FISHING INDUSTRY RESEARCH AND DEVELOPMENT COUNCIL

National Seafood Consumption Study:

Summary and Market Enhancement Options Report

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Summary

The last major study of Australia's consumption of fish and seafood was conducted in 1977. In the ensuing years the health benefits of fish and seafood consumption have become widely known, orange roughy was discovered in commercial quantities and has become one of Australia's most popular eating fish and the proportion of meals consumed outside the home has increased dramatically. These and many other changes have had an impact on Australians' consumption of fish and seafood. The 1990/91 National Seafood Consumption Study, commissioned by the then Fishing Industry Research and Development Council (FIRDC), was designed to assess the impact of these changes and provide a basis upon which the marketing of fish and seafood within Australia could be improved.

Global Fishing Industry Trends

Dramatic changes have occurred in the world fishing industry since 1977. Developed countries' *per capita* fish and seafood consumption has generally increased due to: greater awareness of health benefits; increased disposable income; product innovations allowing large scale distribution through supermarkets, and greater promotion.

However, the developed countries' fisheries have reached the limits of their capacity - indeed many have been overexploited leading to collapse. Furthermore, the introduction of the 200 mile Economic Exclusion Zone (EEZ) has closed off many fisheries to the developed nations' long range fishing fleets. This situation has encouraged many developing nations to develop their own fishing industries with an export orientation. Japan, the US (United States) and Western Europe all run widening trade deficits in fish and seafood that are largely filled by the fishing industries of developing nations. Aquaculture has also become a significant contributor to fish and seafood supply and is expected to contribute 22% by volume of worldwide fish and seafood production by the year 2000.

The entry of many new fish and seafood suppliers onto world markets has dramatically increased competition. For example, Australian prawn producers have experienced fierce competition in their traditional Japanese export market from cultured shrimp producers from China and Taiwan .

These relatively new competitors have quickly introduced value added products that are tailored to the needs of the Japanese consumer. This is one example of a growing trend - the effective use of marketing as a tool of competition. Many companies in the US and the EC (European Community) have introduced innovative upmarket fish and seafood products that use sophisticated packaging technology.

The Australian Fishing Industry

Against the developed country trend, Australia still maintains a significant trade surplus in fisheries products, exporting high value species such as rock lobster, prawns and abalone while importing mainly low value finfish products for domestic consumption. This situation has resulted in many of the larger integrated companies in the Australian fishing industry having an export bias - the domestic market has been generally supplied by small owner operators and importers.

Australian finfish sold for domestic consumption is mostly sold fresh through fishmongers. Imported frozen fish meets the needs of supermarkets, fast food outlets and caterers for fish fillets of low cost, consistent quality and continuous availability. Imported fish is also used as a feedstock to the few Australian based processors manufacturing frozen prepackaged supermarket fish and seafood lines.

The literature and interviews with industry leaders revealed domestic marketing of Australian fish and seafood was often unco-ordinated and of poor quality. Common problems included poor presentation and packaging, substandard retail outlets, confusion due to nomenclature, species substitution, lack of proper storage and handling and little or no promotion.

In spite of these problems, Australian Bureau of Statistics (ABS) figures reveal Australians' apparent *per capita* consumption of fish and seafood grew from 6.5kg to 7.9kg from 1981/82 to 1987/88. However, this did not match the growth in poultry consumption which climbed from 19.6kg to 24.7kg in the same period. Australians' *per capita* fish/seafood consumption still ranks as one of the lowest in the developed world.

Australians' Fish and Seafood Consumption

The 1990/91 National Seafood Consumption Study revealed *per capita* fish and seafood consumption of Australians living in households of 12.06kg per annum which represents a 20% increase over the 13 years since the 1977 study's 10.07kg. Of the 12.06kg, 9.31kg was fish and 2.74kg was seafood[1].

In-home *per capita* consumption of fish in 1990/91 was 6.94kg and of seafood was 1.11kg. Equivalent *per capita* figures for out-of-home consumption were 2.38kg and 1.64kg respectively. No direct comparison can be drawn with 1977 results since the 1977 study did not allocate all fish and seafood consumption into either in-home or out-of-home consumption.

The Study found that 94.6% of individuals living in Australian households had eaten fish/seafood in the last year. Only 4.9% were classified as non fish/seafood consumers which is less than the 7.8% proportion determined in the 1977 study.

[1] Edible weight.

There has been a shift in the type of fish and seafood consumed in the home. In-home consumption of fresh and frozen forms of fish has increased from 2.90kg in 1977 to 4.26kg in 1990/91. However, most of this increase has been matched by a decline in the consumption of fish fingers, other frozen packaged, canned and smoked forms of fish. In-home consumption of fresh, frozen, frozen packaged and canned forms of seafood had declined since 1977 from a total of 1.01kg to 0.79kg.

The average frequency of in-home consumption of fish and seafood has declined from approximately 1.55 fish/seafood meals per household per week in 1977 (includes cooked fish and seafood from take-aways whether eaten in or out-of-home) to 1.08 fish/seafood meals per household per week in 1990/91.

However, out-of-home consumption of fish and seafood has increased dramatically. In 1977, 0.74kg of fish *per capita* was consumed outside of the home, excluding fish purchased from take-aways. In 1990/91 total fish consumption out-of-home was 2.38kg *per capita* of which 0.15kg was purchased from take-aways.

1977 out-of-home seafood consumption was 0.70kg *per capita*, excluding seafood purchased from take-aways. By 1990/91 out-of-home seafood consumption was 1.64kg *per capita* of which 0.17kg was purchased from take-aways. These figures point to at least a doubling of *per capita* fish and seafood consumption out-of-home if purchases from take-aways are excluded.

Consumer acceptance of the fish species orange roughy has been nothing short of phenomenal. Before 1989, Australian catches were less than 400 tonnes per annum. By 1989 the total catch was 36ktonnes[2]. In the 1990/91 consumption survey, orange roughy was the most commonly consumed fresh or frozen fish consumed in-home and was one of the most commonly consumed fish species eaten out-of-home, particularly at restaurants.

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[2] Australian Fisheries, August 1990, p.18.

Place of Purchase

Supermarkets' share of in-home fish meals has declined from 60% in 1977 to 53% in 1990/91. For in-home seafood meals, supermarkets' share has plummeted from 40% to 16% over the same period. The chief reason for this has been the fall in consumption of traditional supermarket lines such as fish fingers, frozen prepackaged (ready to cook) fish/seafood and canned fish/seafood.

However, the overall fall in supermarkets' market share does mask a rise in supermarket share of fresh and frozen fish/seafood in-home meals. In 1977, only 7% of in-home fresh and frozen fish meals were purchased from supermarkets - in 1990/91 this figure had increased to 17%. This change has occurred at the expense of specialist retail fish shops who have seen their market share decline from 39% to 32%.

Restaurants have the largest share of out-of-home fish/seafood meals at 35% followed by friends' and relatives' houses at 16%. Restaurants were particularly popular for the consumption of seafood - over half restaurant fish/seafood meals were seafood. The 1977 study provided insufficient detail to allow any comparison with 1990/91 results.

Fish and Seafood Cooking and Preparation

In 1977, 60% of in-home fresh and frozen fish meals were fried and 13% grilled. In 1990/91, the proportion of meals fried had declined to 43% and grilled increased to 23%.

Changes have also occurred in the use of fresh and frozen seafood in-home. 44% of fresh and frozen seafood was served "straight" (as is) in 1977, whereas only 18% was served "straight" in 1990/91. Fresh and frozen seafood was used far more widely as an ingredient in dishes such as mornays and casseroles in 1990/91.

In spite of approximately 50% of Australian households owning a microwave, only 4% of in-home fish meals were cooked in one.

Consumer Concerns with Fresh and Frozen Fish

The most important factors consumers considered when purchasing fresh or frozen fish were that: the fish is fresh rather than frozen; the labelling can be trusted to be correct; the species is the one that the consumer seeks; the fish has white or light coloured flesh and has been cut and filleted. These attitudes have remained virtually intact since the 1977 study and have been confirmed by subsequent studies since.

The Trades' Problems with Fish and Seafood

The trade segments surveyed were those serving the public for in-home consumption: fishmongers, retailers and wholesalers and those servicing the public for out-of-home consumption: caterers, 'restaurants' and 'take-aways'. All segments had very similar problems with fish/seafood:

- high price
- lack of availability
- price fluctuations
- risk of buying fish and seafood "sight unseen"
- concerns over freshness and storage life
- customers' dislike of bones.

These problems were all identified in 1977 and were just as prominent in 1990/91.

The 55% of retailers who did not sell any fresh, chilled or frozen fish and seafood cited lack of freezer space, no customer demand and no room in store as reasons why. Furthermore, almost half responded that "nothing" would encourage them to stock fresh, chilled or frozen fish/seafood.

The trades' perceptions of fresh or frozen fish, canned fish/seafood and prepared fish products were gathered along with their perceptions of meat, poultry and pork. In general, fresh or frozen fish was associated with the most negative attributes in comparison to other protein sources. The same price and supply issues were prominent as well as the perception that fresh or frozen fish received little marketing support.

Suggested Initiatives to Increase Sales of Fish and Seafood

The out-of-home trade segments (caterers, 'restaurants' and 'take-aways') felt they could do little themselves to stimulate fish and seafood sales. However, they did suggest that the fishing industry establish cheaper prices with less fluctuation, provide more advertising and promotion and more consumer education on health benefits of fish/seafood.

In-home trade segments (retailers, fishmongers and wholesalers) most commonly suggested they could increase display/refrigeration/ freezer capacity to increase fish and seafood sales. Their most common suggested initiative from the fishing industry was "more advertising and promotion", followed by "cheaper prices", "less fluctuation" and "more consumer education on health benefits".

Differences in Trade and Consumer Perceptions

The trade was questioned on the criteria they believed customers use when making a fish or seafood purchase decision. Consumers were also asked to specify the criteria they actually used.

Retailers, fishmongers and take-aways who sold fresh/frozen fish/seafood placed less emphasis on "offering Australian fish/seafood" and "selling fresh rather than frozen fish/seafood" than their customers. These gaps in perceptions between the trade and consumers may cause customer dissatisfaction.

Similarly, 'take-aways' selling cooked fish and seafood placed far less emphasis on "using fresh rather than frozen fish/seafood" and "offering Australian fish/seafood" than their customers. Again, this gap in perceptions may result in customers' dissatisfaction and loss of customers.

The Potential of Under-utilised Wild and Farmed Species

The trade and consumers were questioned on the potential of the underutilised wild species Jack mackerel, squid/calamari, pilchards/sardines, Australian herring/Tommy ruff and silver trevally/skipjack as well as the farmed species of rainbow trout (freshwater), Atlantic salmon (fresh not smoked), mussels, oysters and farmed barramundi.

The trade saw more potential in the farmed species than wild species due to perceived popularity with customers and constant supply. Squid/calamari was the only under-utilised wild species that was seen as offering great potential.

On the other hand, consumers' knowledge of and trial of the various species was patchy. Oysters, rainbow trout, mussels and squid/calamari were well known. However, other species were known of by less than half of consumers. Much of the reason for this low awareness is related to a lack of broad distribution of some species and/or the relative recent entry of some farmed species onto the Australian market.

The Trades' Views on Fish and Seafood Sales Over the Next Five Years

Wholesalers, fishmongers, caterers and supermarkets (a subset of retailers) were the most optimistic segments. Institutions, 'take-aways' and convenience stores (a subset of retailers) were the most pessimistic.

Reasons for optimism included: consumers becoming more health conscious, people eating more fish and an increased population. Reasons for pessimism included: fish/seafood becoming too expensive, tough economic times constraining consumer spending and (specific to 'take-aways') too much competition.

The report that follows provides further details of the National Seafood Consumption Study results.

1. Introduction

In 1990 the FIRDC commissioned a National Seafood Consumption Study to be conducted by a consortium comprising PA Consulting Group (management and technology consultants), Yann Campbell Hoare Wheeler (YCHW; consumer and market research consultants) and Ruello & Associates (specialist fishing industry consultants).

The Fishing Industry Research and Development Council (FIRDC) was replaced by the Fishing Research and Development Corporation (FRDC) in early 1992.

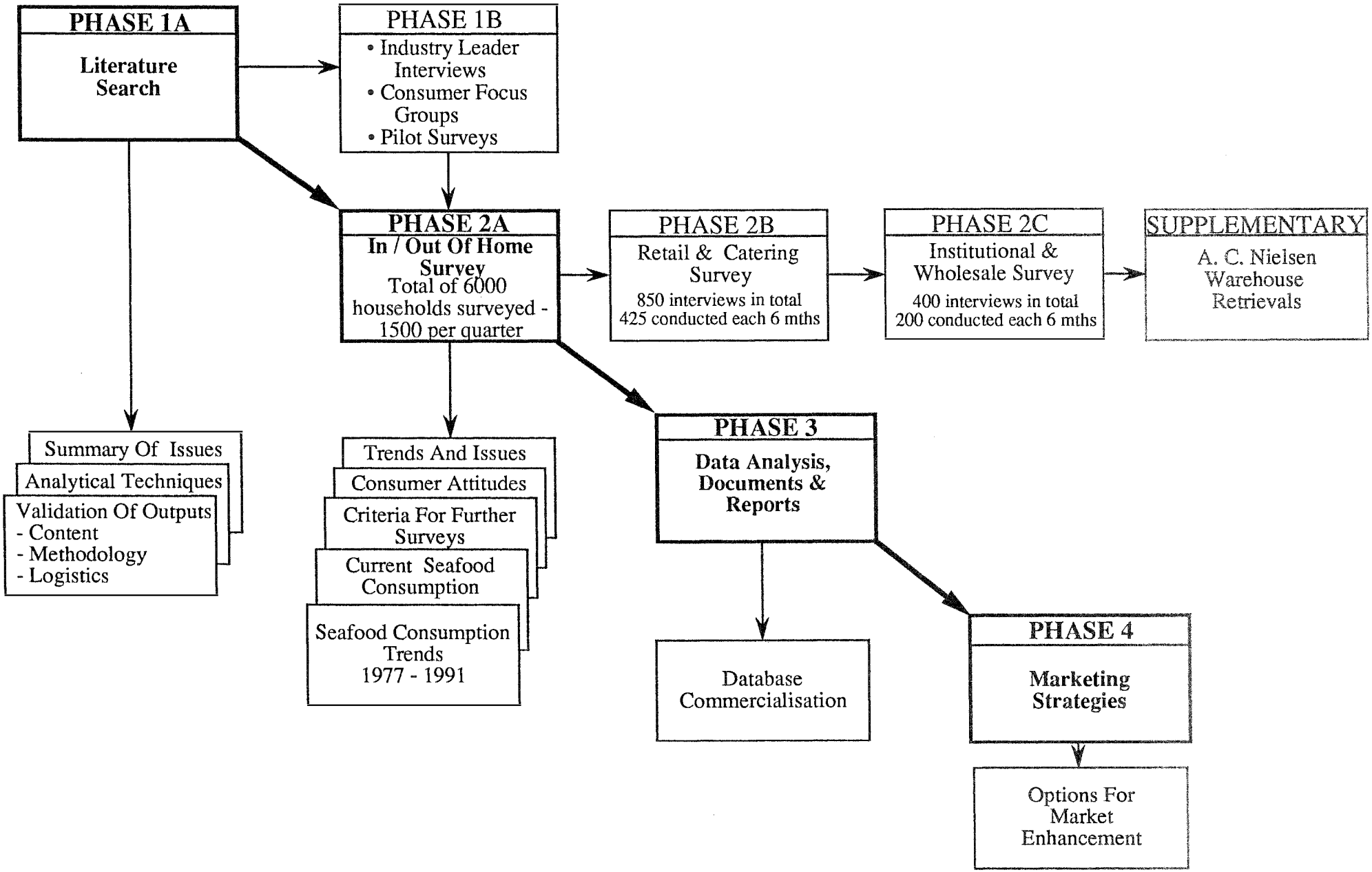
The objectives of the study were:

- to collect detailed and meaningful statistics pertaining to present fish and seafood consumption within Australia from the retail sector, the institutional sector and all other areas
- to collect detailed statistics upon consumer attitudes to fish and seafood both in the short and long term
- to determine from these statistics and survey techniques the nature of the Australian fish and seafood market today, and how this market might be improved both in terms of utilised and under-utilised species.

The consortium adopted a phased approach for the conduct of the study, shown in the schematic of Figure 1.1.

Specific details of the survey methodology are given in Appendices I and II.

Figure 1.1: Project Scope – Activities And Outputs



2. Findings

2.1 Literature Review and Industry Leader Interviews

The Literature Review consisted of initial desk research into the following areas:

- world seafood supply constraints and opportunities and implications for Australian producers
- Australian seafood supply constraints and opportunities
- world seafood demand and trade issues and their impact upon Australian producers
- demand for Australian seafood in international and domestic markets.

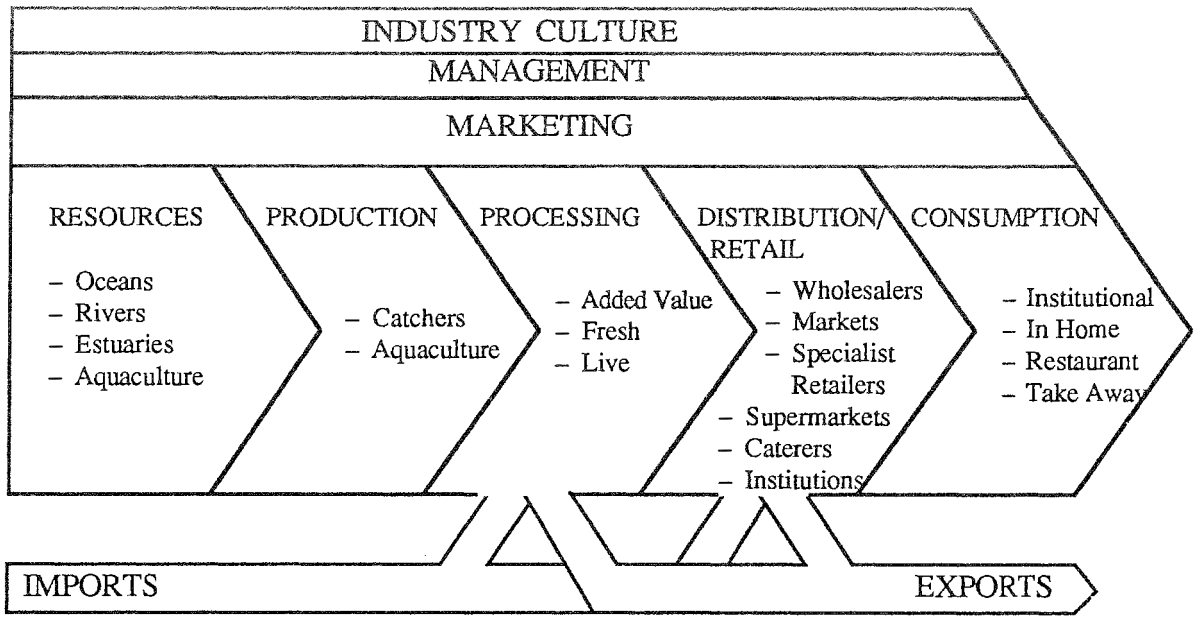
The research paid attention to the seafood industry in its entirety, represented by the value chain model shown in Figure 2.1.1.

Industry leader interviews were conducted with 50 representatives of the Australian fishing industry (respondents) in order to flush out opinions and issues. These were then used in the design of the questionnaires for the study to ensure industry needs were addressed.

Respondents, drawn from all States and the Northern Territory consisted of 7 caterers, 4 institutions, 11 industry organisations, 8 wholesalers/distributors, 4 processors, 5 integrated operators, 6 catchers, 3 retailers and 2 aquaculture producers.

The results of industry leader interviews are drawn upon in discussion of the Australian fishing industry in particular.

Figure 2.1.1 Industry Value Chain



Fish and Seafood Demand

In developed countries *per capita* consumption has generally increased through the 1980s. Drivers of this increase as suggested by the United States of America (US) and the United Kingdom (UK) market research are:

- **Health Benefits of Fish and Seafood.** Consumers in Western countries are lifting their seafood consumption due to a greater awareness of the health benefits accruing from fish and seafood consumption.

- **Disposable Income Increases.** The US and UK research suggested that increased disposable income was a key driver to increased consumption of fish and seafood.

- **Population/Demographic Trends.** The UK marketing study results show how fish and seafood consumption is a factor of age group. The US marketing study suggested fish and seafood consumption to be, in part, a factor of socio-economic group.

- **Product Innovations** in the US and the UK have brought fish and seafood into supermarkets as a mainstream food for the first time.

- **Processed/value-added fish and seafood** allows companies to pursue a strategy of product differentiation to avoid selling fish and seafood as a commodity. In Europe and the US brand names have been developed by focussing upon the key attributes of product quality, convenience of use and storage, and the health benefits of fish and seafood consumption.

- **Lifestyle.** The increase in two income households and single member households in the US and the UK has driven increased demand for convenience food including pre-prepared fish and seafood.

- **Promotion.** The UK Sea Fish Industry Authority (SFIA) conducted a high profile fish and seafood promotion campaign from 1985 to 1990. A recent SFIA campaign had the title "easy meals". Another was aimed at raising the product and service standards of fishmongers through a "Quality Awards Scheme". Strong brand promotion is also a feature of the US and the UK fish and seafood markets.

- **Distribution.** In the US and the UK, supermarkets account for an increased proportion of fish and seafood sales.

Media reports of fisheries pollution have been known to have a serious negative effect on seafood consumption, at least for the short to medium term. Concerns over pollution were at least partially responsible for a decline in US fish and seafood consumption in 1988. Marketers have turned these concerns into tools to encourage greater consumption of their product through emphasising the pollution free origins of the fish and seafood.

While recession has now affected many of the world's developed countries, forecasters still estimate *per capita* consumption will continue to increase during the 1990s, though possibly at lower rates than the 1980s. The rapid growth in the economies of many Asian nations, accompanied by increased personal wealth, has driven domestic demand for premium fish and seafood products which has been positive for Australian exports. This region is expected to continue to grow faster than the rest of the world in the 1990s and remain a key market for Australian fish and seafood.

Fish and Seafood Supply

In contrast to an increasing demand for fish and seafood, the most significant problem in the world's fisheries is that most are already over-exploited. Fisheries of developed countries have been particularly affected by the increased pressure placed on fish stocks through technical advances in nets, freezing at sea, electronic navigation and sonar aids, mechanical net hauling, and a dramatic increase in the size, versatility and operational range of fishing craft.

Fisheries management regimes in the US and European Community (EC) have failed to keep up with these advances and over-fishing has occurred in many fisheries. Stocks of demersal fish[3], which include preferred food fish such as cod, have been heavily depleted. This is leading to increasingly stringent control on fishing effort and fisheries access in these countries at least. Schemes to reduce fishing fleet capacity by 40% are being introduced in the EC. The resultant industry restructuring is expected to improve economic efficiency. The medium to long term outcome for fisheries will be a stabilisation of catches at sustainable levels. However, until over-exploited stocks have recovered, catch levels will be significantly down on peaks.

Developing country output has increased at a faster rate than that of developed countries. However, most developing country catch is in small shoaling pelagic species[4] that are subject to sharp fluctuations in abundance and, for the most part, are reduced to fish meal for animal/fish feed rather than for direct human consumption.

Aquaculture has also become a significant contributor to fish and seafood supplies, already contributing about 10% of total fisheries output by volume and expected to contribute 22% by the year 2000. Aquaculture producers in Asia and Europe use marketing as an effective tool in their business expansion.

Fish and Seafood Trade

The trade in fish and seafood is dominated by three major developed nations/regions - Japan, the US and Western Europe. All run widening trade deficits in fish and seafood, though all are significant exporters as well.

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[3] Demersal: those fish that inhabit the bottom of the oceans.

[4] Pelagic: those fish that inhabit the upper layers of the oceans.

The implementation of the 200 mile Economic Exclusion Zone (EEZ) has closed off many fisheries to the developed nations' fishing fleets and encouraged developing nations to develop their own fishing industries with an export orientation. Hence, developing nations run a trade surplus with developed nations in fisheries products.

The influence of the rapidly expanding fisheries industries of developing nations on world trade can be seen in the increased diversity of supplier countries from which Australia imports fisheries products. In 1981/82, six countries accounted for 91% by value of all Australia's fishery product imports. By 1989/90 the top six countries amongst Australia's sources of fishery product imports accounted for only 58% of imports by value. A multitude of other supplier countries accounted for the remaining 42%.

However, Australia still maintains a significant trade surplus in fisheries products, exporting high value species such as rock lobster, prawns and abalone while importing low value finfish products and processed products for domestic consumption.

Australian export trade in fisheries products has shifted to Asia in recent years. Japan, Taiwan and Hong Kong bought 68% of Australian fisheries exports in 1990/91 compared to 57% in 1981/82. This shift is likely to continue given the relative strength of the Asian economies compared to the rest of the world.

Forces Shaping the World Fish and Seafood Industry

The issues arising from the previous sections on fish and seafood demand, supply and trade are represented by Figure 2.1.2.

The major issue is the limited further growth of wild catch volume versus steadily increasing demand for fish and seafood. To meet this demand, the fishing industries of countries around the world are developing on three major fronts:

- increased aquaculture production

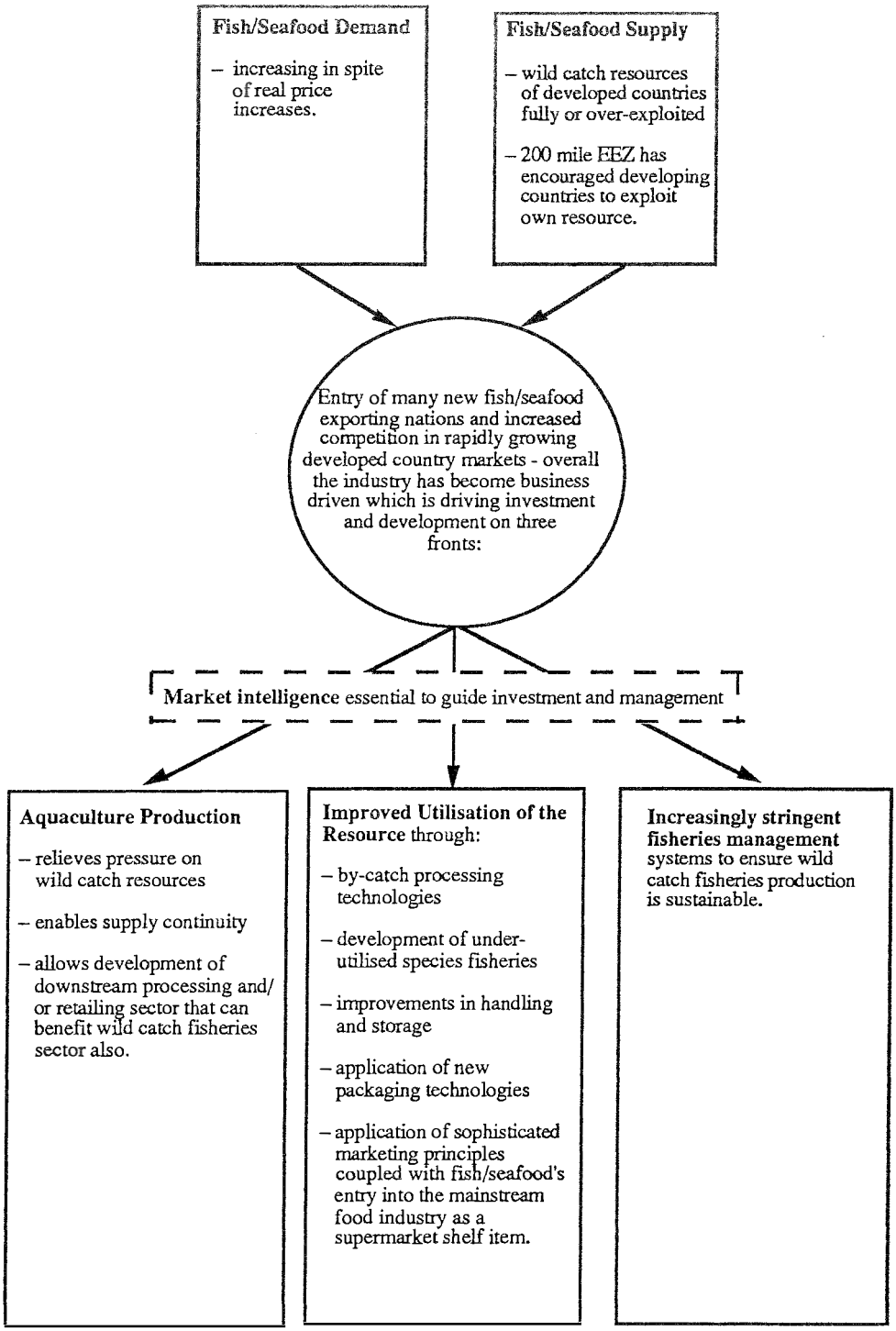
- improved resource utilisation
- implementation of effective fisheries management systems.

Improved marketing of fish and seafood is critical on all of these fronts:

- a lack of market knowledge was seen as one of the major causes of the failure of many Australian aquaculture ventures
- efforts to effectively utilise by-catch and under-utilised species will only succeed if the product has a market
- the effectiveness of fisheries management systems can be improved with careful attention to matching peaks in supply with peak market demand.

The value of marketing has been implicitly recognised by many businesses in the US and the UK where fish and seafood has become a part of the mainstream food industry. Sophisticated marketing techniques are being employed by these businesses to effectively compete with alternative foods. The supply and demand trends driving this emphasis are expected to remain for the medium term at least.

Figure 2.1.2 Forces Shaping the World Fish and Seafood Industry



The Structure of the Australian Fish and Seafood Industry

Australia has the third largest fishing zone, by area, in the world. However, waters around Australia are akin to a "marine desert", due to unfavourable environmental, biological and physiochemical factors. Australia is only the world's fiftieth largest producer by weight.

However, the value of Australian catch is dominated by three major high value product groups: a) prawns, crabs and marron; b) rock and slipper lobster; and c) abalone, which places Australian production value per unit weight amongst the highest in the world. Most of the prawn, rock lobster and abalone catch is exported, which has resulted in many of the larger integrated companies in the Australian fishing industry having an export orientation. The domestic market is, in the main, supplied by small owner operators plying coastal waters, and importers.

The owner operators typically run small boats that are not equipped with refrigeration facilities. Hence, they are restricted to fishing in coastal waters close to their home ports for finfish which is usually sold fresh. Australian finfish on the domestic market are generally sold fresh through fishmongers, either in whole, headed and gutted, or filleted form.

Imports consist of processed products such as canned tuna/salmon and speciality products such as fishballs, fishcakes and surimi. Fresh, chilled, frozen and smoked finfish are imported from New Zealand, South America and a host of other countries around the world. The value of imports in terms of A$/kg is less than one third that of Australian fisheries product exports, highlighting the reason for the export orientation of much of the Australian fishing industry.

Imports of fish often undercut the price of Australian-caught fish. Reasons for this are:

- the lack of a large volume "groundfish" species such as cod or hake in Australia's fishing zone

- the high cost of Australian labour in the catching and processing sectors

- the small boats of the operators who catch the finfish for Australia's domestic market do not allow economies of scale

- an industry culture which hinders beneficial co-operation between catchers, processors, wholesalers and retailers.

Imported frozen fish meets the needs of supermarkets, fast food outlets and caterers for fish fillets of:

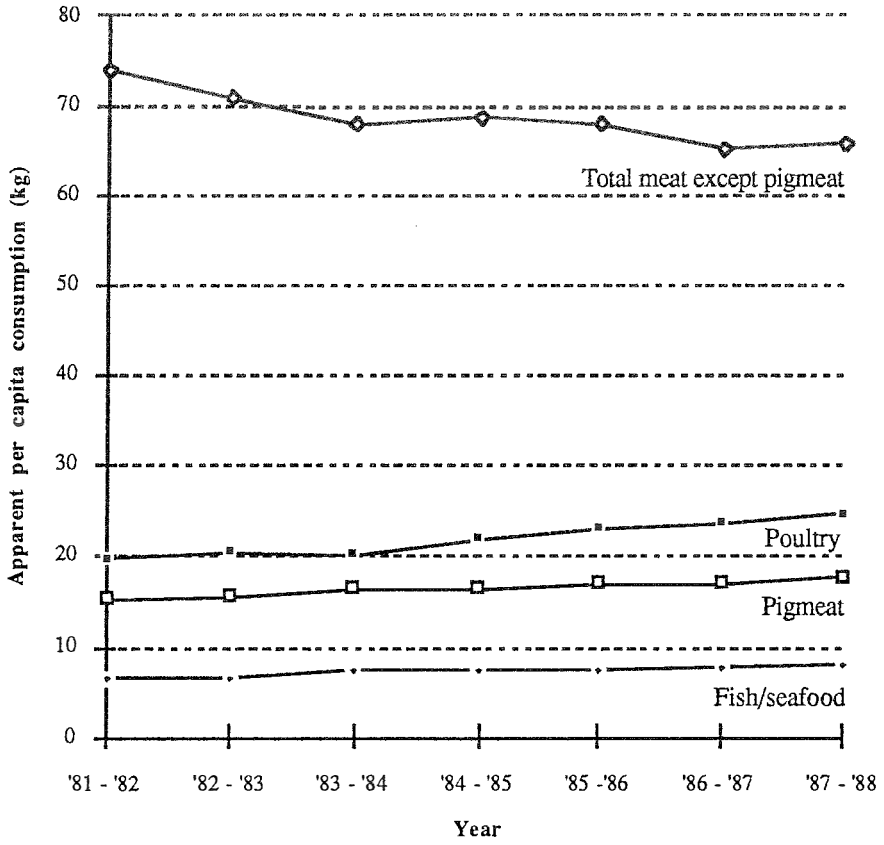
- low cost
- consistent quality
- continuous availability.

Imported fish is also used as feedstock to the few Australian-based processing plants manufacturing supermarket line products such as frozen pre-prepared fish dinners and fish fingers for the same reasons.

Australian Consumer Demand

The Australian Bureau of Statistics' (ABS) published statistics on fish and seafood consumption, show a significant increase in *per capita* consumption from 1981/82 to 1987/88. Annual consumption grew from 6.5kg to 7.9kg *per capita* in this period. Yet figures also show poultry as being the real market winner in the 1980s with *per capita* consumption climbing from 19.6kg in 1981/82 to 24.7kg in 1987/88. See Figure 2.1.3.

Figure 2.1.3 Apparent *Per Capita* Consumption



Source: ABS Catalogue 4306.0

Possible reasons for the minor place of fish and seafood in Australian diets as suggested by previous marketing studies include:

- consumers ranked freshness as the most important factor considered when purchasing fresh fish. However, 20% of respondents were unable to nominate any way to assess freshness and 76% of respondents admitted difficulty in assessing freshness

- problems with bones in fish

- a lack of advertising and specially discounted fish
- mess and smell when preparing fish
- not all household members liking fish
- fish not providing a filling meal
- the lack of availability and high price of fish.

Fish was far more popular as an out-of-home meal choice, since the problems associated with purchase and preparation could be avoided. However, these consumer attitudes are mainly based upon studies conducted in 1977 and 1978. Very little recent work has been done on consumer attitudes to fish and seafood. Other literature and the industry leader interviews provided further information on problems in the Australian industry that could impact on consumption:

- poor product presentation and packaging
- substandard retail outlets
- confusion caused by different names for the same species (nomenclature problems)
- highly seasonal catch leading to availability problems and wide fluctuations in price
- marketing of fish and seafood under false names leading to a loss of consumer confidence in the product
- poor product quality due to a lack of proper storage and handling
- a lack of promotion compared to that conducted for alternate protein sources.

The Outlook for World and Australian Fishing Industries

The shortage of fish and seafood supply against increased demand has steadily pushed up the world price of most fish and seafood. This has provided a powerful monetary incentive for producers, processors and distributors alike, to invest in marketing, new technology and new resources. In countries such as the US, the UK and Australia, fish and seafood has entered into the mainstream food sector on supermarket shelves, where competition with substitute products is far more intense. Marketing sophistication has become an important element in this competition.

New fish and seafood suppliers have entered the market; aquacultured shrimp producers in Asia are now providing stiff competition in price and product quality, to the wild catch sector. The response in Australia's northern prawn fishery has been to focus upon catching larger prawns in an effort to supply a premium, differentiated product to international markets. Increased competition has forced producers worldwide to look at downstream activities and increasingly ask the question: "what does the customer want and how can I best satisfy these wants?".

For example, in Italy, a seafood processor buys fresh fish from all over the world, packs them using a vacuum skin process, date stamps them to assure customers of freshness and then trucks them to supermarkets using its own trucking fleet where they are sold in chilled cabinets. Asian aquaculture producers have successfully moved from supplying a headless product to more value-added cooked and peeled products in tray packs and vacuum packs. These successful strategies are based upon a recognition that consumers are willing to pay for convenience and top quality. The drive to high value fish and seafood products is worldwide: clever packaging, branding, advertising and new distribution channels such as supermarkets and up-market specialty shops will increasingly become the norm.

2.2 Trade Supplies to the Public for Out-Of-Home Consumption

2.2.1 Trade Segments Surveyed

This Section summarises data and attitudes gathered from those segments of the fishing industry considered to supply fish and seafood primarily for consumption by the public outside the home. It draws on surveys conducted by interview of three trade segments:

- caterers (contract caterers, function caterers, and in-house catering by organisations)
- 'restaurants' (restaurants, social and sporting clubs, hotels and motels)
- 'take-away' outlets (fish and chip shops, and other take-away outlets mainly selling cooked product).

As noted in Appendix II, these surveys covered the purchase and resale of fresh and frozen fish/seafood and not canned and frozen prepackaged products.

All weights and volumes referred to in the discussion of these survey results are purchased weights.

Results discussed in this Section concern either respondent attitudes to fish and seafood or actual behaviour (purchase volumes, species/types, sources etc). Section 2.6 discusses other results from survey questions that deal with differences in perception between these trade segments and their customers.

2.2.2 Trade Segments' Purchase Behaviour

The level of independence in all three segments was high in terms of autonomy over buying decisions on fish and seafood; around 80% or more of respondents were not part of any buying group, and bought for their outlet alone.

The three out-of-home segments differed in the principal species/types of finfish which they sold. Caterers and 'restaurants', supplying for a more formal meal-occasion, sold orange roughy, snapper, hake and barramundi most frequently. 'Take-away' outlets sold shark, whiting and hake most frequently. The predominant form in which all three segments purchased their fish was as fillets, although restaurants favoured purchases of whole snapper; 'take-away' outlets also favoured purchasing whole snapper, flathead and flounder.

Most of the fish purchased by these segments was of Australian origin, except for significant reliance by caterers and 'take-aways' on imported hake and by 'take-away' outlets on some imported whiting.

There were numerous regional differences in the species/types of fish sold through 'take-away' outlets. However, no significant regional differences were seen in fish or seafood species/types sold through caterers or 'restaurants'.

There was considerable similarity between caterers, 'restaurants' and 'take-away' outlets regarding their most frequently sold seafood items; prawns, oysters and scallops were common in all three segments, with 'take-away' outlets citing seafood sticks as their second most frequently sold seafood item. Purchases of seafood by the three out-of-home segments were commonly in 'whole' form, and reliance on imported seafood was generally higher than for finfish.

Each of the main species/types of finfish and seafood purchased by caterers and 'restaurants' were typically bought by them in volumes of 1 - 10kg per month per business per species/type.

In contrast, the main finfish species purchased by 'take-aways' were typically bought in volumes anywhere from 1kg to 200kg per month per business per species/type. 'Take-aways' purchases of seafood were in similar volumes to that of caterers and 'restaurants'.

The species purchased in the greatest volume during the survey periods were, for caterers, hake, whiting and orange roughy; for 'restaurants', snapper, hake and barramundi; for 'take-away' outlets, shark, hake and orange roughy (including purchases for uncooked sales).

As Table 2.2.2 suggests, 'restaurants' tended to purchase a broader range of *seafood* than the other two out-of-home segments. The volume of prawns bought by all three segments far exceeded any other seafood item, with crayfish, squid/calamari and scallops ranking next in terms of volume.

The main suppliers of fish and seafood to caterers and 'restaurants' were general wholesalers, followed by fish and seafood wholesalers/co-operatives. 'Take-away' outlets were largely reliant on general wholesalers for their supplies of *seafood*, but called much more evenly on general wholesalers and wholesale fish markets for supplies of *fish* (see Tables 2.2.1 and 2.2.2).

Table 2.2.1 Proportion of the Main Finfish Species/Types Purchased From Respective Suppliers* - Based on the Number of Species/Types Cited

	Proportion of Main Species/Types Mentions: (in brackets is the range of different species/types)					
	Caterers(1)		'Restaurants' (2)		'Take-Aways'(3)	
Commercial fisherman/ aquaculture farm	2.9%	(10)	2.2%	(13)	1.5%	(7)
General wholesaler	36.2%	(42)	36.4%	(47)	41.4%	(36)
Fish/seafood wholesaler/ co-operative	26.3%	(33)	29.2%	(46)	14.1%	(23)
Wholesaler fish market	17.3%	(28)	23.8%	(45)	36.8%	(44)
Retailer	9.9%	(20)	7.6%	(29)	1.7%	(8)
Other	0.3%	(1)	0.6%	(5)	0.7%	(4)
Don't know/no answer	7.1%	(13)	0.2%	(2)	3.7%	(18)
Totals	100%		100%		100%	

(1) based on 312 main species/type mentions

(2) based on 780 main species/type mentions

(3) based on 589 main species/type mentions

** for purchases over the month preceding the surveys*

Table 2.2.2 Proportion of the Main Seafood Species/Types Purchased From Respective Suppliers* - Based on the Number of Species/Types Cited

	Proportion of Main Species/Types Mentions: (in brackets is the range of different species/types)					
	Caterers(1)		'Restaurants' (2)		'Take-Aways'(3)	
Commercial fisherman/ aquaculture farm	1.5%	(3)	2.8%	(9)	2.6%	(4)
General wholesaler	41.4%	(27)	41.0%	(35)	49.3%	(28)
Fish/seafood wholesaler/ co-operative	26.5%	(20)	26.9%	(22)	16.9%	(16)
Wholesaler fish market	19.4%	(14)	20.0%	(24)	21.9%	(18)
Retailer	7.8%	(10)	6.9%	(19)	3.7%	(7)
Other	0%	(0)	1.9%	(11)	1.1%	(4)
Don't know/no answer	3.4%	(7)	0.6%	(3)	4.5%	(13)
Totals	100%		100%		100%	

(1) based on 268 main species/type mentions

(2) based on 700 main species/type mentions

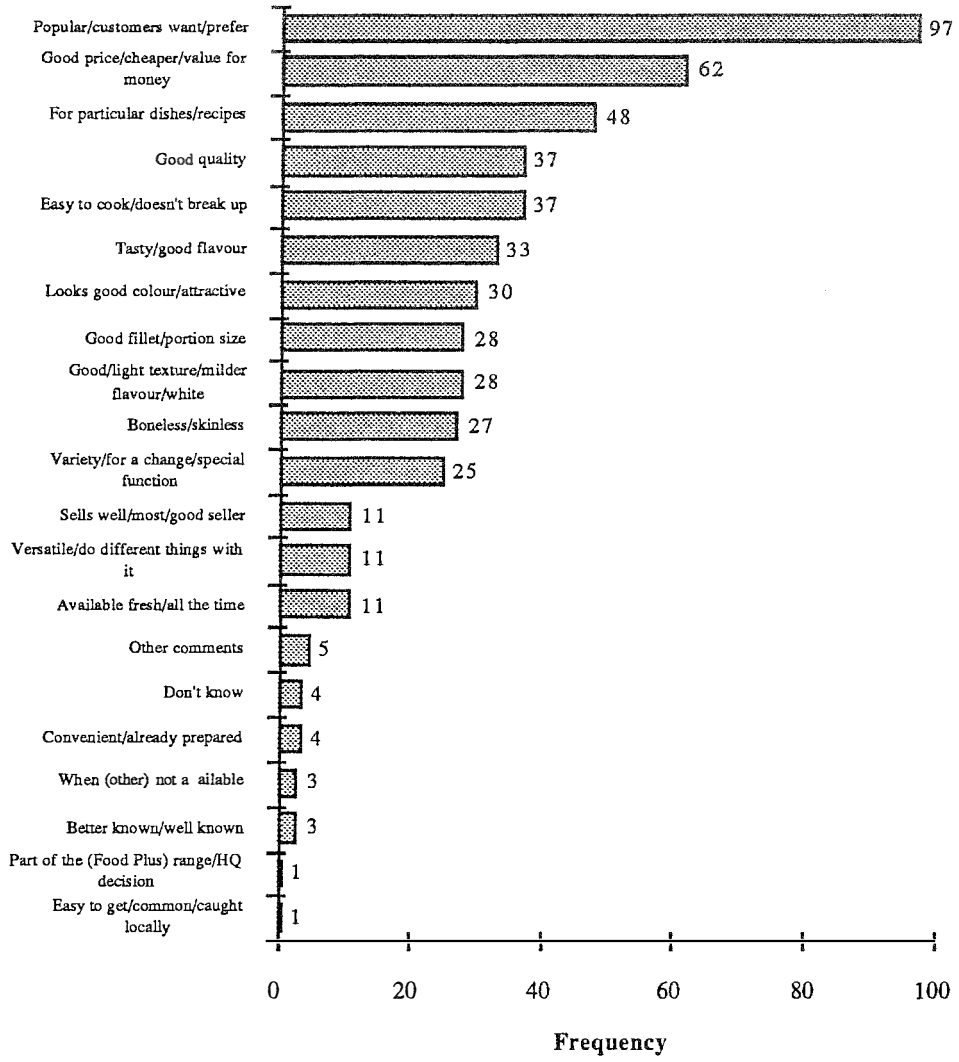
(3) based on 379 main species/type mentions

** for purchases over the month preceding the surveys*

2.2.3 The Selection of Fish/Seafood Species/Types and Suppliers

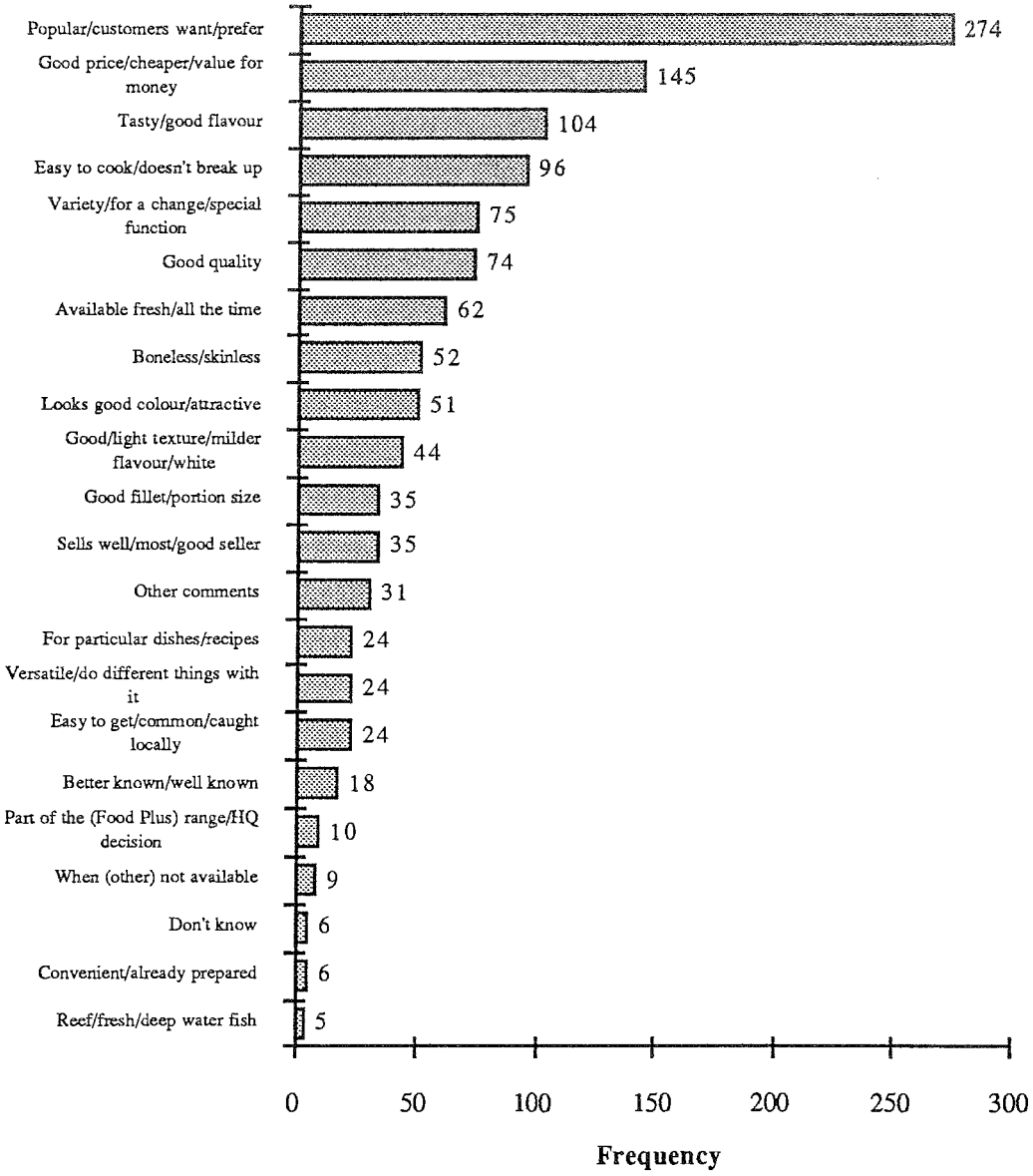
The basis upon which caterers, 'restaurants' and 'take-away' outlets selected their stock of fish and seafood showed major common elements (Figures 2.2.3 through 2.2.5). Popularity with customers, a fair price representing value for money, and a functional attribute (useful in a particular recipe, tasty flavour, free of bones) were the most frequently cited reasons. Some of these characteristics were often associated with certain species/types, eg hake with a good price, orange roughy with taste and bonelessness, and snapper with appearance.

Figure 2.2.3 Caterers' Reasons for Purchase of Main Finfish



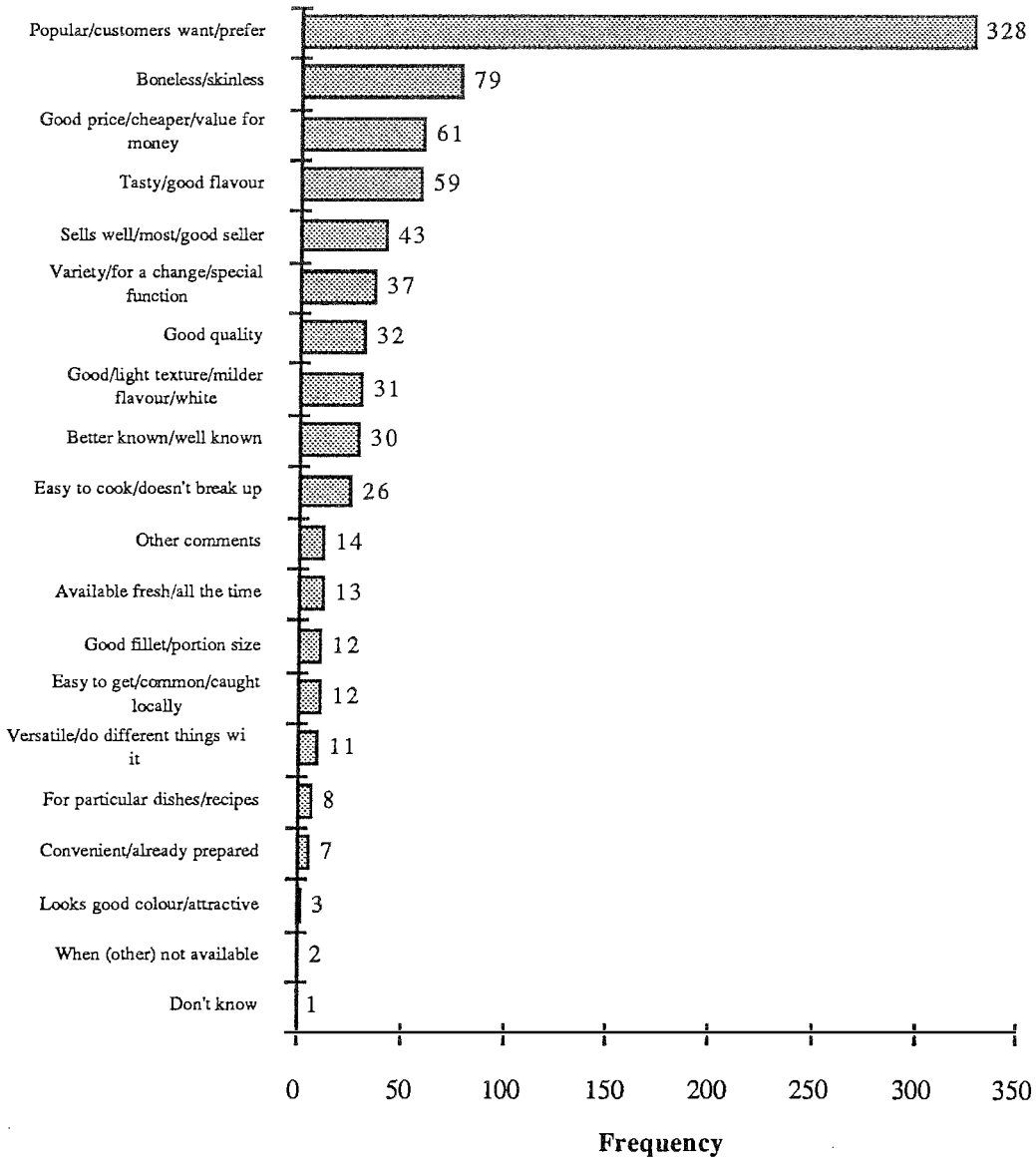
Respondents offered 506 responses for 70 fish species/types for May 1991 and September 1991 surveys.

Figure 2.2.4 'Restaurants'' Reasons for Purchase of Main Finfish



Respondents offered 1204 responses on 76 fish species/types for May 1991 and September 1991 surveys.

Figure 2.2.5 'Take-away' Outlets' Reasons for Purchase of Main Finfish



Respondents offered 809 responses on 54 fish species/types for May 1991 and September 1991 surveys.

The surveys addressed the factors which caterers, 'restaurants' and 'take-way' outlets considered when choosing a fresh or frozen fish/seafood supplier. Respondents were asked to rate each of a list of 17 or 18 given factors in terms of the factor's importance to their decision to choose a particular supplier.

The averaged importance rating given each factor has been used to rank each factor from most to least important as shown in the first column of Tables 2.2.6, 2.2.7 and 2.2.8. These rankings are roughly akin to the expectations of caterer, 'restaurant' and 'take-away' outlet managers when they seek an ideal supplier.

Respondents were then requested to rate their own fresh or frozen fish/seafood supplier's performance in each factor on a scale from "very poor/unfavourable" to "very good/favourable". The averaged performance rating was then used to rank each factor from best to worst performance as shown in the second column of Tables 2.2.6, 2.2.7 and 2.2.8.

As the Tables show, the factors all three outlet types saw as most important were the same. They were:

- that orders are promptly attended to
- that the supplier is honest and fair in doing business
- that supplier stock is under good temperature control.

On the other hand, caterers were not as positive in regard to the performance of their own suppliers in terms of the former two factors mentioned. Prompt attendance to orders and honesty and fairness in doing business were ranked as equal fourth best in actual performance.

'Restaurants' and 'take-away' outlets were relatively satisfied with their supplier's performance in these factors. However, as shown by the figures in column 3 of Table 2.2.7 and 2.2.8, they were not satisfied with supplier performance in delivering consistently low prices.

Table 2.2.6 Caterers' Expectation of Fish/Seafood Suppliers Versus the Performance of Their Present Main Supplier

Factor:	Expectations: ranked importance of each factor in choosing a fish/seafood wholesaler[1]	Performance: ranking of main wholesaler supplier rating[2]	Performance versus expectations[3]
• Orders are promptly attended to	1	4	-0.5
• Honest and fair in doing business	1	4	-0.5
• Good temperature control	2	1	-0.1
• Clean outlet	2	3	-0.3
• Guarantee of being correctly named	2	3	-0.3
• Provides clear documentation	2	2	-0.2
• Has reliable delivery	3	6	-0.4
• Good reputation for quality fish/ seafood	4	5	-0.2
• Can be confident not been frozen	5	8	-0.4
• Offers a wide variety of fish/seafood	5	4	0.0
• Understands my business	6	9	-0.5
• Has friendly staff working there	6	7	-0.2
• Has staff informed about fish/seafood	7	8	-0.2
• Offers Australian fish and seafood	8	5	+0.3
• Gives good credit terms	8	9	-0.2
• Sells fresh fish/seafood	9	7	+0.6
• Consistently low prices	9	11	-0.4
• Sells a range of other products	10	10	+0.7

(1) from most important (1) to least important (10)

(2) from best performance (1) to worst performance (11)

(3) negative numbers signify performance does not meet expectations. The numbers are the difference between performance versus expectation averaged ratings.

Table 2.2.7 'Restaurants' Expectation of Fish/Seafood Suppliers Versus the Performance of Their Present Main Supplier

Factor:	Expectations: ranked importance of each factor in choosing a fish/seafood wholesaler[1]	Performance: ranking of main wholesaler supplier rating[2]	Performance versus expectations[3]
• Orders are promptly attended to	1	1	-0.3
• Honest and fair in doing business	2	2	-0.3
• Good temperature control	3	3	-0.3
• Clean outlet	4	2	-0.1
• Has reliable delivery	4	3	-0.2
• Guarantee of being correctly named	4	3	-0.2
• Provides clear documentation	4	2	-0.1
• Good reputation for quality fish/ seafood	5	2	0.0
• Can be confident not been frozen	6	6	-0.3
• Offers a wide variety of fish/seafood	7	4	0.0
• Understands my business	8	5	0.0
• Consistently low prices	8	7	-0.7
• Has staff informed about fish/seafood	9	6	0.0
• Sells fresh fish/seafood	10	6	+0.2
• Gives good credit terms	10	6	+0.2
• Offers Australian fish and seafood	11	3	+0.6
• Has friendly staff working there	12	4	+0.6
• Sells a range of other products	13	7	+0.6

(1) from most important (1) to least important (13)

(2) from best performance (1) to worst performance (7)

(3) negative numbers signify performance does not meet expectations. The numbers are the difference between performance versus expectation averaged ratings.

Table 2.2.8 'Take-Away' Outlets' Expectation of Fish/Seafood Suppliers Versus the Performance of Their Present Main Supplier

Factor:	Expectations: ranked importance of each factor in choosing a fish/seafood wholesaler[1]	Performance: ranking of main wholesaler supplier rating[2]	Performance versus expectations[3]
• Honest and fair in doing business	1	3	-0.5
• Orders are promptly attended to	2	1	-0.1
• Good temperature control	2	3	-0.3
• Clean outlet	2	1	-0.1
• Provides clear documentation	2	2	-0.2
• Guarantee of being correctly named	2	2	-0.2
• Good reputation for quality fish/seafood	3	3	-0.2
• Understands my business	4	5	-0.3
• Has reliable delivery	5	2	+0.1
• Consistently low prices	6	10	-1.0
• Has friendly staff working there	7	4	+0.3
• Gives good credit terms	8	6	+0.2
• Offers a wide variety of fish/seafood	8	4	+0.4
• Has staff informed about fish/seafood	9	6	+0.4
• Can be confident not been frozen	10	8	0.0
• Offers Australian fish and seafood	11	7	+0.5
• Sells fresh fish/seafood	12	9	+0.9

(1) from most important (1) to least important (12)

(2) from best performance (1) to worst performance (10)

(3) negative numbers signify performance does not meet expectations. The numbers are the difference between performance versus expectation averaged ratings.

2.2.4 Trends in Consumer Preferences

The out-of-home supply segments were asked about a number of perceived social trends, and how these related to **their** customers. Exactly the same responses came from caterers and 'restaurants', who held that customers were more health-conscious, were eating less fats and saturated oils and were purchasing more grilled (rather than fried) fish. 'Take-away' outlets confirmed a trend of less salt on food.

2.2.5 Problems with Fish/Seafood

The three trade segments were asked to rate the significance of a range of 19 to 21 common industry problems with fresh and frozen fish and seafood. Their ratings were very similar. Caterers, 'restaurants' and 'take-aways' attached most significance to the following problems:

- the price of seafood makes it too expensive to buy
- the difficulty in obtaining continuous supplies of fish and seafood at steady prices
- consumer dislike of bones in fish
- the price of fish makes it too expensive to buy
- distrust of suppliers, and the risk of buying "sight unseen"
- tendency of fish and seafood to "go off" quickly
- doubts about fish and seafood freshness.

All three segments expressed greatest concern over the price of seafood. The 'take-away' segment also stressed the difficulty of remaining competitive due to the low margins made on fish and seafood.

2.3 Trade Supplies to the Public for In-Home Consumption

2.3.1 Trade Segments Surveyed

This Section focuses on data and attitudes gathered from those segments of the fishing industry considered to supply fish and seafood primarily for consumption by the public in the home. It draws on surveys conducted by interview with three trade segments:

- retailers (supermarkets, food stores, convenience stores)
- fishmongers (outlets selling mainly "fresh" product)
- wholesalers (general wholesalers and fish and seafood "specific" wholesalers).

These surveys were designed to focus on the sale of fresh, chilled and frozen fish and seafood rather than canned and frozen processed products. They were conducted through interviewing key people within these three trade segments. Details on the sale of canned and frozen processed fish/seafood products were derived from an analysis of "Warehouse Withdrawals Data" purchased from market research firm AC Nielsen Pty Ltd.

All weights and volumes referred to in the discussion of results of interviews with retailers, fishmongers and wholesalers are purchased weights. All weights and volumes referred to in discussing AC Nielsen Pty Ltd Warehouse Withdrawals Data is net product weight excluding packaging.

Results discussed in this Section concern either respondent attitudes to fish and seafood or actual behaviour (purchase volumes, species/types, sources etc). Section 2.6 discusses other results of survey questions that explore differences in perception between these trade segments and their customers.

2.3.2 Retailers' and Fishmongers' Purchase Behaviour

The levels of independence, in terms of autonomy over the fish and seafood buying decision, in the retailer and fishmonger trade segments were similar, with 90% or more businesses in each segment buying for that store alone.

Of the 202 retailers sampled, 97 were supermarkets (ie Coles New World, Safeway, etc), 85 were food stores (ie Cut Price, Scoop etc) and 20 were convenience stores (ie 7 - 11, Food Plus). 55% of all retailers sampled did not sell fresh, chilled or frozen fish/seafood. Supermarkets were more likely to sell fresh, chilled or frozen fish/seafood than either food stores or convenience stores (Table 2.3.1).

Of the 200 fishmongers sampled all, as would be expected, sold mainly fresh fish/seafood.

Table 2.3.1 Proportion of Retailers Which Sold Fresh, Chilled or Frozen Fish/Seafood

Type of fish/ seafood sold	All retailer types*	Supermarkets*	Food stores*	Convenience stores
Fresh (%)	17%	32%	5%	0%
Chilled (%)	23%	42%	7%	0%
Frozen (%)	42%	58%	32%	5%
None (%)	55%	37%	67%	95%
Total sampled (outlets)	202	97	85	20

** percentages do not add to 100% since many retailers sold more than one type of fish/seafood.*

The volume, species/type and form of fish and seafood purchased by retailers and fishmongers were vastly different. Table 2.3.2 shows that the 200 fishmongers surveyed bought 28 times more fresh and/or chilled and/or frozen fish than the 202 retailers surveyed. The equivalent figure for seafood was 48 times.

The species/types of fish purchased by retailers were mainly smoked cod, whiting and hake, all usually purchased as fillets. Retailers' most commonly stocked seafood species/type were prawns and seafood sticks.

Fishmongers purchased a far broader range of fish and seafood than retailers. Orange roughy, flathead and mullet were the three fish species purchased by the largest number of fishmongers. Prawns, oysters and crabs were commonly stocked seafood species.

Table 2.3.2 The Volume of Fish and Seafood Purchased in the Month Preceding the Survey by Retailers and Fishmongers Sampled

	Retailers		Fishmongers	
	Fish	Seafood	Fish	Seafood
Total volume sold (kg/month)	24,878	5,669	687,092	270,114
Average per outlet (kg/month)	123	28	3,435	1,350
Average per outlet that sells fresh, chilled or frozen fish/seafood(1) (kg/month)	276	63	3,435	1,350

(1) of the 202 retailers surveyed, only 90 purchased fresh and/or chilled and/or frozen fish/seafood.

Many species were purchased in vastly different total quantity in the month preceding the May 1991 survey versus the September 1991 survey. This is believed to be largely a result of seasonality in catches. However, fish species/types such as smoked cod, flathead, hake, orange roughy, shark, snapper, redfish and trevally were purchased in substantial quantity during both survey periods. Prawns were the only seafood species/type purchased in substantial quantity in both survey periods.

When retailers were asked to specify their suppliers of fresh and frozen fish/seafood, they predominantly used general wholesalers (Table 2.3.3) in agreement with the results of the wholesalers survey (see Section 2.4.3).

However, fishmongers purchased most of their fish/seafood from wholesaler fish markets (Table 2.3.3) and comparatively little from general wholesalers.

Table 2.3.3 Proportion of the Main Fish and Seafood Species/Types Purchased from Respective Suppliers - Based on the Number of Species/Types Cited

	Proportion of main species/types mentions (in brackets is the range of different species/types):							
	Fish[5]				Seafood[6]			
	Retailers[1]		Fishmongers[2]		Retailers[3]		Fishmongers[4]	
Commercial fisherman/ aquaculture farm	1.3%	(4)	6.4%	(38)	0.0%	(0)	8.4%	(17)
General wholesaler	49.8%	(38)	12.4%	(42)	51.7%	(21)	16.8%	(24)
Fish/seafood wholesaler/ co-operative	23.0%	(29)	10.3%	(34)	28.1%	(11)	22.7%	(27)
Wholesaler fish market	11.2%	(18)	67.1%	(69)	9.6%	(9)	47.2%	(31)
Retailer	3.5%	(8)	0.6%	(3)	1.8%	(1)	0.5%	(4)
Other	5.1%	(9)	1.9%	(15)	0.0%	(0)	1.6%	(7)
Don't know/no answer	6.1%	(17)	1.4%	(15)	8.8%	(8)	2.7%	(11)
Totals	100%		100%		100%		100%	

(1) based on 313 main species/types mentions

(2) based on 1,206 main species/types mentions

(3) based on 114 main species/types mentions

(4) based on 739 main species/types mentions

(5) included "wet" fish whether fresh, chilled or frozen though predominantly fresh from fishmongers

(6) included fresh, chilled or frozen seafood

2.3.3 Wholesalers' Fish/Seafood Purchase Behaviour (includes AC Nielsen Data)

Of the 151 wholesalers sampled 35 were general wholesalers involved in the sale of a wide variety of grocery lines while 116 were fish and seafood specific wholesalers who specialised in the wholesale of fish/seafood.

As Table 2.3.4 shows, the general wholesalers tended to specialise in frozen fish/seafood distribution while fish/seafood specific wholesalers tended to specialise in either fresh or frozen fish/seafood distribution. Less than one fifth of either wholesaler type handled both fresh and frozen fish/seafood.

Table 2.3.4 Proportion of Wholesalers Which Sold Fresh and/or Frozen Fish/Seafood

Type of fish/ seafood sold	All wholesalers	General wholesalers	Fish/seafood specific wholesalers
Only fresh (%)	36%	11%	43%
Only frozen (%)	44%	66%	37%
Both fresh and frozen (%)	18%	14%	19%
None (%)	1%	6%	0%
Don't know (%)	1%	3%	1%
Total (%) (number)	100% 151	100% 35	100% 116

Table 2.3.5 The Volume of Fish and Seafood Purchased by the Wholesalers Surveyed

	For period covering:			
	July - Dec 1990		Jan - June 1990	
	Fish	Seafood	Fish	Seafood
Volume sold (kg/month)	1,331,154	760,709	1,101,595	751,429
Number of wholesalers surveyed	86	86	82	82
Average per wholesaler (kg/month)	15,478	8,845	13,434	9,164

Wholesalers handled far higher volumes of fish and seafood than retailers or fishmongers (see Table 2.3.5).

The fresh and frozen fish and seafood species/types sold by the broadest range of wholesalers were a mix of the leading species sold by retailers and fishmongers. This should be expected given the role of wholesalers as suppliers of fish and seafood to both retailers and fishmongers.

For example, orange roughy, snapper, whiting, hake and flathead were the six fish species handled by the broadest range of wholesalers surveyed. Orange roughy and flathead were the most commonly stocked fish species handled by fishmongers. Whiting and shark were popular with retailers. In terms of volume, orange roughy and whole prawns were clearly the favourite species of wholesalers.

Wholesalers were also asked to estimate the proportion of each main fish and seafood species/type they sold to various customer groups. Table 2.3.6 and 2.3.7 show the major customers of wholesalers interviewed were 'restaurants', retailers (supermarkets, food stores, convenience stores), other wholesalers/markets and direct to the consumer. The significant quantities of fresh and frozen fish and seafood sold by wholesalers direct to the consumer were largely the sales of the wholly owned general wholesalers of large supermarket chains.

The Tables show particular fish and seafood species/types to have quite distinct distribution channels to others. For example, approximately one quarter of hake and shark was sold to fish and chip shops and take-aways, while one percent of Atlantic salmon was sold to this customer group.

To complete the picture, AC Nielsen warehouse withdrawals data revealed that during 1990, warehouses in the five mainland capitals distributed 24,474tonnes† *canned* fish and seafood with a retail value of $233.6million; similarly 11,336tonnes† of *frozen* (prepackaged) fish with a retail value of $87.6million, were distributed. The major items in each of these two categories were tuna and miscellaneous portions (oven fry and battered/crumbed portions, bites, burgers, cakes and snacks), respectively, each constituting almost half the volume sold.

† N t weight excluding packaging.

Table 2.3.6: Proportion of Leading Fish Species Sold by Wholesalers to Particular Businesses (%)

Species/Type of Finfish	Number of Citations	Other W/Saler Market	Value-Added Processor Manufacturer	Institutional Catering	Caterers	'Restaurants/ hotel/motel/ club	Retail Fish Market	Retail Fish Shop (Fishmonger)	Fish and Chip Shop/ Take-Away	Retailers (Super-market etc)	Direct to Consumer	Total
Barramundi	45	16.6	0.0	2.2	8.3	46.3	1.3	6.5	4.1	8.4	6.1	100%
Blue eye	33	12.1	0.0	1.9	5.0	62.3	1.5	7.4	1.3	1.6	6.9	100%
Bream, sea	30	14.1	3.0	1.1	1.1	24.1	3.9	17.4	16.0	9.3	10.0	100%
Cod, red	10	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	27.5	70.0	100%
Cod, smoked	19	1.9	0.0	0.0	0.3	8.3	0.0	2.8	5.6	36.7	44.4	100%
Do y, smooth	9	27.8	0.0	5.6	2.2	36.7	6.7	7.8	11.1	0.0	2.2	100%
Flathead(1)	56	12.1	3.0	0.6	3.7	23.3	4.7	10.5	1.6	11.8	28.8	100%
Gemfish	30	14.6	2.7	2.3	3.2	39.5	3.0	15.2	3.0	8.2	8.3	100%
Grenadier, blue	52	19.1	0.0	4.3	5.4	16.3	2.8	10.1	4.1	22.7	15.1	100%
Hake	58	4.2	0.2	5.6	4.6	19.0	2.3	5.5	24.3	19.6	14.6	100%
Kingclip	52	13.4	2.0	2.8	5.0	44.5	4.8	8.5	2.3	7.5	9.2	100%
Mullet (unspecified)	32	11.9	8.1	0.6	3.2	5.4	6.3	10.0	10.8	7.6	36.0	100%
Orange roughy(2)	95	17.7	1.2	2.7	3.6	29.9	5.1	8.8	6.5	6.8	17.5	100%
Salmon, Atlantic	20	20.6	0.6	1.4	4.7	43.6	1.9	4.0	1.1	5.6	16.6	100%
Snapper(3)	92	15.3	1.3	1.9	3.4	43.4	3.0	7.0	4.6	8.8	11.1	100%
Shark(4)	51	13.8	2.0	1.4	4.3	7.9	2.7	9.0	26.5	21.4	11.1	100%
Trevally(5)	44	17.7	1.8	2.1	8.3	39.6	4.3	7.3	0.8	6.9	11.1	100%
Trout, coral	27	17.1	0.0	0.8	2.3	51.7	0.8	6.3	8.8	4.6	7.5	100%
Whiting(6)	96	8.7	2.4	3.2	4.2	29.1	4.3	6.8	11.2	9.1	21.0	100%

(1) Flathead includes flathead (unspecified) plus any other flathead species. Eight wholesalers claimed to sell 100% of their flathead direct to customers, and none of these respondents were repeat interviews across the two surveys

(2) Orange roughy is orange roughy alone and makes no allowance for orange roughy being called sea perch in NSW

(3) Snapper includes snapper (unspecified) plus snapper, King snapper, Queen snapper

(4) Shark is shark (other), excluding shark, gummy

*(5) Trevally is trevally (unspecified) **plus** warehou blue/silver, but excludes silver trevally/skippy*

*(6) Whiting is whiting (unspecified) **plus** grass whiting, King George whiting, sand whiting, English whiting. Thirteen wholesalers claimed to sell 100% of their whiting direct to customers, and only two of these were repeat interviews across the two surveys.*

Table 2.3.7: Proportion of Leading Seafood Species Sold by Wholesalers to Particular Businesses (%)

Species/Type of Seafood	Number of Citations	Other W/Saler Market	Value-Added Processor Manufacturer	Institutional Catering	Caterers	'Restaurants/ hotel/motel/ club	Retail Fish Market	Retail Fish Shop (Fishmonger)	Fish and Chip Shop/ Take-Away	Retailers (Super-market etc)	Direct to Consumer	Total
Bugs(1)	54	15.8	0.0	0.7	3.3	56.7	3.3	4.8	1.7	0.0	13.7	100%
Crayfish (freshwater marron)	1	70.0	5.0	0.0	5.0	10.0	5.0	0.0	0.0	0.0	5.0	100%
Cra fish (unspecified)	91	12.8	1.2	0.9	4.2	44.5	4.7	8.3	3.4	4.9	15.2	100%
Mussels blue/black	6	8.3	0.0	0.0	6.3	28.7	8.3	36.7	0.0	0.0	11.7	100%
Mussels (unspecified)	69	10.4	1.4	0.5	4.0	50.8	4.8	8.0	3.7	6.3	10.0	100%
Octopus(2)	28	21.9	2.1	0.4	7.3	44.8	4.2	6.0	5.2	0.0	8.0	100%
Oysters(3)	80	11.2	1.1	0.9	5.5	51.1	5.2	6.8	3.7	3.3	11.1	100%
Prawns (whole)(4)	53	13.8	3.6	0.6	1.8	37.5	2.9	7.0	1.0	15.1	16.7	100%
Prawn meat (imported, raw)	4	30.0	0.0	0.0	6.7	56.7	0.0	3.3	3.3	0.0	0.0	100%
Prawn cooked & peeled, Asian	17	13.4	0.0	4.8	13.4	39.1	0.4	4.1	5.0	6.9	12.8	100%
Scallops	75	17.7	1.6	1.0	3.2	49.6	2.2	7.0	7.1	1.6	7.8	100%
Seafood extender	17	6.7	0.0	0.7	0.0	23.7	7.3	12.0	4.7	12.0	33.0	100%
Squid/calamari (5)	69	15.6	1.0	1.7	3.4	43.1	2.1	8.5	6.4	9.2	8.8	100%

(1) Includes Balmain bugs, Moreton bay bugs, slipper lobster bugmeat, and tails, and bugs (unspecified)

(2) 'Octopus' is octopus (unspecified)

(3) 'Oysters' is oysters (unspecified)

(4) Prawns, whole includes banana, endeavour, king, tiger, and other Australian species PLUS 'prawn other' (located after squid)

(5) Squid/calamari combines squid (unspecified) and calamari

2.3.4 The Selection of Fish/Seafood Species/Types and Suppliers

Retailers, fishmongers and wholesalers were asked to give reasons why they purchased each of their leading fish/seafood species/types.

Table 2.3.8 provides the reasons given by fishmongers for why they had purchased the eight leading finfish species. The most common reasons given were:

- the species is popular and/or preferred by customers
- boneless and skinless in reference to orange roughy and shark only
- value for money/cheap in reference to mullet.

The other lower order reasons shown in Table 2.3.8 relate to the species satisfying an end user need (ie, a good taste or flavour) or satisfying a need of the fishmonger (ie, sells well/good seller) or some combination of both (ie, available fresh all the time or keenly priced/ cheap).

Retailers responding to the question of why they purchased specific frozen fish/seafood types/species provided very similar answers to those given by fishmongers. Like fishmongers, retailers' most often cited reason was "popular/customers want/prefer". However, retailers gave more weight to fish/seafood year round availability while fishmongers gave more weight to the fish/seafood having a "tasty/good flavour".

The majority of wholesalers interviewed selected their fish and seafood stock on the basis of past experience with customers' preferences.

Table 2.3.8: The Major Reasons Fishmongers Gave for Purchasing the Eight Leading[4] Finfish Species/Types

Leading species/type bought	Orange roughy[1]	Flathead (unspecified)	Mullet (unspecified)	Snapper (unspecified)	Trevally[2] (unspecified)	Shark	Bream[3] (unspecified)	Whiting (unspecified)
Number of respondents citing this species/type (out of a total of 200 respondents)	122	92	80	76	65	63	54	45
Top five reasons given for stocking each species (proportion of the respondents who cited this species and gave reason shown is given in brackets, %) ranked in descending order:	Boneless/ skinless (31%)	Popular/ customers want/prefer (39%)	Good price/ cheaper/ value for money (35%)	Popular/ customers want/prefer (49%)	Popular/ customers want/prefer (25%)	Boneless/ skinless (29%)	Popular/ customers want/prefer (45%)	Popular/ customers want/prefer (50%)
	Popular/ customers want/prefer (23%)	Better known/ well known (16%)	Popular/ customers want/prefer (32%)	Better known/ well known (14%)	Good price/ cheaper/value for money (25%)	Popular/ customers want/prefer (28%)	Better known/ well known (14%)	Tasty/good flavour (11%)
	Good/light texture/milder flavour/white flesh (22%)	Good price/ cheaper/value for money (16%)	Sells well/ sells most/ good seller (10%)	Good quality (10%)	Tasty/good flavour (10%)	Better known/ well known (12%)	Good price/ cheaper/value for money (9%)	Good price/ cheaper/value for money (10%)
	Tasty/good flavour (5%)	Tasty/good flavour (8%)	Better known/ well known (7%)	Tasty/good flavour (7%)	Available fresh/all the time (8%)	Sells well/ sells most/ good seller (7%)	Tasty/good flavour (7%)	Sells well/sells most/good seller (8%)
	Sells well/ sells most/ good seller (4%)	Sells well/ sells most/ good seller (8%)	Easy to get/common/ caught locally (5%)	Sells well/ sells most/ good seller (4%)	Sells well/ sells most/ good seller (6%)	Good/light texture/milder flavour/white (7%)	Easy to get/ common/ caught locally (7%)	Good quality (5%)
Average number of reasons given for purchase of this species by each respondent who had purchased in previous month	2.0	1.5	1.4	1.5	1.7	1.7	1.3	1.4

(1) contribution for orange roughy may be understated, since this species is commonly called sea perch in NSW

(2) includes blue/silver warehou, but where silver trevally (skipjack) was specified these data were not included

(3) aside from these 54 bream (unspecified) mentions, there were 23 sea bream mentions and 21 silver/yellow fin bream mentions not shown here

(4) leading in terms of the number of fishmongers who said they had purchased these species in the last month.

The surveys addressed the factors retailers and fishmongers considered when choosing a fresh/frozen fish/seafood supplier. Respondents were asked to rate each of a list of 17 or 18 given factors by the importance of the factor in their decision to choose a particular supplier.

The first column in Tables 2.3.9 and 2.3.10 show each factor ranked by the averaged importance rating given. As shown, both retailers and fishmongers place most importance upon a supplier's honesty and fairness.

However, other than this factor, retailers ascribe highest importance to prompt attendance to orders, reliable delivery and guaranteed correct naming of fish/seafood, while fishmongers are concerned with storage temperature control and reputation for quality fish/seafood. These differences suggest a different business focus between retailers and fishmongers.

Respondents were also requested to rate their own supplier's performance in each factor on a scale ranging from "very poor/unfavourable" to "very good/favourable". The second column of Tables 2.3.9 and 2.3.10 shows the ranking of each factor in accordance with its averaged performance rating.

Both retailers and fishmongers thought their fresh/frozen fish/seafood supplier performed best in "providing clear documentation". Most factors ranked of high importance were not as highly ranked in terms of actual performance, suggesting some dissatisfaction in these key areas. In particular, supplier performance in providing "consistently low prices" was relatively poor in respect of both retailers' and fishmongers' expectations.

Table 2.3.9 Retailers' Expectation of Fish/Seafood Wholesalers Versus the Performance of Their Own Wholesaler[4]

Factor:	Expectations: ranked importance of each factor in choosing a fish/seafood wholesaler[1]	Performance: ranking of main wholesaler supplier rating[2]	Performance versus expectations[3]
• Honest and fair in doing business	1	4	-0.6
• Orders are promptly attended to	1	2	-0.4
• Has reliable delivery	2	5	-0.6
• Guarantee of being correctly named	3	2	-0.2
• Good reputation for quality fish/seafood	4	6	-0.5
• Good temperature control	4	3	-0.2
• Provides clear documentation	5	1	+0.1
• Clean outlet	5	6	-0.4
• Consistently low prices	6	11	-0.9
• Gives good credit terms	6	9	-0.6
• Understands my business	7	7	-0.2
• Offers a wide variety of fish/seafood	8	10	-0.3
• Has staff informed about fish/seafood	9	9	-0.1
• Has friendly staff working there	10	7	+0.3
• Sells a range of other products	11	7	+0.4
• Can be confident not been frozen	12	10	+0.3
• Offers Australian fish and seafood	13	8	+0.6
• Sells fresh fish/seafood	14	12	+0.7

(1) from most important (1) to least important (14)

(2)from best performance (1) to worst performance(12)

(3) negative numbers signify performance does not meet expectations. The numbers are the difference between performance versus expectation ratings

(4) only retailers who sold fresh, chilled or frozen fish/seafood were asked this question.

Table 2.3.10 Fishmongers' Expectation of Fish/Seafood Suppliers Versus the Performance of Their Present Main Supplier

Factor:	Expectations: ranked importance of each factor in choosing a fish/seafood wholesaler(1)	Performance: ranking of main wholesaler supplier rating(2)	Performance versus expectations(3)
• Honest and fair in doing business	1	4	-0.8
• Good temperature control	1	2	-0.6
• Good reputation for quality fish/seafood	2	4	-0.7
• Provides clear documentation	3	1	-0.1
• Orders are promptly attended to	3	4	-0.6
• Can be confident not frozen	4	4	-0.5
• Clean outlet	4	4	-0.5
• Guarantee of being correctly named	5	1	+0.1
• Offers a wide variety of fish/seafood	6	4	-0.3
• Sells fresh fish/seafood	7	4	0.0
• Consistently low prices	7	10	-1.1
• Understands my business	7	9	-0.7
• Offers Australian fish and seafood	8	3	+0.2
• Has a friendly staff working there	9	7	-0.2
• Has staff informed about fish/seafood	9	5	+0.1
• Gives good credit terms	10	6	+0.2
• Has reliable delivery	11	8	+0.4

(1) from most important(1) to least important (11)

(2)from best performance(1) to worst performance(10)

(3) negative numbers signify performance does not meet expectations. The numbers are the difference between performance versus expectation ratings.

2.3.5 Problems with Fish/Seafood

Fishmongers', wholesalers' and retailers' most common problems in selling and/or distributing fresh fish were cited as:

- lack of availability and unreliable supply
- price too expensive and price fluctuations.

The short shelf life was the most common problem for retailers in selling *fresh* fish/seafood. They had to sell fish/seafood quickly to avoid it going off. Fishmongers, and to a lesser extent retailers, also cited lack of consistent quality and doubts on freshness as problems.

Retailers had far less problems selling *chilled* fish/seafood; 19 of the 47 respondents said they had no problems at all. Others cited the short shelf life and not being able to refreeze it after defrosting as problems.

The three industry segments were also asked to rate the significance of a range of 21 or 22 common industry problems relating to supplies of fresh or frozen fish and seafood. Again, retailers and fishmongers attached most significance to the problems of price and supply:

- retailers were most concerned with the high price of seafood; the risk of buying fish and seafood "sight unseen" (ie supplier integrity); and the difficulty of getting continuous supply at steady prices
- fishmongers' overall degree of concern was higher than that of retailers for the same price and supply issues. Fishmongers also were concerned with problems of the customer's lack of knowledge about fish/seafood; poor business profitability; and customers' dislike of bones in fish
- wholesalers were most concerned with "low margins necessary to remain competitive" and "credit terms that have to be offered to customers".

The 55% of retailers surveyed who did not sell any fresh, chilled or frozen fish/seafood (see Section 2.3.2) were asked for their reasons for not stocking these lines. Most commonly cited reasons were:

- lack of freezer or refrigerator space
- no perceived customer demand
- no room or not enough space in store.

When these retailers were asked what would encourage them to stock these lines they replied:

- nothing (almost half the replies)
- increased customer demand
- more storage/shop area
- a good/reliable supplier
- the supply of subsidised refrigerators/freezers.

2.4 In-Home, Out-of-Home and Institutional Consumption

This Section details the results of two major surveys within the 1990/91 National Seafood Consumption Study. The surveys reported upon here are:

- the In and Out-Of-Home consumption survey, which measured the fish and seafood consumption and the attitudes of Australians living in households

- the Institutional consumption survey which measured the fish and seafood consumption of people in institutions and the attitudes of the caterers who purchase foodstuffs and prepare meals for them.

These two surveys are complementary in their coverage of fish and seafood consumption since together they capture the fish and seafood consumption of virtually all Australians.

2.4.1 Main Findings - *Per Capita* Consumption

The two surveys showed that Australians living in either institutions or households ate an average of 11.99kg[5] of fish and seafood *per capita* per annum during the survey period in 1990/91. This consisted of 9.29kg of fish and 2.70kg of seafood.

These figures cannot be directly compared to those of the 1977 study[6] of fish and seafood consumption since institutional consumption was not included in 1977.

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[5] "A Report to the Department of Primary Industry on The Consumer Survey of Fish and Seafood Consumption in Australia", PA Consulting Services Pty Ltd, Melbourne, 1977.

[6] All references to weight in Sec ion 2.4 are edible weight unless otherwise specified.

However, the 1990/91 study also revealed an average consumption of fish and seafood for just those Australians living in households of 12.06kg *per capita* per annum which can be compared to the 1977 result (Table 2.4.1) of 10.07kg.

Table 2.4.1 Annual In and Out-Of-Home Fish and Seafood Consumption of Australians Living in Households - 1977 Versus 1990/91 (kg *per capita*)

	1977	1990/91	CAGR*
Fish *per capita*	7.80	9.31	1.4%
Seafood *per capita*	2.27	2.74	1.5%
Total fish and seafood *per capita*	10.07	12.06	1.4%

** Compound Annual Growth Rate.*

This represents an increase of 20% over the 13 years between the studies or a Compound Annual Growth Rate (CAGR) of 1.4%. People living in Perth households had the highest *per capita* consumption of 14.71kg per annum while those from regional Tasmania had the lowest at 10.38kg per annum.

The 1990/91 survey found that 94.6% of individuals living in Australian households had eaten fish or seafood in the last year. Only 4.9% were classified as non-fish/seafood consumers, significantly less than the 7.8% of the population survey in the 1977 study. Within the overall increase in consumption lies a shift in the types of fish/seafood consumed in-home and the share of in-home versus out-of-home consumption. In-home consumption of fresh and frozen forms of fish has increased by 1.36kg *per capita* since 1977 though most of this increase has been matched by a decline in the consumption of fish fingers, other frozen packaged, canned and smoked forms of fish as suggested in Table 2.4.2 Subtotal (1).

Table 2.4.2 In-Home Fish Consumption 1977 Versus 1990/91 (kgs *per capita* per annum)

	1977	1990/91
Fresh and frozen	2.90	4.26
Fish fingers	0.66	0.15
Other frozen packaged	0.30	0.22
Canned	1.81	1.39
Smoked	0.24	0.13
Subtotal (1)	5.91	6.15
Cooked fillet	NA*	0.58
Other	0.04*	0.20
Subtotal (2)	0.04*	0.78*
Total In-Home	5.95*	6.94

** does not include the consumption of take-away fish meals eaten in-home because 1977 data did not separate the consumption of this form of fish by whether it was consumed in or out-of-home. Total consumption of take-away fish in and out-of-home in 1977 was 1.10kg per capita per annum.*

As Table 2.4.2 footnote describes, the 1977 study did not separate fish purchased from take-aways (including fish and chip shops) into consumption in-home or consumption out-of-home. Hence a proper 1977 versus 1990/91 comparison of cooked fillet, which is all purchased from take-aways and "other" forms of fish consumption, that are in part purchased from take-aways is not feasible.

Table 2.4.3 In-Home Seafood Consumption 1977 Versus 1990/91 (kgs *per capita* per annum)

	1977	1990/91
Fresh and frozen	0.80	0.68
Frozen packaged	0.09	0.06
Canned	0.12	0.05
Subtotal (1)	1.01	0.79
Other	0.02*	0.32
Total In-Home	1.03*	1.11

** does not include in-home consumption of take-away meals since 1977 study did not split consumption of take-away meals by in or out-of-home. In 1977 the consumption of seafood in take-away meals totalled 0.54kg per capita whether consumed in or out-of-home.*

Table 2.4.3 shows in-home consumption of fresh and frozen, frozen packaged and canned forms of seafood to have all declined since 1977 in *per capita* terms.

In sum, only fresh and frozen forms of fish have shown increased *per capita* consumption in-home over the 13 years since 1977. The increase in overall *per capita* consumption can be attributed to increased fish and seafood consumption out-of-home.

Table 2.4.4 shows that both fish and seafood consumption has risen out-of-home. The extent of the increase is somewhat understated in the figures shown due to the differences in the treatment of take-away meals in 1990/91 versus 1977.

Table 2.4.4 Out-Of-Home Consumption of Fish and Seafood 1977 Versus 1990/91

	1977	1990/91
Fish:		
Eaten out-of-home	NA	2.38(1)
Cooked from take-away outlets	1.10*	-
Eaten outside the home	0.74	
Total fish out-of-home	1.84*	2.38(1)
Seafood:		
Eaten out-of-home	NA	1.64(2)
Cooked from take-away outlets	0.54*	
Eaten outside the home	0.70	
Total seafood out-of-home	1.24*	1.64(2)
Total fish and seafood	3.08*	4.02

** an unknown proportion of 1977 consumption of fish and seafood from take-aways was consumed in-home. Hence actual 1977 out-of-home fish and seafood consumption was somewhat less than the figures shown*
(1) 0.15kg was from a take-away and eaten out-of-home
(2) 0.17kg was from a take-away and eaten out-of-home.

2.4.2 Consumption Frequency

The frequency of in-home consumption of all forms of fish and seafood declined from 1977 to 1990/91. Even in the case of fresh and frozen fish which showed an increase in *per capita* weight consumed, actual frequency of consumption declined. *Per capita* consumption was only held up by an increase in the average serve size from 168grms to 218grms.

Table 2.4.5 summarises the fish/seafood consumption frequency results which illustrate the shift from in-home to out-of-home consumption. The 1977 frequency of eating cooked fish and seafood from take-aways is a mix of in and out-of-home consumption. Even without the contribution of these types of in-home meals (in 1977 figures) the results show a 20% decline in in-home fish consumption frequency and a 11% decline in in-home seafood consumption frequency.

Table 2.4.5 The Frequency of Fish and Seafood Consumption of Australians Living in Households - 1977 Versus 1990/91 (Meal-Type-Occasions per Week)

	1977	1990/91	
Fish in-home	1.15	0.92	per household
Cooked fish from take-aways*	0.16	NA	per household
Fish eaten out-of-home**	0.13	0.38	per respondent
Seafood in-home	0.18	0.16	per household
Cooked seafood from take-aways*	0.06	NA	per household
Seafood eaten out-of-home**	0.13	0.24	per respondent

** in the 1977 study this type of fish/seafood meal was not split by whether it was consumed in or out-of-home*

*** the consumption out-of-home of all Australians over 15 years of age.*

Table 2.4.5 highlights the greater popularity of seafood consumed out-of-home versus in-home. On the other hand, fish is consumed far more often in-home than out-of-home.

Also derived from 1990/91 frequency of consumption results, the proportion of Australian households that had consumed any form of fish or seafood in-home in the seven days prior to interview was 55.2% and 11.4% respectively. By far the most popular forms of fish consumed were fresh and canned fish consumed in the past seven days by 25.4% and 22.3% of households respectively.

The most popular forms of seafood consumed in-home were fresh and "other" (ie cooked, used as ingredient in pizza and Chinese take-away meals) consumed in the past seven days by 5.3% and 4.6% of households respectively.

Out-of-home consumption frequency was surveyed for the main food purchaser/preparer in each household (termed the grocery buyer for convenience) and all other members of each household over the age of 15 years (termed non-grocery buyers).

Table 2.4.6 The Frequency of Fish and Seafood Consumption Out-Of-Home - Grocery and Non-Grocery Buyers

	Fish out-of-home		Seafood out-of-home	
	Grocery buyers	Non grocery buyers	Grocery buyers	Non grocery buyers
Proportion eating fish/seafood out-of-home in last week	16.4%	20.6%	13.4%	18.2%
Average number of times fish/seafood eaten out-of-home per week	0.279	0.456	0.209	0.263

Non-grocery buyers were more frequent consumers of fish/seafood out-of-home than grocery buyers (Table 2.4.6).

The most popular places of purchase/consumption of fish and seafood for out-of-home meals were restaurants, friends' and relatives' houses, fish and chip shops and "other" places ("other" places were generally canned fish used in sandwiches that were prepared at home and eaten at work).

2.4.3 When Fish/Seafood Meals Were Consumed and Species and Forms Consumed

The study shows a distinct preference for consuming fish/seafood meals at the evening meal and on Friday (whether consuming in or out-of-home). 9.2% of in-home meals were fish/seafood meals on Friday versus only 4.6% on Sunday. Saturday was also a popular day for out-of-home fish and seafood meals.

66.4% of in-home fish/seafood meals and 51.3% of out-of-home fish/seafood meals were consumed at dinner.

The most popular forms of fish consumed in-home were canned fish (32.5% of all in-home fish meal-type-occasions) and fresh fillets (25.6%). Canned fish constituted over two thirds of all lunchtime fish meal-type-occasions in-home while fresh fillets were more popular than canned fish at dinner time.

Nonetheless, there has been a slight shift to consuming canned fish at dinner rather than lunch over the years 1977 to 1990/91. In 1977 only 29.1% of all canned fish meals were consumed at dinner and 61.3% at lunch. In 1990/91 37.5% were at dinner and 52.5% were at lunch.

35.3% of all seafood in-home meal-type-occasions consisted of seafood bought in fresh whole form and 33.5% in "other" (ie pre-cooked, crumbed, used as ingredient in pizza and Chinese take-away meals, etc). A higher proportion of in-home seafood meals were consumed at dinner (71.9%) than was the case for fish meals (65.4%).

The orange roughy/perch species was the most commonly consumed fresh/frozen fish in-home in Australia in 1990/91. It was also one of the most popular fish species consumed out-of-home, particularly at restaurants. This species was unknown in 1977 and has gained rapid consumer acceptance since its introduction into the market place. Shark is another very popular fish species purchased fresh/frozen for in-home consumption that was relatively unknown, by that name, in 1977. The 1977 study recorded flake (another term for shark) as the most popular species purchased as a cooked fillet from take-aways/fish and chip shops. In 1990/91 the term 'flake' had completely dropped out of use and shark had an even greater share of cooked fillet purchases from take-aways/fish and chip shops.

2.4.4 Place of Fish/Seafood Purchase

The place of purchase of fish and seafood for in-home consumption showed strong dependence upon the form of fish or seafood. For example, for the various main forms of fish consumed in-home:

- fresh fish and seafood were most commonly purchased from specialist retail fish shops, fish or general markets or caught by a household member or friend

- frozen fish was most commonly purchased from supermarkets while frozen seafood was purchased mainly from the same outlets as fresh seafood

- most frozen packaged (ready to cook), canned and smoked fish and seafood were purchased from supermarkets

- pre-cooked fish fillets were predominantly purchased at fish and chip shops/take-aways as was much of the "other" forms of seafood which include seafood used as an ingredient in take-away meals, cooked seafood and crumbed seafood.

Supermarkets' share of in-home fish meals has declined from 60% in 1977 to 53% in 1990/91. For seafood, supermarkets' share has plummeted from 40% to 16% over the same period. This was due to the substantial fall in the consumption of fish fingers, frozen packaged (ready to cook) and canned fish and seafood products.

However, while supermarkets have maintained their dominant share of these (overall) declining market segments, they have also increased their previously insignificant share of fresh and frozen fish and seafood in-home meals. For example, in 1977, 7.3% of fresh and frozen fish meals were purchased from supermarkets; in 1990/91 this had increased to 16.7%. Equivalent figures for fresh and frozen seafood are 3.7% in 1977 to 8.5% in 1990/91. There has been a consequent decline in the share of specialist retail fish shops in fresh and frozen fish and seafood meals, though specialist retail fish shops still had the largest share in 1990/91.

The forms of fish and seafood consumed out-of-home also show strong dependence upon the place of purchase/consumption. Of all fish/seafood out-of-home meals, fillets were the most popular with a 29% of out-of-home meal-type-occasions, followed by canned (16%), whole (15%) and pre-prepared (13%). However, the forms most popular in the various places of purchase/consumption were:

- canned fish/seafood took a 40% share of fish/seafood meals at work cafeterias
- fillets and whole fish/seafood took a 23% and 22% share respectively of restaurant fish/seafood meals
- fillets took a 41% share of fish/seafood meals at clubs and hotels and a 68% share at fish and chip shops
- fillets and pre-prepared fish and seafood took 29% and 25% of meals purchased/consumed at fast food outlets/take-aways

- canned fish/seafood took a dominant 69% of fish/seafood meals purchased/consumed at sandwich/milk bars and 58% at "other" places of purchase/consumption which were often at the place of work.

Based upon these results, canned fish/seafood meals out-of-home were mostly in sandwiches, whether prepared in the home for later consumption out-of-home, or purchased from work cafeterias, coffee lounges/cafés or sandwich/milk bars.

These four places of purchase/consumption together account for 21.8% of all out-of-home fish/seafood meals. Restaurants have the largest share of out-of-home fish/seafood meal-type-occasions at 35.4%, while consumption at friends' and relatives' houses accounts for 15.5%.

Restaurants were pre-eminent in the purchase/consumption of seafood - over half restaurant meal-type-occasions were seafood, while for all other places of purchase/consumption the seafood proportion fell between 13% and 38%.

2.4.5 Fish and Seafood Preparation

The preparation of fresh and frozen fish in-home has shifted since 1977 from frying to grilling. In 1977, 59.8% of in-home fresh and frozen fish meals were fried and 13.2% grilled. In 1990/91 the proportions were 43.2% and 23.0% respectively.

There has been a shift away from using canned fish and seafood straight, to its use as an ingredient in more elaborate dishes such as mornays, casseroles and stir fry. It likely that recipes have played a role in the swing to the use of canned fish and seafood as ingredients. Meals prepared using canned fish showed the highest recipe usage rate amongst all forms of fish.

Similarly, while 43.5% of fresh and frozen seafood was served straight in 1977, this proportion had declined to 18.5% in 1990/91. Instead, in 1990/91 21% of fresh and frozen seafood meal-type-occasions were prepared using seafood as an ingredient in mornays, stir fry, casseroles and other dishes.

Microwaves have had little impact - only 4% of in-home fish meals were cooked in this way in 1990/91.

Deep frying was the most common method of cooking/preparing fish/seafood consumed out-of-home, accounting for 24% of all fish/seafood out-of-home meal-type-occasions. Straight frying and grilling were the second and third most common methods respectively. No comparative figures were available from the 1977 study.

2.4.6 Consumer Attitudes to Fish and Seafood

In consumer attitude tests, consumer concern over the integrity and reliability of the labelling on fresh or frozen fish was highly evident. Consumers also wanted assurance that the fish was fresh rather than frozen. Many would only consider the purchase of certain well known species of fish and fish that had white or light coloured flesh that had been cut and filleted. Given the seasonal availability of many fish species, the strong consumer preference for certain species of fish is a barrier to fish becoming a more regular meal in the home.

Respondents were also asked what type of food they would have purchased if the fish/seafood they had bought in the previous week had not been available. Half of the respondents said they would have opted for another type of food rather than another type of fish/seafood. This again indicates the strong preferences that many consumers have for certain species of fish/seafood often to the exclusion of others.

Other consumer attitude tests revealed the following:

- most consumers had a strong preference for fresh fish/seafood since they could not judge frozen fish quality and perceived the taste of frozen fish as inferior to fresh. This also led them to avoid freezing fish at home. Younger people (less than 40 years old) were not as averse to frozen fish and seafood as older respondents

- most consumers were suspicious that much of the fresh fish they purchased was, in fact, thawed frozen fish

- a minority of consumers (approximately 20%) had difficulties in preparation and cooking of fish/seafood either through lack of knowledge (recipes) or plain dislike of cooking fish/seafood. Younger respondents were generally not as confident in fish/seafood preparation/cooking as older respondents

- fish/seafood was seen by most people as a "light" meal

- bones in fish are a problem for most people but more so for females

- just over half consumers agreed they ate fish/seafood because it is better for their health than red meat

- 86% of consumers were concerned about the impact of pollution on fish and seafood safety

- one third of consumers agreed that "fish costs so much I eat it rarely". Most in this group were from lower household income groups

- most consumers (80%) preferred to buy "familiar" types of fish/seafood and most (74%) preferred Australian to imported fish/seafood. Only half of consumers actively sought to try different (unfamiliar) types of fish/seafood. Younger consumers were generally more adventurous than older consumers in this regard

- 62% of consumers agreed that quality fish/seafood could only be bought from a specialist fish outlet, though younger consumers (less than 40 years) were less likely to believe this than older consumers.

In a question asked as part of the in-home survey, respondents were asked to select from a list of 26 dishes up to six dishes they would consider preparing for a certain household in-home meal-occasion. Each of 26 dishes fell under one of the five major dish types given in the first column of Table 2.4.6a. As shown, meat dishes were the most common choice though fish/seafood dishes were chosen more often than poultry or pork.

Within the fish/seafood major dish category, there were eight dish selections offered for respondents to choose from: canned fish, whole fish, fish fillet, smoked cod, fish fingers, salmon (not canned), prawns (not canned) and scallops. Fish fillet was the most popular fish/seafood dish chosen overall. However, prawns (canned) were a particularly popular choice for an entertaining entrée. Canned fish and whole fish were two other popular fish/seafood dishes.

Table 2.4.6a: Dishes Grocery Buyers Would Most Likely Prepare: Proportion of All Dish Choices (%)

Major types	All meal occasions† (proportion of dish choices, %)	Evening meal by self (proportion of dish choices, %)	Household evening meal (proportion of dish choices, %)	Entertaining entrée (proportion of dish choices, %)
Meat	36%	36%	46%	11%
Pork	5%	5%	7%	1%
Poultry	16%	14%	17%	11%
Fish/seafood	19%	19%	15%	40%
Other	24%	25%	15%	37%
Total* (%)	100%	99%	100%	100%
No. of dish choices ('000s)	23,102	5,026	5,157	2,724
Average no. of dish choices/ respondent	4.4	4.6	5.3	3.3

** some columns do not add to 100% due to rounding*

† six different meal-occasions were considered. Only three are shown.

Respondents' perceptions of certain fish/seafood dishes for an in-home meal, as compared to alternative dishes, were gathered in yet another battery of questions. Fish fillets and whole fish were the dishes most strongly associated with "containing little fat". However, a larger range of dishes were seen by most respondents as being "a healthy meal" including whole chicken and steak along with fish fillet and whole fish.

Chicken and steak were more strongly associated with "being popular with people who will be eating the meal" than any fish/seafood dish. Up to 20% of respondents suggested fish seafood dishes "had a taste that is disliked". This applied especially to fish fingers, canned fish, prawns and scallops. This perception was stronger for these fish/seafood dishes than any alternate dish.

In terms of quality variation, sausages and steak were seen by one quarter of respondents as having this problem, ahead of any fish/seafood dish. However prawns and fish fillets used to prepare an entertaining entrée were associated with this problem by about 20% of respondents.

Fish/seafood dishes were more strongly associated with "being too expensive for the meal" than any other dish apart from steak. Similarly fish/seafood and steak were seen by many respondents as something they would buy only on special. This applied especially to prawns and scallops.

Fish/seafood dishes, especially whole fish and scallops, were the dishes most strongly associated with representing a problem to purchase due to a lack of knowledge on the consumers' part. Similarly, whole fish and, to a lesser extent, scallops and prawns were dishes most strongly associated with not being easy to prepare for cooking. Up to 15% of respondents sought more information on how to cook whole fish.

Most respondents agreed they "don't mind cooking" most dishes listed in the questionnaire. However, fewer respondents agreed to this statement in relation to fish/seafood dishes, especially whole fish and prawns.

Dishes most strongly associated with "a lot of wastage" were those containing a large proportion of bone, such as lamb chops, pork chops and whole chicken. Whole fish and prawns were also seen by up to one third of respondents as presenting this problem.

Finally, dishes bought in cans such as canned fish, vegetables and meat were most strongly associated with presenting a problem with waste disposal. Prawns were also seen as presenting this problem.

Consumer attitudes to farmed and under-utilised species are further discussed in Section 2.5.1. Attitudes to trade outlets serving the in-home or out-of-home market are discussed in Sections 2.6.1 and 2.6.2 respectively. Responses to the battery of 20 statements regarding fish and seafood were used to segment consumers. Section 2.4.7 details this analysis.

2.4.7 Market Segmentation

Based upon another more detailed attitude test within the in-home questionnaire, consumers were grouped into seven "clusters" of consumers of like attitude using a technique called cluster analysis. This analysis was able to establish a strong link between consumer attitude and behaviour. It showed that the two clusters with most positive attitudes to fish/seafood had over two times the *per capita* fish/seafood consumption both in and out-of-home compared to clusters that had the most negative attitudes to fish/seafood. The dominant attitudes in each Cluster are detailed under the following subheadings:

Cluster 1 distinctive attitude grouping was:

- fish costs so much I eat it rarely
- fish/seafood is less filling than chicken
- avoid freezing fish if I can
- are more likely to see fish as being for special occasions
- dislike fish with bones
- believe quality fish/seafood can be bought only from a specialist fish outlet

- like to buy familiar types of fish/seafood and don't like trying different types of fish/seafood.

These attitudes indicate a group of people who are cost value conscious and conservative in their choice of type of fish/seafood and method of storing fish/seafood. For convenience they can be labelled as "**cost/value conscious conservatives**".

Cluster 2 distinctive attitude grouping was:

- not at all concerned over bones in fish
- like trying different types of fish/seafood
- like preparing fish/seafood.

On the other hand, 50% of the people in this group agreed with the statement:

- I would eat more fish/seafood if it was easier to obtain.

This will be of particular interest later when marketing strategies are being developed.

This cluster can quite appropriately be labelled as "**fish/seafood buffs**".

Cluster 3 distinctive attitude grouping was:

- if I knew more ways to cook fish/seafood I would eat more
- don't believe there are enough recipes for fish/seafood
- don't find fish easy to cook
- don't like preparing fish and seafood.

The overriding characteristic of this group of people is they "**dislike cooking or don't know how to cook fish/seafood**".

Cluster 4 distinctive attitude grouping was:

- ambivalent towards the taste of frozen versus fresh fish as compared to people from all other clusters who considered the taste of frozen inferior to fresh fish
- do **not** avoid freezing fish
- believe quality fish/seafood can be bought from other types of retail outlets besides specialist fish outlets
- were, on average, more confident of being able to purchase quality frozen fish/seafood.

This group can be labelled as "**frozen fish/seafood lovers and convenience shoppers**". The element of convenience in their shopping habits can be drawn from the tendency to prefer non-specialist outlets (ie supermarkets).

Cluster 5 distinctive attitude grouping was:

- strong avoidance of freezing fish, if they can
- do not limit fish consumption because of the cost (ie not price sensitive)
- find fish easy to obtain
- like preparing fish and seafood and find it easy to cook
- dislike fish with bones.

It may be inferred that this group preferred filleted **fresh** fish and can afford fish fillets regularly. The group can be labelled "**fresh fillet lovers/non price sensitive**".

Cluster 6 distinctive attitude grouping was more lengthy than most other clusters and has a mix of attitudes some of which are positive and some of which highlight difficulties in fish/seafood purchase and consumption.

Positive attitudes were:

- like preparing fish and seafood
- eat fish and seafood because is better for their health than red meat
- like trying different kinds of fish/seafood
- find fish/seafood easy to cook

and those attitudes pointing to difficulties were:

- would eat more fish/seafood if it was easier to obtain
- eat fish/seafood rarely because of the cost
- if knew more ways to cook fish/seafood would eat more
- avoid freezing fish/seafood if possible
- not always sure that the fresh fish they buy hasn't been frozen
- and half of people in this group thought fish/seafood was less filling than chicken.

It is somewhat difficult to provide a concise label for this group of people because of the number and diversity of distinctive attitudes. For convenience they were a group that was "**positive towards fish/seafood but has difficulties with availability, cost, methods of cooking, suspicion of retailers selling previously frozen fish as fresh, belief that fish/seafood is not as filling as chicken, avoidance of freezing fish/seafood**".

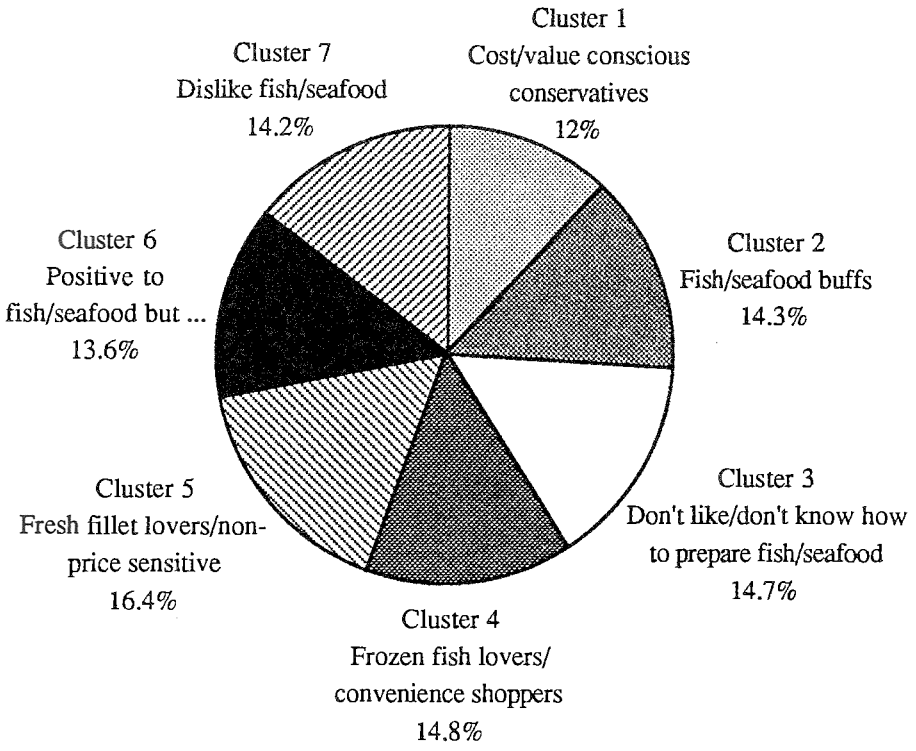
Cluster 7 distinctive attitude grouping was:

- strong dislike for preparing fish/seafood
- do not believe fish/seafood is better for their health than red meat
- would not eat more fish/seafood even if it was easier to obtain
- do not like trying different kinds of fish/seafood
- many do not find fish easy to cook
- but most do not believe they would eat more fish/seafood if they knew more ways to cook it.

This cluster is relatively easy to label by their overriding "**dislike for fish/seafood**".

Figure 2.4.7 shows the proportion of respondents who fall into each cluster.

Figure 2.4.7 The Attitudes of In-Home Consumption Study Respondents - Seven Cluster Solution



Base: 5 223,000 (weighted) main food purchasers/preparers.

There were, however, significant differences in terms of whether respondents had eaten fish/seafood in and out-of-home in the last week. 41% of Cluster 1 and 7 respondents were from fish/seafood eating households but had not eaten any fish/seafood in the last week. The equivalent figure for Clusters 2 and 5 was 18%. Hence fish/seafood consumption behaviour is closely aligned with respondent attitudes in each cluster.

However, the most startling differences between clusters can be seen in the in-home and out-of-home *per capita* consumption figures of respondents and members of their households (Table 2.4.8 and Table 2.4.9 respectively). Cluster 2 *per capita* in-home consumption of fish and seafood is almost three times that of Cluster 7.

Table 2.4.8 Respondents' and Other Household Members' *per capita* In-Home Fish and Seafood Consumption - by Cluster (kg)

Fish consumption by form bought to eat in-home	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Average all Clusters
Fresh whole	0.65	**1.95**	0.38	1.02	**1.14**	**1.57**	0.34	1.02
Fresh fillet	1.09	**3.57**	1.58	**2.85**	**4.12**	**2.71**	0.69	2.45
Fresh cutlet	0.03	**0.45**	0.06	**0.20**	0.04	**0.25**	0.01	0.15
Fresh headed and gutted/peeled	0.00	**0.13**	0.03	0.05	0.04	**0.09**	0.00	0.05
Frozen whole	0.02	**0.17**	0.00	**0.24**	0.03	0.05	**0.12**	0.09
Frozen fillet	0.13	0.26	0.34	**0.97**	0.37	0.35	0.36	0.41
Frozen cutlet	**0.02**	**0.02**	0.00	0.01	**0.02**	0.00	0.00	0.01
Frozen headed and gutted/peeled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fresh prepared ready to cook	0.07	**0.12**	0.02	**0.23**	0.04	0.03	0.08	0.09
Frozen packaged ready to cook	0.17	0.24	**0.44**	**0.62**	0.19	0.30	**0.47**	0.35
Smoked	**0.17**	**0.27**	0.08	0.05	**0.26**	0.09	0.03	0.14
Canned	1.20	**1.62**	1.28	**1.73**	**1.59**	1.29	0.95	1.39
Glass bottle	0.00	0.02	0.01	0.02	**0.05**	0.01	0.01	0.02
Cooked fillet	**0.87**	0.50	**0.59**	0.57	**0.69**	0.45	0.47	0.58
Other	0.06	**0.32**	0.11	**0.25**	0.07	0.07	0.08	0.14
Don't know	0.00	**0.13**	0.02	0.04	**0.07**	0.02	0.00	0.04
No answer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Fish	4.47	**9.77**	4.93	**8.85**	**8.73**	**7.28**	3.62	6.94
Seafood consumption by form bought to eat in-home								
Fresh	0.33	**0.89**	0.52	0.48	**1.00**	**0.68**	0.22	0.60
Frozen including packaged	0.08	**0.16**	0.11	**0.23**	**0.18**	0.11	0.05	0.13
Canned	0.02	**0.06**	0.04	0.05	**0.08**	0.05	0.02	0.05
Other	0.27	**0.47**	0.19	**0.31**	**0.33**	**0.40**	0.23	0.32
Total Seafood	0.70	**1.58**	0.86	**1.08**	**1.59**	**1.23**	0.52	1.10
Total Fish and Seafood	5.17	**11.35**	5.79	**9.93**	**10.32**	**8.51**	4.13	8.04

Note that bolded figures indicate per capita consumption that is above the average of all respondent .

Table 2.4.9 The *per capita* Out-Of-Home Consumption of Grocery Buyers and Children under 15 Years of Age* (kg)

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Average all Clusters
Out-of-home fish and seafood consumption	1.68	**2.94**	2.39	2.19	**3.17**	2.31	1.35	2.32

** this is the out-of-home consumption known of by the grocery buyer as sampled by the 'In-Home' questionnaire. The children's consumption is just that which has been purchased by the grocery buyer.*

The bolding of numbers in Tables 2.4.8 and 2.4.9 showing higher than average *per capita* consumption, emphasises the distinctive preferences of the members of each cluster. These preferences are largely consistent with the label given to each cluster.

For example, the Cluster 1 "cost and value conscious conservatives" have higher than average consumption of smoked fish, cooked fillets and frozen cutlets. Their out-of-home consumption is the second lowest of any cluster.

Cluster 2 "fish/seafood buffs" have the highest in-home and second highest out-of-home *per capita* consumption of total fish and seafood.

Cluster 3 members who "dislike or don't know how to cook fish and seafood" have above average in-home consumption of frozen packaged ready to cook fish and cooked fillets, both forms of which alleviate the need for cooking or arduous preparation.

Cluster 4 the "frozen fish/seafood lovers and convenience shoppers" have higher than average in-home consumption of frozen fish and seafood. Also, true to their label as convenience shoppers, they are higher than average consumers of canned fish and frozen, packaged, ready to cook fish - the most convenient forms of fish purchase and preparation.

Cluster 5, the "fresh fish lovers /non price sensitive" obviously do consume above average quantities of fresh fish and seafood in-home. They are the highest *per capita* consumers of fish and seafood out-of-home which indicates they do have the spending power required for discretionary out-of-home meals. This is supported by other results which show Clusters 2 and 5 to eat a higher proportion of out-of-home fish and seafood meal-type-occasions in restaurants, as compared to other clusters.

Cluster 6, the group that is "positive to fish/seafood but ..." has an in and out-of-home consumption pattern that is not far off the average of all respondents. Surprisingly, in spite of the problems and concerns this group has, their in-home consumption of *fresh* fish and seafood is above average. However, this preference for *fresh* fish/seafood may also explain why this group held so many problems and concerns. Their concerns over fish/seafood availability, cost and suspicion of the "freshness" of fish purchased are all most applicable to *fresh* fish/seafood.

However, one characteristic common to all clusters is in-home consumption of canned fish of between 0.95kg and 1.73kg *per capita*. There is comparatively little variation in *per capita* canned fish consumption across clusters, in contrast to that observed with other forms of fish and seafood.

Other consumer behaviour that was found to align closely with distinct cluster attitudes were:

- place of fish/seafood purchase

- preferred techniques for in-home fish/seafood meal cooking/preparation

- suggested fishing industry actions that would increase respondents' household fish/seafood consumption.

In addition, the respondent members of each Cluster tended to have different demographic characteristics. For example, a greater proportion of Cluster 2 ("fish/seafood buffs") tended to come from the younger age group as shown in Table 2.4.10. Note, Table 2.4.10 summarises cluster tendencies as compared to the average for all respondents - it does not suggest that all Cluster 2 respondents were from younger age groups (45% were under 40 years old as against 40% for the total respondent population). Nonetheless, these demographic tendencies provide a basis upon which marketing strategies can be developed.

Table 2.4.10: Summary of Cluster Demographic Tendencies

	1 Cost/value conscious conservatives	2 Fish/ seafood buffs	3 Dislike cooking/don't know how to cook fish /seafood	4 Frozen fish/seafood lovers and convenience shoppers	5 Fresh fillet lovers/non price sensitive	6 Positive to fish/ seafood but ...	7 Dislike fish/ seafood
Coastal/inland	–	–	–	Inland	–	–	Inland
Age Profile	Older	Younger	Younger	–	Middle to older	–	–
Marital Status	Divorced/ separated/ widowed	–	Single	–	Married	–	Divorced/ separated/ widowed
Household Composition	Singles living alone	–	–	–	Married/*de facto*/with adult family members	–	Singles living alone
Nationality	Australian or English speaking country	Non-English speaking country	–	–	–	Non-English speaking country	Australian/ English speaking country
Household Income	Lower	Moderate to high	Moderate to high	–	–	Lower	Lower
Number of Adult Income Earners	None/one	Two or more	Two or more	–	–	–	None/one

Note: blanks indicate the cluster characteristics are approximately that of the total respondent population.

2.4.8 Recreational Fishing Activity

One third of Australian households contained at least one member who was involved in recreational fishing in the three months January, February and March 1991 which represented the peak season in terms of recreational fishing activity and catch. This is the same proportion as the PA 1977 study reported.

The low season in recreational fishing activity occurred in the months of July, August and September 1991 when 23% of households had at least one member involved in recreational fishing.

The catch from recreational fishing, estimated at 24,392,000kg live weight per annum in the areas surveyed, represents 2.82kg edible weight of fish and seafood *per capita* or 23% of the 12.06kg total in and out-of-home fish/seafood consumption of Australians living in households. These figures show recreational fishing to be a major contributor to fish and seafood consumption in Australia.

In general, households in regional areas were more likely to be involved in recreational fishing than those in the cities. Regional South Australia, regional Western Australia and regional Tasmania had the highest levels of recreational fishing involvement. Canberra and Perth were the two cities with highest involvement which was also the case in the 1977 PA study.

2.4.9 Institutional Consumption and Purchasing Patterns

The fish and seafood consumption of people living in institutions was 8.28kg and 0.53kg respectively, or 8.81kg of fish and seafood in total. Hence the *per capita* fish consumption of people in institutions was slightly below that of people living in households. Seafood *per capita* consumption of people in institutions was one fifth that of people living in households.

The major forms of fish purchased and consumed in institutions were frozen fish (namely fillets) and canned fish which accounted for 77.5% of the edible weight of all fish consumed in institutions. Frozen seafood accounted for 83.0% of the edible weight of all seafood consumed in institutions. Across the different types of institutions surveyed, *per capita* fish and seafood consumption varied considerably. Prisons/youth centres and secondly hospitals/nursing homes showed highest *per capita* fish/seafood consumption at 9.92kg and 9.52kg respectively. Interestingly, prisons/youth centre consumption was all fish - no seafood was reported as being purchased by any prison surveyed.

Welfare/charitable homes reported the lowest *per capita* fish/seafood consumption of 6.17kg per person. As for prisons, all but 0.01kg of this was fish rather than seafood.

Apart from the consumption of fish and seafood in institutions, the survey sought to identify purchasing patterns and considerations of the buyers for institutions, in the same way that this information was also sought in other "trade" segments of the study[7]. The following major points emerged for institutions as compared to other "trade" segments surveyed[8]:

- there is a far greater variety of potential decision-makers in institutions regarding the purchasing of fish and seafood

- institutions most frequently select meals on a regular menu basis. If their fish consumption is to increase, then this menu selection process must be influenced, and its subsequent constraints complied with (ie agreed price, guaranteed availability, reliability of quality)

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[7] Fishing Industry Research and Development Council, "Trade Supplies for the Public for In-Home Consumption" (Retailers, Fishmongers, Wholesalers and Warehouse Withdrawals Data) Report, July 1992, PA Consulting Group, Perth, Western Australia, for example.

[8] Other trade segments surveyed were 1) Retailers, Fishmongers, Wholesalers and Warehouse Withdrawals Data, and 2) Caterers, 'Restaurants' and 'Take-Aways' which are analysed in two separate reports.

- institutions were unique amongst the trade segments in their commitment to canned products. Canned tuna and salmon were by far the most frequently purchased non-fresh/frozen finfish items

- institutions were unique amongst the trade segment in their emphasis on cleanliness as a priority issue when selecting a supplier

- the tendering process for establishing fish purchase contracts is used by as little as 26% of institutions, and accordingly presents no real barrier to enhanced sales into this sector

- the primary levers which could be used by fish and seafood suppliers would be quality and price. Institutions have positive perceptions of the healthiness of fish and seafood in diets (ahead of poultry and meat as alternative protein sources). Their chief negative perceptions relate to price levels, price fluctuations and freshness of product. By and large though, as a group, institutions tend to see no major problems in the handling and preparation of fish and seafood

- the fish preference pattern for institutions most closely resembles that of 'take-aways' (particularly fish and chip shops) and caterers. It emphasises fillets of hake, orange roughy, whiting, shark and blue grenadier as popular species, principally because of customer demand, ease of eating (boneless, skinless) and value for money

- institutions noted a trend towards health-consciousness and reduced intake of saturated fats and oils, in keeping with other trade segments.

2.5 Other Findings Across Trade and Consumer Surveys

2.5.1 The Potential of Under-utilised Wild and Farmed Species

One of the objectives of the National Seafood Consumption Study was to investigate the potential market for under-utilised species. To this end, all trade segments and respondents to the in-home questionnaire were asked to comment on the potential of the following under-utilised species:

- wild species:
  - Jack mackerel
  - squid/calamari
  - pilchards or sardines (not canned)
  - Australian herring/Tommy ruff
  - silver trevally/skipjack
- 'farmed' species
  - rainbow trout (freshwater)
  - Atlantic salmon (fresh not smoked)
  - mussels
  - oysters
  - farm barramundi.

These species were chosen on the basis of the Industry Leader Interview results by the study Steering Committee.

Overall, the trade saw more potential in the farmed species than wild species with the single exception of squid/calamari which has become popular in recent years.

Of the out-of-home trade segments, caterers and 'restaurants' were far more positive in regard to the potential of under-utilised species than 'take-aways'. Within the in-home trade segments, fishmongers and wholesalers were far more positive than retailers.

Major reasons trade respondents gave for suggesting a species had high potential were:

- a popular fish/in demand
- always available/constant supply (in relation to farmed fish/seafood)
- a good flavoured fish/seafood.

On the other hand, wholesalers were interested in the constant supply/availability of farmed species, no doubt due to the operating efficiencies this could provide them.

Consumers were not asked to comment directly on the "potential" of the under-utilised species. Instead they were questioned on whether they had "heard of" the species, whether they had tried it and whether they had liked it. The farmed species of oysters, rainbow trout and mussels, along with wild species squid/calamari had been heard of by over 85% of all consumers surveyed and had been tried by at least 60% of those who had heard of the species. Most other wild or farmed species had been heard of by 50% or less of consumers surveyed.

Much of the reason for low consumer awareness and trial of these species appeared to be a lack of distribution coupled with (some farmed species') relatively recent entry into the Australian market. These problems can largely be solved through appropriate marketing strategies.

2.5.2 Caterers' and 'Restaurants'' Perceptions of Alternate Protein Sources and Products - Perceptual Maps

The perceptions which caterers and 'restaurants' hold about fish as a protein source versus alternatives have significant bearing on the selection of meals offered to their customers. Accordingly, the perceptions held by caterers and 'restaurants' regarding the association of 20 or so attributes with six protein sources (meat, poultry, pork, fresh or frozen fish, canned fish and seafood, prepared fish products) were analysed. The results are described through the use of Perceptual Maps (Figures 2.5.1 and 2.5.2). Appendix IV has guidelines for reading Perceptual Maps.

Generally, all three fish product categories had a less favourable image than the alternative protein sources. In particular fresh or frozen fish was most commonly associated, by caterers and 'restaurants', with the following negative perceptions:

- its price fluctuates too much
- it is thought likely to go off in store.

Furthermore, caterers held that, more than for any other protein source, the quality of fresh or frozen fish was likely to vary. 'Restaurants' also considered fresh or frozen fish as the most likely protein source to be considered too dear by their customers, and that no fish categories were well supported by advertising.

Figure 2.5.1 Perceptual Map of Caterers' Attitudes to Protein Sources

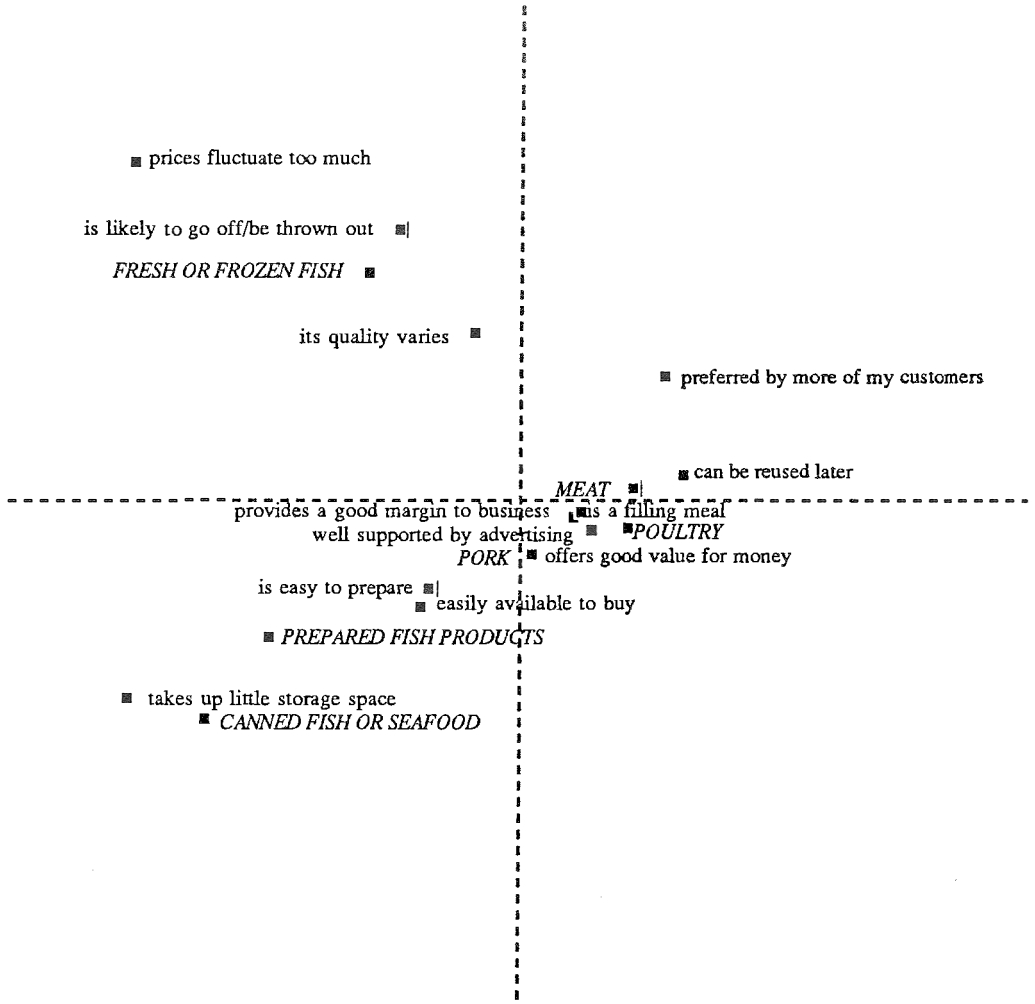
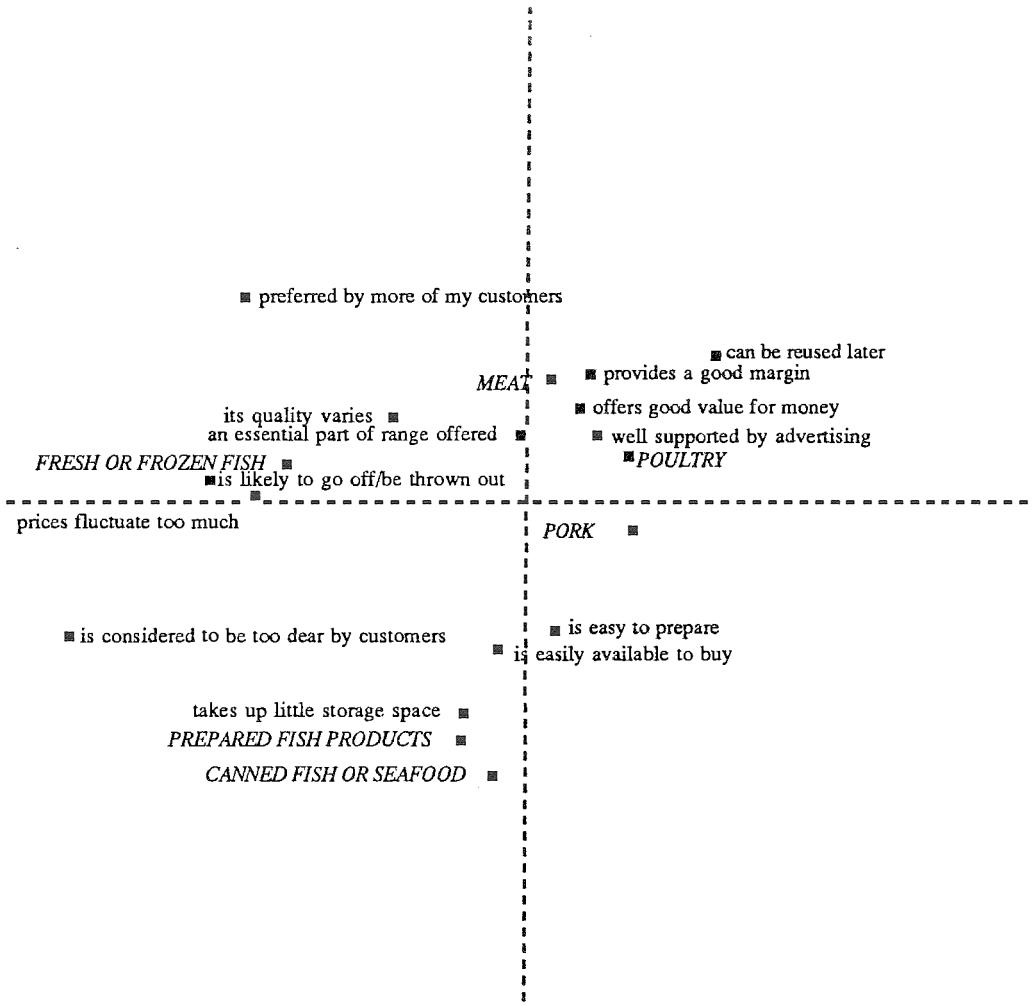


Figure 2.5.2 Perceptual Map of 'Restaurants'' Attitudes to Protein Sources



2.5.3 Retailers' Perceptions of Alternate Protein Sources and Products - Perceptual Maps

Retailers (ie supermarkets, food stores and convenience stores) carry a wide variety of protein sources. As a result their perceptions of various protein sources were also gathered in the same way as for caterers and 'restaurants' previously mentioned. Figure 2.5.3 shows the resulting perceptual map.

Again (see Section 2.5.2), fresh or frozen fish was the protein source perceived in the most negative light. It was associated with:

- needing more trade and consumer marketing support
- often too expensive to buy
- supply often cannot be guaranteed for future in-store promotions
- staff who do not have the knowledge to recommend it.

It was second to canned fish and seafood in the strength of association with the attribute of "being considered to be too dear by customers" and was the protein source most strongly associated with customers requesting information on its presentation for cooking.

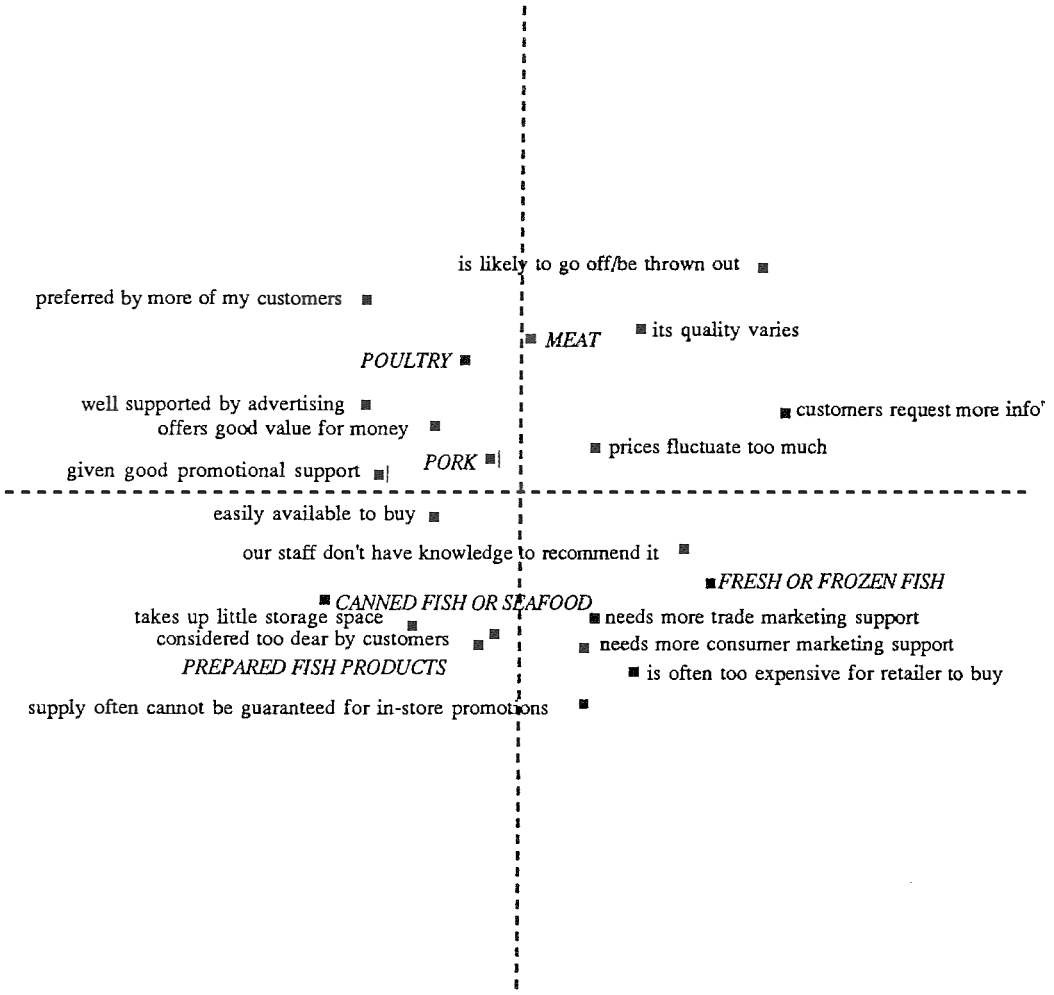
Fresh and frozen fish are **not** strongly associated with several positive attributes such as being "easily available to buy".

Canned fish and seafood was seen by retailers in a far more positive light. It was perceived as:

- easily available to buy
- taking up little storage space
- receiving good promotional support from suppliers
- well supported by advertising.

Prepared fish products fell between canned and fresh or frozen fish/seafood in terms of retailers' perceptions. However, prepared fish products were perceived as being considered too dear by customers.

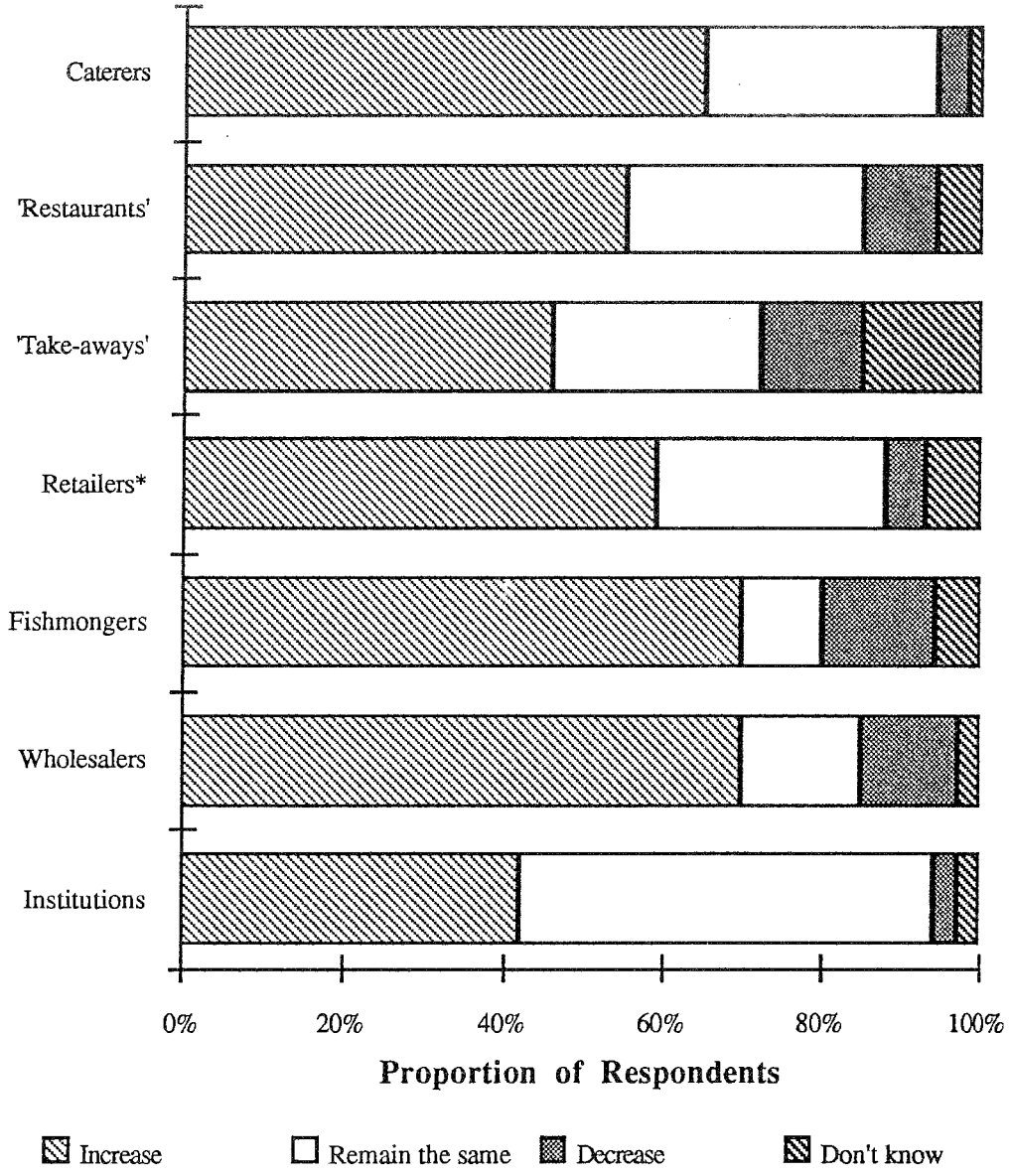
Figure 2.5.3 Perceptual Map of Retailers' Attitudes to Protein Sources



2.5.4 The Trades' Views on Fish and Seafood Sales Over the Next Five Years

All trade segments were asked for their opinions on whether they expected sales of fish and seafood products in their store to increase, decrease or remain the same over the next five years. Figure 2.5.4 summarises responses and shows significant variation between trade segments. Wholesalers, fishmongers, caterers and supermarkets (see Figure 2.5.4 footnote) were the most optimistic segments. Institutions, 'take-aways' and convenience stores (Figure 2.5.4 footnote) were the most pessimistic.

Figure 2.5.4 Trade Opinions on Fish/Seafood Sales in Their Own Business/Workplace Over the Next Five Years(1)



** within this segment 67% of supermarkets, 53% of food stores and 45% of convenience stores expected increased fish/seafood sales in next five years*

The most common reasons given for suggesting increased fish/seafood sales over the next five years were:

- people becoming more health conscious
- people eating more fish
- no/low cholesterol/fish is a health food
- increased population.

The most common reasons given for expecting fish/seafood sales to remain the same over the next five years were:

- there has not been a change in the last 5 - 10 years
- there is limited demand in the area/small sized business or institution
- fish/seafood is becoming too expensive (fishmongers)
- too much competition (take-aways).

The most common reasons given for expecting a decrease in fish/seafood sales over the next five years were:

- fish/seafood is becoming too expensive
- people are not spending due to tough economic times
- too much competition (take-aways).

The "too much competition" reason was given mostly by take-aways, suggesting this may be the chief cause of the high proportion of "don't know" responses (see Figure 2.5.4) from them.

2.6 Differences in Trade and Consumer Perceptions

2.6.1 Customers' Versus Retailers' Perceptions on Criteria Customers Use in Selection of a Retailer for a Fish/Seafood Purchase

In the In-Home Consumption survey, those consumers who had consumed fresh or frozen fish or seafood in-home within the seven days prior to interview, purchased from one of four main types of outlets, were asked to rate each of 16 given factors by the factors' importance to their choosing the outlet. The four main outlets were fish or general markets, specialist retail fish shops, fish and chip shops/take-aways and supermarket food stores which accounted for 80% of all in-home fish/seafood meal-type-occasions.

Consumer concern over store cleanliness and reputation for quality fish/seafood were consistently the highest ranked factors across all four outlet types. Beyond this the factors considered important for supermarkets/food stores had a different slant to those for the other three outlet types.

Two of the four most important ranked factors for outlet types other than supermarkets/food stores relate to retailer reputation and consumer confidence that fish/seafood sold as fresh is, in fact, fresh. It is apparent consumers still have concerns over the quality of fish/seafood they buy and the integrity of fresh fish/seafood retailers in particular. Equivalent ranked factors for supermarkets/foodstores were easy store access and friendly staff.

As a part of the trade surveys, respondents from three main outlet types were asked to rate the same 16 factors in terms of their perceived importance to customers when buying fresh or frozen fish/seafood. Tables 2.6.1, 2.6.2 and 2.6.3 highlight any differences in perceptions between customers and the trade in the importance of 16 factors shown to the choice of outlet.

The third column of each Table is the most useful in detecting differences in perceptions. In Table 2.6.1 it highlights that retailers (supermarket, food stores and convenience stores) do not attach as much importance to "offering Australian fish/seafood" and "selling fresh rather than frozen fish/seafood" as their customers. This may give rise to consumer dissatisfaction with the fresh and frozen fish/seafood available at retailers.

The positive numbers in the "difference" column of Table 2.6.2 suggest that fishmongers attach at least as much importance to each factor as their customers do. However, "offering Australian fish/seafood" and "selling fresh rather than frozen fish/seafood" show a difference of 0.0, far less than the minimum of +0.5 shown for all other factors except "clean outlet/store". The two factors are also ranked lower by fishmongers than consumers. This suggests that at least some fishmongers do not attach as much importance to these factors as consumers.

Table 2.6.3 reveals a similar difference between fish and chip shops/take-aways and their customers.

The differences in customer versus trade perception on the issues of "selling fresh rather than frozen" and "offering Australian fish/seafood" may be related to the difficulties the trade has in securing consistent supplies of fresh Australian fish/seafood at reasonable prices (see Sections 2.2.5 and 2.3.5). This leads to the use of imported fish and seafood lines such as smoked cod and hake.

Table 2.6.1 Customers' Versus Retailers' Perceptions on Criteria Customers Use When Selecting a Retailer for Fresh/Frozen Fish/Seafood

Factor:	Importance of each factor in customers' choice of retailer: factor ranking(1)	How retailers believe customers choose their store: factor ranking(2)	Difference in importance ratings given(3)
• Clean outlet/store	1	1	0.0
• Is easily accessible to me	2	2	+0.1
• Has a good reputation for quality fish/seafood	3	2	+0.3
• Has friendly staff working there	4	1	+0.8
• You can buy many different types of food there	5	2	+0.5
• I frequently shop there	6	3	+0.6
• Confident that fresh fish/seafood hasn't been frozen	7	5	+0.3
• Offers Australian fish/seafood	7	9	-1.2
• Offers a wide variety of fish/seafood products	7	8	-0.3
• Has consistently low prices for shopping in general	7	5	+0.3
• Has attractively displayed fish/seafood	8	4	+0.7
• Has consistently low prices for fish/seafood	9	6	+0.4
• It sells fresh rather than frozen fish/seafood	10	10	-1.0
• Has staff informed about fish/seafood	11	7	+0.5
• Offers fish/seafood specials	11	7	+0.5
• It offers advertised specials regularly	12	5	+1.0

(1) those consumers who had purchased fresh or frozen fish/seafood within the previous 7 days.
(2) those retailers who sell fresh/frozen fish/seafood.
(3) positive numbers signify a retailer's giving this factor a higher importance rating than consumers do. Negative numbers signify the reverse.

Table 2.6.2 Customers' Versus Fishmongers' Perceptions on Criteria Customers Use When Selecting a Fishmonger for Fresh/Frozen Fish/Seafood

Factor:	Importance of each factor in customers' choice of fishmonger: factor ranking(1)	How fishmongers believe customers choose their store: factor ranking	Difference in importance ratings given(2)
• Clean outlet/store	1	1	+0.1
• It sells fresh rather than frozen fish/seafood	2	6	0.0
• Has a good reputation for quality fish/seafood	2	1	+0.5
• Confident that fresh fish/seafood hasn't been frozen	3	1	+0.6
• Has friendly staff working there	4	1	+0.7
• Has attractively displayed fish/seafood	5	3	+0.8
• Offers a wide variety of fish/seafood products	5	4	+0.7
• Is easily accessible to me	5	3	+0.8
• Offers Australian fish/seafood	6	8	0.0
• Has staff informed about fish/seafood	7	2	+1.2
• I frequently shop there	8	5	+1.1
• Has consistently low prices for fish/seafood	9	7	+0.7
• Has consistently low prices for shopping in general	10	NA	NA
• Offers fish/seafood specials	10	8	+1.0
• You can buy many different types of food there	11	NA	NA
• It offers advertised specials regularly	12	8	+1.1

(1) those consumers who had purchased fresh or frozen fish/seafood within the previous 7 days.

(2) positive numbers signify a retailer's giving this factor a higher importance rating than consumers do. Negative numbers signify the reverse.

NA = not available

Table 2.6.3 Customers' Versus Fish & Chip Shop/ Take-Aways' Perceptions on Criteria Customers Use When Selecting a Fish & Chip Shop/Take-Away for Fresh/Frozen Fish/Seafood

Factor:	Importance of each factor in customers' choice of fish & chip shop/take-away: factor ranking[1]	How fish & chip shops/take-aways believe customers choose their store: factor ranking	Difference in importance ratings given[2]
• Clean outlet/store	1	1	+0.2
• Has a good reputation for quality fish/seafood	2	2	+0.4
• It sells fresh rather than frozen fish/seafood	3	7	0.0
• Confident that fresh fish/seafood hasn't been frozen	3	6	+0.3
• Has friendly staff working there	4	3	+0.9
• Is easily accessible to me	4	5	+0.6
• Offers Australian fish/seafood	5	9	-0.2
• Has attractively displayed fish/seafood	6	6	+1.0
• Offers a wide variety of fish/seafood products	7	8	+0.6
• I frequently shop there	8	4	+1.6
• Has staff informed about fish/seafood	9	5	+1.5
• Has consistently low prices for fish/seafood	10	7	+1.2
• Has consistently low prices for shopping in general	11	NA	NA
• Offers fish/seafood specials	12	10	+0.4
• You can buy many different types of food there	13	NA	NA
• Offers regular advert specials	14	11	+0.4

(1) those consumers who had purchased fresh or frozen fish/seafood within the previous 7 days.

(2) positive numbers signify a retailer's giving this factor a higher importance rating than consumers do. Negative numbers signify the reverse.

2.6.2 Customers' Versus 'Restaurants'' and 'Take-Aways'' Perceptions on Criteria Used When Selecting Fish/Seafood on a Menu

People who had eaten fish/seafood in a 'restaurant' or cooked from a 'take-away' outlet within the seven days prior to being interviewed (through the out-of-home consumption study) were asked to rate the importance of each of a given set of eight factors to their decision to order fish/seafood on the menu.

'Restaurants' and 'take-aways' interviewed during the Trade survey were also asked to rate the same eight factors in accordance to how important they perceived them to be to their customers. 'Restaurants' tended to rate most factors of higher importance than their customers, particularly the factor "consistently low prices". This suggests customers are quite prepared to pay moderate to higher prices for fish/seafood so long as other needs such as "a clean premises" and "fresh rather than frozen fish/seafood" are met.

A comparison of the ratings given each of the eight factors by 'take-aways' and their customers is shown in Table 2.6.4. Here, three factors are seen of significantly less importance by the 'take-aways' as compared to customers, as indicated by the negative numbers in the third column. These gaps in perception suggest customer needs are not being met by the 'take-away' trade segment in these three criteria.

Table 2.6.4 Customers' Versus 'Take-Aways'' Perceptions on Criteria Used When Selecting Fish/Seafood on a Menu

Factors:	Customers' ranking of importance of each factor[1]	'Take-aways'' perceptions of importance to customer[1]	Difference in importance ratings given[2]
• clean premises	6.7 (1)	7.0 (1)	+0.3
• fresh rather than frozen is used	6.1 (3)	4.5 (8)	-1.6
• has a reputation for quality seafood	6.2 (2)	6.7 (2)	+0.5
• can be sure that fresh fish/ seafood hasn't been frozen	5.1 (7)	5.9 (4)	+0.8
• offers Australian fish/seafood	5.6 (5)	4.6 (7)	-1.0
• has informed staff	5.2 (6)	6.0 (3)	+0.8
• offers a wide variety	5.0 (8)	5.5 (5)	+0.5
• has consistently low prices	5.8 (4)	5.4 (6)	-0.4

(1) based upon a rating given on a 7-point scale where 1 = not at all important and 7 = very important. Figures in brackets represent the factor ranking by importance

(2) Positive numbers indicate 'take-aways' giving a higher importance rating than their customers. Negative numbers indicate the reverse.

2.7 Initiatives to Increase the Sale and Consumption of Fish and Seafood

2.7.1 The Trades' Suggestions for Initiatives They Could Take to Increase Fish and Seafood Sales

When out-of-home segments (caterers, 'restaurants' and 'take-aways') were asked what initiatives they could take to increase their purchases and sales of fish and seafood, all three most frequently replied "none". The facility to offer fish and seafood at lower, more reasonable price levels (perhaps through "specials") was the second most frequently cited response by caterers, 'restaurants' and 'take-away' outlets.

When the in-home trade segments (retailers, fishmongers, wholesalers) were asked what initiatives they could take to increase their sales of fish and seafood, the leading responses from retailers and fishmongers were similar, ie "nothing", "resolve the physical constraints" (display area, refrigerator and freezer capacity, etc), and "build customer demand". Most wholesalers saw stimulating customer demand as the best initiative, linked to more advertising and lower prices.

Institutions were also asked the same question - their more frequent responses were "nothing", "offer lower prices/specials", and "change the menu to increase fish meals".

2.7.2 The Trades' Suggestions for Initiatives the Fishing Industry Could Take to Increase Fish and Seafood Sales

Table 2.7.1 summarises the most common suggestions made by trade respondents for fishing industry initiatives that would lead to their own business purchasing more fish/seafood. As shown, the suggested initiatives show a high degree of similarity across all trade segments surveyed.

Not shown in the Table, institutions were the most negative 'trade' segment - their most frequent response was "nothing" followed by "cheaper prices and less fluctuation".

Respondents were also asked to estimate how likely a range of nine given industry initiatives would increase their purchases of fish and seafood. Tables 2.7.2 and 2.7.3 show the initiatives seen as having greatest impact upon fish/seafood purchases. Except for caterers, all segments of the in-home and out-of-home trade saw increased advertising as having greatest impact. Not shown, institutions thought that guaranteed consistent supply, portion control to ensure standard piece sizes and a greater supply/variety of Australian fish would have greatest impact.

Table 2.7.1 The Trades' Suggested Fishing Industry Initiatives for Increasing Fish/Seafood Sales - Ranked by Number of Times Cited

Rank	Out-of-home segments	In-home segments		
		Retail	Fishmongers	Wholesalers
1	Cheaper prices & less fluctuation	More advertising & promotion	More advertising & promotion	More advertising & promotion
2	More advertising & promotion	Nothing	More education on health benefits	Cheaper prices & less fluctuation
3	Nothing	Cheaper prices & less fluctuation	Cheaper prices & less fluctuation	More education on health benefits
4	More education on health benefits	Other comments	Other comments	Good quality & standards of fish

Table 2.7.2 Likelihood of Given Industry Actions Leading to Increased Fish/Seafood Purchase by Own Business - Out-of-Home Trade Segment

Rank	Caterers	'Restaurants'	'Take-aways'
1	Greater supply/ variety of Australian fish	More advertising support	More advertising support
2	Guarantee of consistent supply	Guarantee of consistent supply	Greater supply/ variety of Australian fish
3	More advertising support	Greater supply/ variety of Australian fish	Guarantee of consistent supply
4	Greater quality regulation to minimise food poisoning	Greater quality regulation to minimise food poisoning	Greater quality regulation to minimise food poisoning

Table 2.7.3 Likelihood of Given Industry Actions Leading to Increased Fish/Seafood Purchase/Sales by Own Business - In-Home Trade Segment

Rank	Retailers	Fishmongers	Wholesalers
1	More advertising support	More advertising support	More advertising support
2	Supply more ready-to-cook meals	Better quality product through better handling	Supply of information on cooking
3	Supply of information on cooking	Supply of information on cooking	Better quality product through better handling
4	Give all retailers equal access to fish	More consistent supply of fresh fish/seafood	Greater encouragement of aquaculture

2.7.3 Consumers' Suggested Industry Initiatives That Would Increase Household Fish/Seafood Consumption

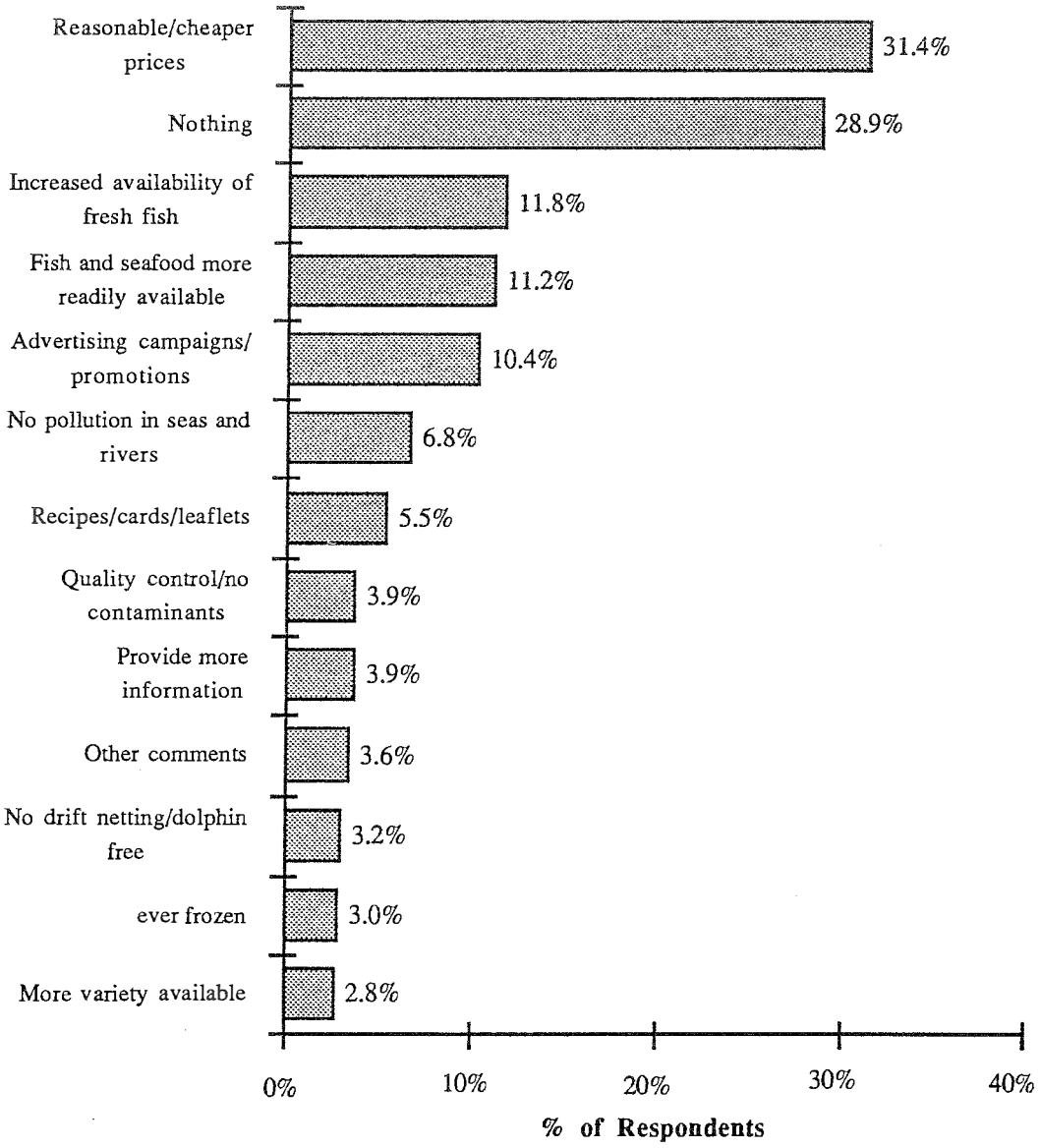
Figure 2.7.4 shows the top 13 industry initiatives suggested by respondents. "Lower prices", "increase *fresh* fish/seafood availability", "increase fish/seafood availability" and "advertising campaigns/promotions" were the most commonly made suggestions. 28.9% of respondents suggested that "nothing" the industry did would cause their household to consume more fish/seafood.

The suggestion "reasonable/cheaper prices" was made by approximately one third of respondents no matter whether they were from high or low household income groups.

On the other hand, calls for more advertising/promotions were made by 16% of respondents from the highest household income group as compared to only 6% of those from the lowest household income group. Similarly, 10% of respondents from the highest income households suggested "recipe cards/leaflets" and 8% "be informative/provide information" compared to 2% and 2% respectively from the lowest income households. These figures suggest many respondents from higher income households would increase their in-home fish/seafood consumption if there was greater marketing support for fish/seafood.

Younger respondents (less than 40 years old) were similarly more likely to suggest that advertising, recipe cards/leaflets and more information would increase their household fish/seafood consumption as compared to older respondents. For example, 8% of respondents less than 40 years of age suggested recipe cards/leaflets as compared to only 2% of those over 60 years old. Therefore, marketing efforts are likely to provide most gains if aimed at younger age group adults.

Figure 2.7.4 Actions Which Need to be Taken to Increase Household Fish/Seafood Consumption: by Proportion of Respondents Surveyed*



** each respondent gave, on average, 1.46 suggestions*

3. Discussion and Market Enhancement Options

3.1 The Consumer Attitude Versus Behaviour Gap

In the In-Home Consumption study respondents were asked to select, from a list of 26 dishes, up to six dishes they would consider preparing for a certain household in-home meal-occasion. The results of this question have been discussed in Section 2.4.6 and shown in Table 2.4.6a.

Table 3.1.1 shows the information in the "all meal occasions" column of Table 2.4.6a, represented in a slightly different way. The relative number of dishes selected can be used as an indicator of consumer preference or attitude to the consumption of these dishes. The right hand column of Table 3.1.1 uses normalised *per capita* consumption figures for each protein source as an indicator of actual behaviour, ignoring for the moment the fact that consumption figures include a small component for out-of-home consumption as well as the major in-home component.

Table 3.1.1: The Consumer Attitude Versus Behaviour Gap

Main dish type:	Preference(1)(3) (Attitude)	Consumption(2)(3) (Behaviour)
Meat	100	100
Pork	15	27
Poultry	44	37
Fish/seafood	52	12
Other	66	NA

(1) respondents were asked what type of meal they would most likely prepare and allowed a choice of up to six different dishes from a list of 26 dishes
(2) based on apparent per capita consumption figures for 1987/88 from ABS Catalogue No. 4306.0
(3) figures are normalised to meat = 100.

The figures have been normalised so that the relative number of meat dishes chosen is represented by 100, as is the relative *per capita* meat consumption figure. Other dish type figures have been expressed as a relative number to meat. Hence, in the preference column, for every 100 meat dishes chosen by respondents there were 15 pork dishes chosen, 44 poultry dishes and so on. Similarly, for every 100kg of meat consumed in Australia, 27kg of pork was consumed, 37kg of poultry and so on.

The comparison between consumer attitude versus behaviour in the case of fish/seafood consumption shows a relatively positive attitude has not translated into actual consumption. This attitude versus behaviour "gap" is not suffered to any major extent, by any other type of protein based dish, suggesting there are barriers to increased fish and seafood consumption in-home. Barriers suggested by survey results are discussed in the next Section.

3.2 Barriers to Increased Consumption of Fish/Seafood

The consumer survey identified many problems that consumers have with fish and seafood that are either not as significant or are not experienced at all with alternate sources of protein. The trade surveys gained the perceptions of problems of various trade segments in their purchasing and sale of fish/seafood.

It is the purpose of this Section to highlight the barriers to increased fish/seafood consumption from the consumer viewpoint and then detail the views of the trade with respect to those same barriers and problems. This leads to the development of market enhancement options later in this report, addressing barriers to increased consumption through thorough analysis of constraints and opportunities at the trade and consumer level.

3.2.1 Lack of Freshness of Fresh Fish and Seafood

Consumer concern over the freshness of "fresh" fish/seafood they purchased (Section 2.4.6) was matched by most in the trades' concern that their suppliers exercise good stock temperature control (Sections 2.2.3 and 2.3.4). However, when asked to rate the significance of industry problems with fresh and frozen fish/seafood, doubts on the freshness of fresh fish/seafood surfaced with fishmongers, the out-of-home trade segments and, to a lesser extent, retailers (Sections 2.2.5 and 2.3.5). Related problems cited by the trade include a distrust of suppliers, a risk in buying fish and seafood "sight unseen" (suggesting quality and freshness problems) and the short shelf life of fish/seafood (Sections 2.2.5 and 2.3.5).

The 23% of retailers who sold "chilled" fish/seafood avoided many of the problems associated with handling fresh fish/seafood. However, the use of the word chilled, rather than simply fresh or frozen, may in itself be further confusing consumers.

The out-of-home trade segments (caterers, 'restaurants' and 'take-aways') were particularly concerned over the possibility of food poisoning with fish/seafood (Section 2.7.2). However, food poisoning most commonly occurs when cooked fish and seafood is left sitting without refrigeration, particularly in warm weather. Bacteria in the fish/seafood multiply, resulting in food poisoning when consumed. Bacteria in the fish/seafood that multiply as a result of fish/seafood not being stored at correct temperatures prior to cooking are washed off prior to cooking and/or killed when cooked and do not lead to food poisoning. However these bacteria do cause taste and texture deterioration and hence a loss in the appeal of the fish/seafood to the end consumer.

The trade was generally satisfied with their supplier's temperature control for stock storage (Sections 2.2.3 and 2.3.4). This suggests that the handling and storage of fresh fish/seafood along the distribution chain before it reaches suppliers to the trade is poor and/or the time from catch to reaching the in-home and out-of-home trade is too long. Certainly both these problems were raised during interviews with industry leaders (Section 2.1) and in the Literature Review of literature on the Australian fishing industry.[9] Furthermore, all trade segments such as fishmongers, retailers and fish and chip shops, selling fresh fish/seafood to the public were themselves criticised for poor stock temperature control and handling.

Consumer perceptions of poor quality fish/seafood that had a high chance of being "off" when purchased were strong in consumer focus groups run in the early phases of the study.[10] This concern led people to avoid freezing fresh fish and seafood after purchase for fear of food poisoning. This places fresh fish/seafood at a disadvantage in terms of user convenience - most people have no qualms about freezing meat and poultry for later use (see Section 2.4.6).

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9 "National Seafood Consumption Study: Literature Review", PA Consulting Group on behalf of the Fishing Industry Research and Development Council, April 1992, Section 5.6.3.

10 "Fish and Seafood Consumer Focus Group Discussions", November 1991, PA Consulting Group on behalf of the Fishing Industry Research and Development Council.

3.2.2 Consumer Preference for Fresh Over Frozen Fish/Seafood

Consumers expressed a strong preference for fresh over frozen fish/seafood (Section 2.4.6). However, this consumer need was not perceived to be highly important by retailers, fishmongers and fish and chip shops (that sold fresh and/or frozen fish/seafood) and 'restaurants' and 'take-aways' (Sections 2.6.1 and 2.6.2).

Only 17% of retailers surveyed actually sold fresh fish/seafood. When consumers were asked to suggest fishing industry initiatives that would increase their consumption, one of the most frequent suggestions was to increase the availability of fresh fish/seafood.

These results point to many consumers' fresh fish/seafood needs not presently being adequately met. Concurrently, the Australian fishing fleet (along with fleets around the world) is moving to larger boats with on board freezers to allow fishing in deeper, more remote waters in all weather. This is tending to increase availability of frozen fish/seafood and decrease fresh fish/seafood availability.

It appears that the fishing industry has no choice but to begin long term plans to educate consumers on the quality and benefits of frozen fish/seafood. Presently consumers feel they cannot judge frozen fish quality and perceive the taste of frozen fish as inferior to fresh (Section 2.4.6). These issues will need to be addressed in any consumer education campaign.

3.2.3 Suspicion of Fish/Seafood Mis-labelling

Consumers had doubts on the integrity and reliability of the labels on fresh and frozen fish (Section 2.4.6). While this is largely based on widely held suspicions of species substitution, many consumers were also of the opinion that much of the fresh fish they purchased was, in fact, thawed frozen fish (Section 2.4.6).

Matching these consumer concerns, fishmongers ranked their "having a good reputation for quality fish seafood" and customers' "confidence that fresh fish/seafood hasn't been frozen" as the most important factors they felt customers considered when selecting their store (Section 2.6.2). Fish and chip shops selling fresh/frozen fish and seafood ranked "a good reputation" highly, yet ranked customer "confidence that fresh fish/seafood hadn't been frozen" as only the sixth most important factor, out of 11. In contrast, customers ranked this as the third most important factor they considered pointing to a gap in perceptions between fish and chip shops and their customers.

Customers of retailers ranked the factor "confidence when buying fresh fish/seafood hasn't been frozen" as only the seventh most important factor influencing their choice of retailer from which to purchase fresh or frozen fish/seafood. This low ranking reflects the fact that most purchases of fish/seafood from retailers are of either chilled or frozen rather than fresh fish/seafood.

No problems in labelling were raised by retailers or fishmongers when asked about the performance of their own suppliers (Section 2.3.4). Hence, in sum, it appears that the labelling issue is not perceived as a major problem within the trade though fishmongers in particular understand how important a guarantee that fresh is, in fact, fresh (and not thawed frozen) is to consumers.

Yet consumers still remain suspicious of fish/seafood labelling. This suspicion in itself is enough to depress demand for fish/seafood and the industry needs to address it.

3.2.4 Bones in Fish - the Preference for Fillets

Bones in fish were a problem for most consumers, but particularly females. Possibly linked to this are relatively negative perceptions of whole fish, including it presenting a problem in preparation, cooking and waste disposal. Fish fillets were perceived in a far more positive light and indeed most consumers would only consider the purchase of fish that has been cut and filleted (Section 2.4.6).

Fishmongers, caterers, 'restaurants' and 'take-aways' were acutely aware of the concern amongst their customers over fish bones, citing it as one of their own major problems with fish (Sections 2.2.5 and 2.3.5).

Obviously the appeal of particularly "bony" species of fish will be limited. However, one group (cluster) of consumers labelled "fish/seafood buffs" representing 14% of respondents surveyed were not at all concerned over bones in fish. This group is an obvious target for the marketing of bony fish (Section 2.4.7). Otherwise, consumer education through point-of-sale materials and in-store demonstrations may be viable means of reducing consumer concern over bones in fish.

3.2.5 Concern with Pollution Contamination

Most consumers were highly concerned over the threat of pollution contamination of fish/seafood, though this was not seen as a major problem by the trade. On the other hand, industry leaders, particularly from New South Wales, were acutely aware of the effects of pollution contamination on demand for fish/seafood. The Sydney "oyster scare" of early 1990 and its dramatic impact on consumer demand for fish/seafood in general was still high in most industry leaders' minds.[11]

The degree of consumer concern demands a response from all levels of the industry to ensure fish/seafood is not contaminated and that the media is properly informed. Industry bodies should continue to pressure and work with government to reduce pollution of inland and ocean waters. The fishing industry itself should ensure that it has a clean environmental record and promote this in the media at every opportunity.

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[11] "Industry Leader Interview Report", PA Consulting Group, November 1991 on behalf of the Fishing Industry Research and Development Council, p 14, 36.

3.2.6 High Price and Price Fluctuations

Consumers perceived fish/seafood to be expensive and many saw this as limiting their consumption of fish/seafood (Section 2.4.6). One third of respondents suggested that "reasonable/cheaper prices" would encourage them to consume more fish/seafood (Section 2.7.3).

High price and wide price fluctuations were significant problems to both the in-home and out-of-home trade segments (Sections 2.2.5 and 2.3.5). This applied in particular to fresh and frozen fish and seafood. Fresh and frozen fish was perceived by 'restaurants' and retailers as being the protein source most likely to be considered as too dear by customers (Sections 2.5.2 and 2.5.3).

Some trade respondents suggested they could increase their own fish/seafood sales by offering price "specials" (Section 2.7.1).

Of those trade segments who expected their fish/seafood sales to either remain static or decline in the next five years, the most common reason given was that fish/seafood was becoming too expensive (Section 2.5.4).

3.2.7 Strong Consumer Preference for Familiar Species/Types of Fish/Seafood Linked with Low Levels of Consumer Fish/Seafood Knowledge

A strong preference for familiar species or types of fish/seafood linked to an unwillingness to try different (unfamiliar) species or types is a major hurdle to increasing demand for under-utilised species and making fish/seafood a *regular* item on the dinner tables of most Australians. Consumers also expressed a strong preference for fish that has white or light coloured flesh.

It is likely that fishmongers were expressing frustration at these narrow tastes by citing, as one of their major problems, their customers' general lack of knowledge about fish and seafood (Section 2.3.5). This is supported by consumers themselves who felt they did not have the knowledge to buy fish and seafood confidently (Section 2.4.6).

Recognising their lack of fish/seafood knowledge, many consumers suggested the industry provide "more information" as an initiative that would increase their fish/seafood consumption (Section 2.7.3). This is a prerequisite for encouraging consumers to try underutilised wild and farmed species. Before trial of a species unfamiliar to them, consumers need to be informed of the species characteristics (Section 2.5.1).

3.2.8 Lack of Availability

Most consumers perceived that quality fish/seafood could only be purchased from a specialist fish outlet (Section 2.4.6). However, industry leader interviews revealed that specialist fish retailers were certainly not as numerous as butchers and often not present in large air conditioned shopping centres favoured by consumers today.[12] This may explain why approximately 20% of respondents to the in-home survey suggested the fishing industry take action to either increase fresh fish availability or the availability of fish and seafood generally as a way of increasing their household fish/seafood consumption (Section 2.7.3).

Furthermore, the segmentation of consumers by their attitude to fish and seafood revealed that 50% of people in the cluster labelled as "fish/seafood buffs" and almost all people in the cluster labelled "positive to fish/seafood but ..." agreed they would eat more fish/seafood if it was easier to obtain.

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12 "Industry Leader Interview Repor ", PA Consulting Group, November 1991 on behalf of the Fishing Industry Research and Development Council, Section 7.1.3.

All trade segments suggested industry action to boost fish/seafood availability or increase supply consistency would have a high likelihood of increasing purchases of fish/seafood by their own businesses (Section 2.7.2). The out-of-home trade segments (caterers, 'restaurants', 'take-aways') cited greater supply/variety of Australian fish in particular as an industry action that would likely lead to increased fish purchases.

3.2.9 Consumer Difficulty With Preparation and Cooking of Fish/Seafood

A greater proportion of consumers had difficulty with the preparation and cooking of fish/seafood than for alternate protein sources. This applied especially to whole fish. Approximately 20% of consumers expressed difficulty in the preparation and cooking of fish/seafood. Younger people were generally not as confident in their ability as older people (Section 2.4.6).

Consumers themselves suggested the fishing industry provide more recipe cards/leaflets as a means of addressing this problem (Section 2.7.3). This was also seen by in-home trade respondents as an industry action with high potential to increase their fish/seafood sales (Section 2.7.2).

3.2.10 Lack of Marketing Support for Fish/Seafood

When comparing alternative protein sources, caterers, 'restaurants' and retailers perceived fresh and frozen fish/seafood as having very weak marketing support versus that afforded to sources such as meat and poultry (Sections 2.5.2 and 2.5.3). Retailers suggested fresh and frozen fish, prepared fish products and canned fish/seafood all needed more trade and consumer marketing support (Section 2.5.3). However, when questioned on what initiatives they could take to increase their fish/seafood sales, most in the trade replied "nothing", suggesting they did not see a large role for themselves in increasing the marketing support for fish/seafood consumption (Section 2.7.3).

Many consumers suggested increased advertising, promotion and point-of-sale material such as recipes/cards/leaflets would increase their household fish/seafood consumption (Section 2.7.3).

3.2.11 Other Barriers to Fish/Seafood Consumption

Consumers felt the taste of fish/seafood dishes was more likely to be disliked by people eating the meal than the taste of alternate protein based dishes (Section 2.4.6). This applied in particular to fish fingers, canned fish, prawns and scallops. During the consumer focus group discussions run as part of the study, respondents reported the taste of fish and seafood as not being popular with their families.[13]

Most consumers surveyed saw fish and seafood as a "light" meal, which is something of a "two edged sword" in the appeal of fish and seafood, depending on whether a consumer seeks a "light" or "heavy" meal.

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[13] "Fish and Seafood Consumer Focus Group Discussions", PA Consulting Group on behalf of the Fishing Industry Research and Development Council, November 1992, pp 13 14 19.

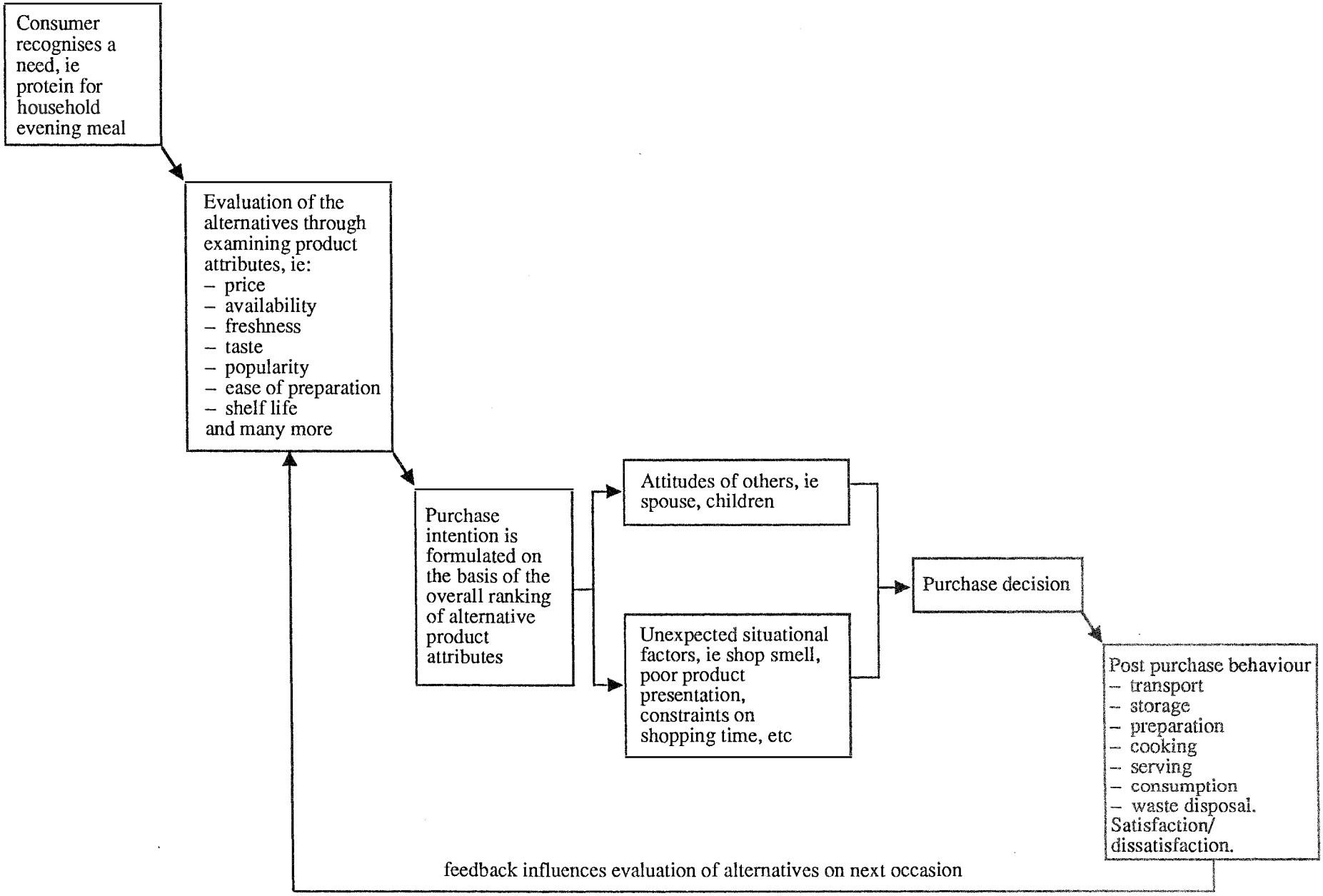
3.3 How Barriers to Consumption Impact Consumer Behaviour

Figure 3.3.1 outlines a simple model of consumer decision making processes. The barriers to increased fish/seafood consumption discussed in Section 3.2 have an impact upon virtually all stages of the purchase decision as emphasised by the model. Consumers concerned with the price, availability and freshness of fish/seafood compared with alternatives are not going to purchase fish/seafood. Even those forming an intention to make a fish/seafood purchase may not actually carry out the purchase if their spouse suggests another protein source may be a better choice, or the fish/seafood shop smells and has poorly presented products. All these problems occur for fish/seafood as summarised by Section 3.2.

Even after purchasing fish/seafood, commonly cited difficulties with aspects of post purchase behaviour result in a lowered likelihood of repeat purchases.

The model explains why the consumer attitude versus behaviour gap exists and why the fishing industry must address the barriers to fish/seafood consumption to close the gap.

Figure 3.3.1: A Model of Consumer Decision Processes When Purchasing Protein Sources



3.4 Market Enhancement Options

3.4.1 Gaining Acceptance of Change

The barriers of fish/seafood consumption are the result of customer needs not being met by the fishing industry. The problems these barriers highlight suggest there are a multitude of actions the industry should take to improve its competitive position. However, solutions to many of these problems require concerted action at all levels of the industry distribution chain. A prerequisite for this to occur is industry wide acceptance that change is necessary. The publication and dissemination of results of the National Seafood Consumption Study represents the most significant opportunity the industry has had for some years to achieve a broad consensus that change is necessary and, above all, the direction in which change must be made. It is therefore imperative that the major findings of the study be disseminated to the fishing industry as wide and forcefully as possible. Avenues by which this can occur are:

- publication of detailed study results and summary reports available to interested parties
- a mail-out of information brochures to companies and individuals within the industry
- inclusion of summary articles in industry magazines, newsletters and journals
- holding of industry seminars to discuss results and instigate change in as many regions or product groups as practical
- provision of public access to the computerised database holding the results of the study
- industry leaders, industry organisations, government representatives, fishing industry companies and individuals seizing the initiative and actively pursuing change.

Having gained widespread industry support for change, then initiatives such as the market enhancement options discussed in the following sections are far more likely to succeed. The provision of detailed marketing information to the industry will also allow the development of tailored market enhancement initiatives specific to individuals, companies and fisheries to complement the broad based initiatives that are discussed in the sections that follow.

3.4.2 The Need for Quality

Product quality is often interpreted as being synonymous with "high quality", luxury, expense and so on. However, quality can only be judged in terms of how well the product meets the needs and expectations of the customer. After all, it is the verdict of the customer that will decide whether a product is successful in the marketplace and ultimately whether a company will survive. Clearly, quality product can as easily be a budget item as a top line luxury item, so long as it meets the needs and expectations of the customer.

Many of the barriers to fish/seafood consumption represent customers' needs and expectations that the fishing industry and broader food industry (in the case of supermarkets, foodstores and convenience stores) are not meeting. These needs and expectations include:

- confidence that fresh fish/seafood is fresh (ie has suffered no deterioration due to time in storage, distribution, handling and so on)
- confidence in the integrity of the labelling of fish/seafood both in terms of fresh versus frozen and in terms of species substitution
- readily available white fleshed, boneless fillets of well known popular fish species
- confidence that fish/seafood comes from clean unpolluted waters
- reasonably priced, value for money fish/seafood with minimal price fluctuation

- the knowledge to confidently purchase, prepare, cook and serve fish/seafood

- fish/seafood that is well liked by their families.

Any industry change must address these consumer needs and expectations by moving to meet them and/or moulding consumer expectations so they can be realistically met. Only then will fish/seafood be regarded by consumers as a quality alternative to other foods. More specific market enhancement initiatives aimed at achieving this are discussed in the following sections.

Many fishmongers and wholesalers suggested that fishing industry action to lift fish/seafood quality through better handling would lead to increased purchases/sales of fish/seafood by their own businesses (Section 2.7.2). It is apparent that the fish/seafood industry is losing large sales and money through poor quality fish/seafood.

3.4.3 Training

People working at all levels of the fish/seafood chain have a role to play in ensuring consumer needs and expectations are met. For them to play this role they need:

- an understanding of the main consumer needs and expectations of the fish/seafood end product

- an understanding of their own role and influence upon whether the end product meets these consumer needs and expectations

- the knowledge, skills and equipment to effectively fulfil this role.

Yet many industry leaders interviewed in the study were critical of a general lack of quality consciousness by people throughout the distribution chain which, in many cases, was linked to poor or no training. The Literature Review supported these industry leader comments. In particular, the Australian Science and Technology Council's (ASTEC) 1988 report "Casting the Net" cited poor skills training as one of the fishing industry's most significant problems.

In the survey of retailers' perceptions of various alternate protein sources, fresh and frozen fish/seafood was the protein source most strongly associated with the problem of the retailers' staff not having the knowledge to recommend it (Section 2.5.3).

The industry must have an integrated training programme tied in with the development of well thought out career paths for people in all parts of the distribution chain from catching to retailing. The focus of this programme must be quality.

3.4.4 Rewarding Quality

Many companies in Australia and throughout the world have discovered that a single minded commitment to product quality pays. It pays in terms of a reduced cost of production, increased market share, increased profits and ensuring long term company survival.

Yet domestic markets for fish/seafood do not pay a premium for quality fish/seafood according to literature and industry leaders. ASTEC reported "the price received for catch, typically does not reflect the quality of the product; in the case of more popular species the product can be sold regardless of quality, and fishermen therefore have little incentive to improve their practices"[14]. Several industry leaders interviewed said there was a need for a system of standardised grading of catch quality to ensure catchers were paid a price linked to the quality of their catch.

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[14] "Casting the Net", Australian Science and Technology Council, 1988, Canberra, p 93.

The lack of any such system explains why respondents from in-home and out-of-home trade segments saw the purchase of fish and seafood "sight unseen" as risky (Sections 2.2.5 and 2.3.5). The lack of any grading of catch quality forces buyers into having to inspect the catch before purchase, usually on a market trading floor. This results in more handling of fish/seafood and delays in its distribution to the final customer.[15] It also places wholesalers in a strong bargaining position with catchers, who are simply suppliers of a commodity, and trade buyers, who can only rely upon their own judgement and the recommendations of the wholesalers when making a purchase decision.

To ensure the appropriate price signals are sent to catchers and to encourage an industry shift to quality, it is imperative for standardised quality grades to be implemented for catch. This will require the support of industry and government to be achieved.

3.4.5 Standardised Labelling

Consumers, the trade, market researchers and others, still labour under multiple non-standardised names for the same species of fish/seafood. Some examples of this are:

- sea perch or orange roughy
- perch or morwong or sea bream
- warehou or trevally.

The confusion these multiple names cause is a major factor driving consumer suspicions of species substitution.

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15 "Marketing Efficiency: Is the Fishing Industry Missing the Boat?", Perry Smith, Australian Fisheries, April 1992, pp 27 - 30 for an analysis of the present market system.

Industry use of standardised names is a must. Similarly, the use of fresh and frozen must be standardised - retailers' use of the term "chilled" is just adding to consumers' confusion over what is fresh versus frozen. Standardised labelling can be tied in with a cohesive programme to inform and educate the consumer. The purpose of such a programme is discussed in the next Section.

3.4.6 Informing and Educating the Consumer

The major thrust of a standardised labelling system linked with standard grading of fish/seafood quality is to increase consumer confidence in the integrity of fish/seafood. The full benefits to the industry of such a change programme can only be achieved if public awareness of the changes and their benefits is high. This requires the staging of a well planned promotional campaign to inform the general public. Such a campaign would, of necessity, raise consumer expectations of the fishing industry - it should not be attempted unless real and visible change (to the consumer) is occurring.

Apart from informing the public of an industry change programme, campaigns could be developed to alleviate other consumption barriers such as:

- targeted promotion of fish/seafood species that are in season and/or underutilised. Such promotions should at least inform the public of where the fish/seafood is caught/farmed, taste, texture and preparation/cooking methods. Over the medium term, these campaigns should aim at weaning the bulk of consumers off the notion that they can only purchase a limited range of "well known" fish/seafood species. In season species also represent far better value than species out of season

- informing consumers of where fish/seafood is caught/farmed to assure consumers that fish/seafood is caught in clean, unpolluted waters. All fish/seafood sold should have its origins clearly displayed

- people still have difficulty with fish/seafood preparation. If they could be confident of being given helpful hints and recipes at the place they purchase fish/seafood then this problem would not exist. However, many outlets do not offer this kind of advice and point-of-sale material such as recipe leaflets are still a rarity in contrast to the "beef shortcuts" and other promotional material available at butchers. The fishing industry must ensure retail staff have training so they can dispense preparation/cooking advice. Point of sale materials are a must in every outlet

- a medium to long term public awareness campaign aimed at improving the public perception of frozen fish/seafood quality. Retailers currently avoid this issue by selling thawed frozen fish/seafood as "chilled". Shelf life would be increased and the public would purchase a better quality product if frozen fish/seafood was sold in its frozen state. Apart from a public awareness programme, widely available, well marketed, packaged and date stamped frozen fish/seafood would go a long way towards improving attitudes to frozen product.

3.4.7 Smoothing Supply and Price: the Case for Industry Co-operation

Industries around the world are discovering the benefits of establishing long term co-operative relationships with their suppliers. Such benefits include reduced stockholding and wastage, enhanced ability to forecast, plan and make appropriate investment decisions, and lower risks of stockouts of essential supplies. These and other benefits result in improved financial performance for companies and their suppliers alike.

In contrast, the Australian fishing industry was seen by industry leaders and the literature as being characterised by adversarial relations between various sections of the industry (Section 2.1). This culture is preventing the industry from serving one of the most fundamental needs of end consumers (and the in and out-of-home trade segments serving those consumers) - reasonably steady fish/seafood prices and availability.

Processors entering contracts to purchase fish from catchers assure themselves of a constant fish supply and the catcher of a reliable outlet for their catch. Other mutually beneficial relationships should be established at all levels of the distribution chain. These relationships also encourage the development of new markets and products that require the combined expertise of people working at several levels of the distribution chain. Fisheries managers should also consider the impact of any management plan on fish/seafood price and supply.

3.4.8 Branding

Brands are developed to represent a certain set of product and/or service attributes. The use of brands allows consumers to make quicker evaluations of competing products and hence speeds their decision making. The "lean beef" and "beef short cut" campaigns of the Australian Meat and Livestock Corporation (AMLC) have been designed to develop a brand image for beef and butchers along the lines of:

- healthy
- good value
- easy preparation and cooking
- fun/friendly.

A programme of change throughout the fishing industry to a quality emphasis would represent an opportunity not to be missed to build a brand image for Australian fish and seafood. For fresh fish and seafood the brand attributes sought should centre upon addressing the major barriers to fish and seafood consumption. Likely attributes could be

- freshness
- value
- ease of preparation/cooking

- popularity with other family members
- caught (or farmed) in clean, pollution free waters.

In addition, the health benefits of fish and seafood should be highlighted. A trademark or logo identifying the product as fresh Australian fish/seafood is needed - states throughout Australia have moved to force fish/seafood retailers to identify imported fish/seafood as imported - however, are consumers to be left to assume that unlabelled fish/seafood is Australian? Better to remove any doubt and brand it Australian.

The branding of fish/seafood retail outlets to coincide with improved levels of service quality and product quality could be effectively used to raise consumer confidence in the fish/seafood they purchase. Retail outlets could be accredited with exceeding certain levels of:

- staff training and fish/seafood knowledge
- product presentation
- correct storage and handling
- fish/seafood freshness
- use of standardised labels

and so on. Those retail outlets receiving this accreditation would be entitled to use a logo or trademark to signify their high standards.

3.5 A Responsibility to Pursue Change

A world of finite resources and infinite needs is a fundamental contradiction that many individuals, companies and countries are coming to terms with in the 1990s. For the fishing industry the resource constraints are real and highly visible - finding new and better ways of gaining value from this resource is the only way the industry can grow. Indeed the industry has a moral obligation to ensure maximisation of the resources' long term value.

The National Seafood Consumption Study has shown that, in spite of a positive consumer predisposition to fish and seafood, there are many significant barriers preventing this being translated into the purchase and consumption of fish and seafood. Market enhancement options have been proposed which address these barriers to consumption with the aim of increasing the fish and seafood consumption of Australians and the value of the Australian fishing industry.

Yet a review of the findings and recommendations of the 1977 survey of fish and seafood consumption reveals many of the same barriers and recommendations as in the 1990/91 study. It is apparent that the 1977 study was not utilised effectively as a catalyst for change and little fundamental change, if any, occurred.

For the industry to assure its growth and effective resource utilisation for the benefit of all Australians, industry change is now essential. Industry leaders and government should now get down to the task.

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Appendix I

In and Out-Of-Home Study Methodology and Sample Characteristics

In and Out-of-Home Questionnaires

Two questionnaires were used in this study phase:

- 'In-Home' questionnaire
- 'Out-Of-Home' questionnaire.

The two questionnaires were complementary in terms of their coverage of fish/seafood consumption.

The 'In-Home' questionnaire was administered through personal interviews to 6,000 people who were the main food purchaser and preparer in their household. Only one person per household was interviewed. In this report these people are referred to as "respondents" along with people who answered other questionnaires. The fish and seafood consumption this questionnaire measured was:

- the consumption in-home of all members of the household and visitors to the household in the seven days immediately prior to the interview
- the out-of-home consumption of the respondents for those same seven days
- the out-of-home consumption of children, under 15 years of age when the fish/seafood had been purchased by the respondent, again over the last seven days.

Hence, the 'In-Home' questionnaire accounted for all in-home fish/seafood consumption and a part of out-of-home fish/seafood consumption. The 'Out-Of-Home' questionnaire was designed to measure the remaining out-of-home fish/seafood consumption.

Specifically in three out of ten households in which the 'In-Home' questionnaire was completed, the supplementary 'Out-Of-Home Self Completion' questionnaire was left with all other household members 15 years of age or more. This methodology was the same as that in the 1977 study. For the sake of clarity, these household members will be termed "non-grocery buyers" while the main food purchasers and preparers will be termed "grocery buyers".

The non-grocery buyers were asked to fill out the 'Out-Of-Home Self Completion' questionnaire and return it in the attached return paid envelope.

Fish and seafood consumption measured by this questionnaire was:

- the out-of-home consumption of non-grocery buyers over the seven days prior to them receiving the questionnaire

- the out-of-home consumption of children under 15 years of age when the fish/seafood had been purchased by the non-grocery buyer, over those same seven days.

In total, 2,159 'Out-Of-Home' questionnaires were placed with other household members aged 15 years or more and 507 were returned. This equates to a response rate of 23% which is in line with that predicted by academic literature of 15% to 25% for the survey methodology used.

The 6,000 'In-Home' interviews were divided equally over four quarters - 1,500 interviews conducted per quarter. This was done to capture any seasonal variation in consumption and eating patterns. By association the 'Out-Of-Home Self Completion' questionnaires were also distributed across four quarters.

The fieldwork for the In-Home Study followed the timetable below:

First Quarter	3 November	-	27 November, 1990
Second Quarter	16 February	-	17 March, 1991
Third Quarter	18 May	-	16 June, 1991
Fourth Quarter	17 August	-	15 September, 1991

Apart from collecting statistical information on fish and seafood consumption, both questionnaires were designed to collect detailed statistics on consumer attitudes to fish and seafood. Questions were asked to determine attitudes to:

- substitutes to fish and seafood by meal-occasion
- fish and seafood by meal-occasion
- retail outlets
- the purchase of fresh and frozen fish
- selection of restaurants on the basis of reputation for fish and seafood
- outlets for out-of-home fish and seafood meals
- under-utilised wild species and farmed species
- different types of fish and seafood.

Statistical information on recreational fishing was also obtained.

Weighting Procedures - In-Home and Out-Of-Home Sample

The data from the 6,000 In-Home interviews was weighted up to represent a total of 5,221,710 households in the seven capital cities and six regional areas that were surveyed.

The basis of the weighting up was household composition. This was determined during the In-Home interview as one of the categories given in the right hand column of Table 1.

Appendix I Table 1 Household Composition Categories Used in the In-Home Consumption Study and ABS* Equivalents

ABS*	In-Home Consumption Study
Lone person household	Single/living alone
Group household/related adults	Single/living with other singles - relatives/not relatives
Couple	Married/de facto, no child(ren)
Couple, dependent child(ren)	Married/de facto, dependent child(ren)
Couple and adult family members Couple, child and adult family members	Married/de facto, adult family members
Parent, dependent child(ren) Parent, dependent children and adult family members	Single parent/dependent child(ren) Single parent/adult family members

* *Australian Bureau of Statistics.*

The Australian Bureau of Statistics (ABS) 1986 Census of Population and Housing provided the base household composition information to which the 6,000 household sample was weighted up to. Table 1 shows how the household composition classifications used in the In-Home questionnaire were matched to ABS classifications. Table 2 shows the numbers actually sampled versus the numbers of households given by the ABS Census to which the sample was weighted up to.

Appendix I Table 2 In-Home Study Sample Size and Weighted Up Numbers of Households by City or Region

City or Region	In-Home Study Sample (No. of households)	ABS Census (No. of households)
Sydney	1,150	1,145,396
Regional New South Wales	570	687,246
Melbourne	1,030	960,556
Regional Victoria	360	395,679
Brisbane	520	387,872
Regional Queensland	360	473,941
Adelaide	520	350,383
Regional South Australia	150	125,605
Perth	460	342,688
Regional Western Australia	150	124,576
Canberra	330	79,314
Hobart	250	60,734
Regional Tasmania	150	88,720
Total	6,000	5,221,710

The number of people within these households total 14,571,000 to the nearest thousand. This is the figure used in calculating the *per capita* consumption of people living in households.

The information also formed the basis in the determination of the number of people (weighting factor) in the Out-Of-Home Consumption Study. The 507 non-grocery buyers who returned the 'Out-Of-Home Self Completion' questionnaire were scaled up to represent the 6,754,000 non-grocery buyers amongst the 14,571,000 (weighted) sample population.

Sample Characteristics - In-Home and Out-Of-Home Sample

Table 3 provides details of the 'In-Home' questionnaire sample quarter and 'Out-Of-Home Self Completion' questionnaire sample across all four quarters. The figures shown reflect the sample after the weighting procedure has been applied as discussed previously. Hence the figures in Table 3 relating to Region and Household Composition show little or no variation by quarter, as would be expected since these sample characteristics have been weighted to reflect those of the ABS 1986 Census of Population and Housing.

Households consisting only of adults comprised 68.7% of the sample which is up considerably on the 56% figure from the 1977 study.

Overall, 26.5% of the sample were over 60 years of age, which is considerably higher than the 20.8% in the 1977 study. The 40 - 59 year age group has remained at about 34% as in 1977. The 20 - 39 year age group has declined as a proportion of respondents from 43.3% in 1977 to 38.1% in 1990/91. These figures are consistent with ABS figures which show that the Australian population has aged over the last 15 years or so.[16]

80% of households' main food purchasers and preparers were female and 20% male.

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[16] As a proportion of the total Australian population, the over 35 year old age group has increased from 40.4% to 45.4% over the period June 1977 to June 1990, ABS Catalogue No. 3201.0.

Appendix I Table 3: In-Home/Out-Of-Home Study Sample by Quarter: Proportion of Total Sample

		In and Out-of-Home Consumption of Main Food Purchaser/Preparer					Out-of-home Consumption
		Nov 1990 (%)	Mar 1991 (%)	June 1991 (%)	Sept 1991 (%)	Total (%)	Non-grocery buyers (%)
Region	Sydney	21.9	21.9	21.9	21.9	21.9	19.0
	Regional NSW	13.2	13.2	13.2	13.2	13.2	14.0
	Melbourne	18.4	18.4	18.4	18.4	18.4	16.0
	Regional Vic	7.6	7.6	7.6	7.6	7.6	7.0
	Brisbane	7.4	7.4	7.4	7.4	7.4	7.0
	Regional Qld	9.1	9.1	9.1	9.1	9.1	7.0
	Adelaide	6.7	6.7	6.7	6.7	6.7	8.0
	Regional SA	2.4	2.4	2.4	2.4	2.4	2.0
	Perth	6.6	6.6	6.6	6.6	6.6	9.0
	Regional WA	2.4	2.4	2.4	2.4	2.4	2.0
	Canberra	1.5	1.5	1.5	1.5	1.5	3.0
	Hobart	1.2	1.2	1.2	1.2	1.2	5.0
	Regional Tas	1.7	1.7	1.7	1.7	1.7	1.0
Area	Coastal Area	83.8	83.8	86.5	84.2	84.7	87.0
	Inland Area	16.2	16.2	13.5	15.9	15.3	13.0
Respondent Sex	Male	20.3	19.4	19.3	20.7	20.0	72.0
	Female	79.7	80.6	80.7	79.3	80.0	28.0
Age Group	Under 40 years	40.5	39.7	38.3	39.6	39.5	60.0
	40 - 59 years	34.4	34.4	33.6	32.6	33.9	25.0
	Over 60 years	25.0	25.8	28.1	27.3	26.5	15.0

cont...

		In and Out-of-Home Consumption of Main Food Purchaser/Preparer					Out-of-home Consumption
		Nov 1990 (%)	Mar 1991 (%)	June 1991 (%)	Sept 1991 (%)	Total (%)	Non-grocery buyers (%)
Household Composition	Single/living alone	18.8	18.8	18.8	18.8	18.8	0.0
	Single with other singles	9.0	9.0	9.0	9.0	9.0	6.0
	Married/de facto no children	23.3	23.3	23.3	23.3	23.3	25.0
	Married/de facto with children	27.7	27.7	27.7	27.7	27.7	49.0
	Married/de facto with adult family members	15.7	15.7	15.7	15.7	15.7	13.0
	Single parent with children	3.3	3.6	3.9	3.9	3.6	3.0
	Single parent with adult family members	2.2	2.0	1.7	1.7	1.9	3.0
Socio-Economic Group	Upper/upper middle	18.4	15.8	15.9	17.4	16.9	24.0
	Middle	18.6	18.9	20.0	16.8	18.6	26.0
	Lower middle	19.3	16.9	16.8	16.6	17.6	20.0
	Lower	20.2	18.9	17.1	17.4	18.3	26.0
	Retired white collar	6.8	9.0	10.7	10.5	9.1	1.0
	Retired blue collar	7.8	11.7	10.8	12.1	10.7	0.0
	Not determined	8.9	8.8	8.7	9.1	8.9	3.0
Household Income	Less than $15,000	18.6	20.2	19.5	19.9	19.5	11.0
	$15,000 - $25,000	12.7	15.5	14.2	13.4	13.9	14.0
	$25,001 - $40,000	20.7	20.2	19.6	22.4	20.7	27.0
	$40,001 - $60,000	14.6	12.4	14.8	14.2	14.2	19.0
	More than $60,000	10.4	9.9	9.5	9.6	9.9	13.0
	Refused/don't know	22.9	21.7	22.5	20.5	21.5	16.0

Appendix II

Retail and Catering Study and Wholesale and Institutional Study Methodology and Sample

Within the retail and catering segment, five categories of businesses were identified, each requiring slight questionnaire variations:

- retail (supermarkets, food stores and convenience stores)
- fishmongers (selling mainly "fresh" product)
- fish and chip/takeaway outlets (mainly selling cooked product)
- restaurants/clubs/hotels/motels (selling cooked product)
- caterers (contract caterers, function caterers and in-house catering by organisation).

Questionnaires were also developed for the wholesale and institutional (hospitals/homes, welfare homes, schools, prisons and defence forces) segments. The methodology employed for the retail and catering and wholesale and institutional studies was very similar, although slight modifications were required for the seven versions of the questionnaire. Therefore, these two studies were considered as one in terms of sample design, interviewing procedures, fieldwork procedures and data processing and are discussed herein as such.

Extensive pilot testing of all seven questionnaires was conducted using over 200 personal interviews. On the basis of the pilot test results, questionnaires were modified prior to being adopted for the main surveys. The coverage of the seven questionnaires was set at fresh and frozen fish and seafood. Canned and frozen prepackaged fish and seafood movements were sourced from warehouse withdrawals data purchased from market research firm AC Nielsen Pty Ltd.

In total, 1,250 personal interviews (850 retail and catering and 400 wholesaler and institutional) were conducted with the range of distribution channels for fish and seafood. Quotas were set on the total number of interviews to be achieved within each segment and State based on the relative importance of the segment and State to the fishing industry, while also ensuring that the total sample for each segment was large enough for reliable conclusions to be drawn. The sample distribution was determined by members of the Steering Committee. In addition, the 43 in-depth interviews planned for the pilot study were re-allocated into the main study through the inclusion of "repeat interviews" in Wave 2. The necessity for conducting an interview with the same respondents in Wave 1 and 2 is outlined fully below.

Interviews were conducted with the person with the greater knowledge relating to fish and seafood purchased. Depending on the type of organisation this may have been the manager or store owner, food buyer, or head chef.

Tables 1 through 3 reflect the number of interviews completed in this research phase. Interviews were evenly split in Waves 1 and 2 with fieldwork being conducted between 15 April and 9 July (to complete a few of the large wholesaler interviews) and 9 September and 4 October, 1991.

Appendix II Table 1 Retail and Catering Sample by Region

	Total	Syd	Melb	Bris	Adel	Per	Hob
Retail (supermarkets/ convenience stores)	202	70	52	32	20	16	12
Fishmongers	200	69	51	32	20	16	12
Fish and chip/ takeaway outlets	149	51	38	24	15	12	9
Restaurants/clubs/ hotels/motels	202	75	47	31	20	18	11
Caterers	101	35	26	16	10	8	6
Sub Total	854	300	214	135	85	70	50

Appendix II Table 2 Institutional Sample by Region

	Total	Syd	Melb	Bris	Adel	Per	Hob
Hospitals/nursing homes	169	56	48	28	20	17	-
Welfare/charitable homes	35	10	14	2	6	3	-
Residential school/ college/prison/ defence	48	10	14	10	4	10	-
Sub Total	252	76	76	40	30	30	-

Appendix II Table 3 Wholesale Sample by Region

	Total	Syd	Melb	Bris	Adel	Per	Hob
Main grocery wholesalers	29	7	5	8	3	6	-
Large fish and seafood wholesalers(1)	22	3	4	6	5	4	-
Small fish and seafood wholesalers	119	37	42	15	13	12	-
Sub Total	422	123	127	69	51	52	-

(1) including interviews conducted in both Waves 1 and 2. See explanation ahead.

Sample Design

Prior to the final decided distribution of the 1,250 interviews, population figures for each segment, and sub-segments within the seven nominated segments were collected. This information enabled PA/YCHW/Ruello to allocate interviews on a proportional basis within each segment to ensure the collection of reliable and valid information for each segment.

Specific types of organisations were identified for inclusion within each of the seven nominated segments as detailed below:

Retail

- supermarkets (chain and independent)
- food stores, and
- convenience stores.

Fishmongers

- a mix of retail outlets and those in a fish market environment were included.

Fish and chip/take-away outlets

- a mix of traditional fish and chip shops and those with a wider range of take-away food were included.

Restaurants/club/hotel/motel

- restaurants - BYO and licensed restaurants were included, some specialising in fish and seafood and others not
- hotel - serving bistro or counter meals
- motel - providing accommodation for guests and meals are served in a restaurant, and
- club - where a meal service is provided for members and guests.

Caterers

- contract caterers on another business' premises
- caterers who prepare food on their own premises and then deliver to the client
- in-house catering by employees of a business to other staff members, and
- catering of food where clients come to the premises (function caterers).

Institutional (defined as having full-time residents)

- hospitals and homes
- welfare and charitable homes
- residential schools and colleges
- prisons, and
- defence installations.

Wholesale

- major grocery wholesalers (eg Davids, Coles)[17]
- large fish and seafood wholesalers, and
- small fish and seafood wholesalers.

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[17] to minimise sampling error, particularly large fish and seafood operators were interviewed in both waves of the study. A covering letter sent to these respondents on FIRDC letterhead and signed by Bernard Bowan, Chairman of the FIRDC, explained the objectives of the study and emphasised the importance of their response in the first and second waves of the study.

Prior the the personal interview, respondents to the institutional and wholesaler studies were faxed an information recording sheet regarding the volume of fish and seafood purchased by that business. The purpose of this approach was to give the respondent sufficient time so as to collect as accurate information as possible.

Weighting Procedures - Institutional Sample

To determine the total *per capita* consumption of fish and seafood, not only was the data in relation to in-home and out-of-home consumption weighted to the population (of households), but it was also critical to weight consumption data for those residents in non-private dwellings (institutions). The weighting units used were as defined in the 1979/1980 survey funded by the Fishing Industry Research Trust Account[18] (see Table 4).

Appendix II Table 4 Weighting Factors Used for Each Institution Type

Type of Institution	Weighting Unit
Hospitals/Nursing Home	Beds
Residential College/Boarding School	Full time residents
Welfare and Charitable Home	Full time residents
Prison/Youth Centre	Full time residents
Defence	Regulars

The first step in the weighting procedure was to convert the purchased weight of fish and seafood to edible weight.

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18 "Institution 1 and Catering Markets for Fish and Fish Products: Australia", PA Consulting Services, Melbourne, Australia, for the Fishing Industry Research Committee, April 1981.

The resultant edible weight for the institution was then adjusted to exclude the of meals prepared for people who were not full time residents of the institution - for example staff members who lived off the premises and whose consumption would have been included in estimates of out-of-home consumption derived from the other questionnaires.

The edible weight for the institutions' full time residents was totalled with edible weights from like institutions in each State and then divided by the appropriate weighting unit to give a consumption per weighting unit. For example, for hospitals/nursing homes sampled in New South Wales, the edible weight consumed by full time residents per annum was divided by the total number of beds in the sample to provide a kg per bed per annum figure. This figure was then multiplied by the total "population" of beds in New South Wales. This procedure was followed for each type of institution in each State to give a weighted edible weight consumption figure.

"Population" figures for each weighting factor were obtained from appropriate government departments and the ABS 1986 Census of Population and Housing.

Appendix III

Differences in 1990/91 Versus 1977 Study Methodologies

The 1977 study conducted by PA Consulting Services Pty Ltd on behalf of the Department of Primary Industry was titled "The Consumer Survey of Fish and Seafood Consumption in Australia".

In the study there were no surveys of the retail, catering, institutional and wholesaler industry segments. The only survey run was the equivalent of the In and Out-of-Home Consumption Survey (or Phase 2A in Figure 1.1, Section 1). Hence the 1990/91 study is far more comprehensive than that conducted in 1977.

The methodology used in the 1977 study was highly effective and was carried over into the In and Out-of-Home Survey in 1990/91 mostly unchanged to allow detailed comparison of 1977 versus 1990/91 results. However, some changes and improvements were considered necessary in order to accommodate significant changes in consumption behaviour evident both overseas and in Australia. Most notable has been the dramatic increase in consumption of meals out-of-home.

Specific differences between the 1977 and 1990/91 In and Out-of-Home Consumption studies are:

- the 1990/91 study included all forms of fish and seafood including where fish and seafood was used as an ingredient in other dishes. In 1977 forms such as fish paste, fish soup, seafood pizza, spaghetti marinara and in fried rice were excluded

- the 1977 study recorded fish/seafood consumption as falling into one of three categories: in-home consumption, out-of-home consumption and take-away meals (purchased from fish and chip shops and general take-away outlets). No information was recorded as to whether take-away meals were actually eaten in-home or out-of-home. The last decade has seen a blurring of the distinction between the take-away outlets and restaurants with many take-away chains adding on restaurant style facilities. Hence the 1990/91 study recorded fish/seafood consumption in two main categories based upon where it is actually consumed; in-home or out-of-home

- the 1977 study covered fish/seafood consumption by people living in households located in the seven capital cities except Darwin. The 1990/91 study covered fish/seafood consumption by people living in households **and** people living in institutions. In 1990/91 the population living in regional areas outside the capitals (apart from the Northern Territory) were also covered.

The above mentioned differences in methodologies must be considered when comparing results of the two studies.

Appendix IV

Perceptual Maps

Perceptual maps are used to present the results of surveys in which respondents are asked whether any of a given set of products have any of a given set of attributes.

In the retailers questionnaire, the set of products were the protein sources listed below:

- meat
- pork
- poultry
- fresh or frozen fish
- prepared fish products
- canned fish and seafood

and some of the set of 22 attributes were:

- provides a good margin to the retailer
- well supported by advertising
- is often too expensive for the retailer to buy
- is likely to go off in store and have to be thrown out.

Respondents were asked to say when a particular attribute was possessed by one or more of the protein sources listed.

A perceptual map is simply a technique to visually present key results from this type of questioning.

A few points about perceptual maps:

- both protein sources (ie products) and attributes are "mapped" using statistical techniques onto a single chart. The dots alongside the protein sources and attributes represent their position on the "map"

- the closer together the protein sources are on the map, the greater their perceived similarity

- the closer a particular attribute is to a particular protein source, the greater the likelihood that retailers believe the protein source possesses that attribute.