

Silver Perch Market Assessment

Report Prepared for

NSW Fisheries

NSW Aquaculture Management & Research Advisory Committee

Queensland Department of Primary Industries

By

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26 October 1999

FOREWORD & DISCLAIMER

This report has been prepared for NSW Fisheries, the NSW Aquaculture Management & Research Advisory Committee and the Queensland Department of Primary Industries. The report was prepared within a limited timeframe and budget and addresses the terms of reference but it is not a general marketing study on silver perch or other farmed species.

It is based on information gathered from published reports, primary desk research and by means of interviews with persons believed to be reputable and reliable.

I believe the report to be accurate but it contains evaluations of future events and readers should make their own inquiries to satisfy themselves on all matters.

Nick V Ruello, Principal, Ruello & Associates Pty Ltd

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EXECUTIVE SUMMARY

The production levels and likely supply of silver perch over the next five years were evaluated from discussion with fish farmers and government research agencies and a review of the history of the silver perch industry and Australian aquaculture in general.

The prospective demand, prices and product specifications were evaluated by the consultant after taking account of information gained from fish distributors/wholesalers, chefs and restaurateurs and market data on silver perch and other fish.

The projected demand for silver perch in 1999/2000 of approximately 460 tonnes, at farm gate prices of about \$8.50 per kilogram in the mainstream market and \$9.50 for the smaller market segment in selected restaurants, is remarkably close to the projected supply level of approximately 480 tonnes.

In five years time projected supply may exceed projected demand of about 776 tonnes at the \$8.00/9.00 per kilogram farm gate price levels (if the resources invested in promotion and market development remain at the levels of recent years). However, the industry will probably have grown substantially and reached economies of scale whereby the farmers can nevertheless sell their product at profitable prices even if there is some oversupply.

It should be noted however that it has been difficult to precisely forecast silver perch supply and demand at this time because:

1. Most enterprises are not well funded and rely on this year's profits to fund the next year's operations, and so on, while several others are planning a substantial investment.
2. There is a new food diet available which is set to lower production costs.
3. A group of silver perch farmers has recently undertaken a market promotion exercise which they believe will lead to a quantum leap in demand.
4. Several export market and value adding (smoked fish) opportunities likely to benefit the industry over the next five years are currently confidential and not accountable now.

Silver perch has many fine attributes and has been gaining greater awareness and popularity. The data overall indicate that the market outlook over the next five years is very positive.

If the production costs decrease and farm gate prices fall to \$6.00 per kilogram for whole fish in the medium to long term, as is widely anticipated, the demand will expand enormously because the fish can then be retailed by fishmongers and the supermarkets at a \$9.99 per kilo price point and sold as a boneless skin on fillet for just under \$20 per kilo. At these price levels, or slightly higher, silver perch has a tremendous future domestically and in overseas markets.

Even at these low price levels however silver perch will not be able to replace imports of most frozen fish fillets, other than New Zealand orange roughy which is currently the most expensive imported fillet. Silver perch would, however, be price competitive with at least several of the popular fresh wild marine fish fillets because of anticipated price rises in wild marine fish.

INTRODUCTION

Silver perch is a native freshwater species with white flesh and few bones and, according to research undertaken by NSW Fisheries since the 1970s, has the potential to form the basis of a significant industry, in NSW in particular. Although commercial production of silver perch only has a history going back ten years or so there are more than 200 licensed operations in NSW and Queensland alone but only about 50 actually sold fish in 1998/99 with a total volume of approximately 320 tonnes.

Production and trade in silver perch are essentially contained within the three eastern states as there is negligible aquaculture or marketing of silver perch in the other states, and export volumes to date have been very small.

Silver perch is not widely known in the mainstream fish/seafood market. The fish has however been well received by Asian consumers in the three eastern capital cities (buying the fish from live tanks in restaurants and retail outlets) and there has been excellent feedback on the fish from a range of non Asian restaurants, around NSW in particular.

The silver perch industry has become very optimistic about the fish's market potential following substantial market diversification in the past year and a promotional exercise by a group of growers at the 1999 Fine Food Show at Darling Harbour in September this year.

NSW Fisheries, NSW Aquaculture Management and Research Advisory Committee and the Queensland Department of Primary Industries are constantly receiving requests for research and development assistance from the silver perch industry, as well as most of the other aquaculture commodity groups. They therefore requested a two part study on the current and prospective market for silver perch in Australia to provide a foundation for future research and management initiatives for the Australian silver perch industry.

The marketing of silver perch was investigated by Ruello & Associates in 1994 as part of an aquaculture initiative of the NSW Office of Labour Market Adjustment funded by the Federal Department of Employment Education and Training (NOFARIC 1995).

The current project was undertaken mostly from August 20 to 14 September 1999 (Part A, Interim Report) and the Part B work completed by mid October. The interim report was submitted on 14 September and this final draft report covers all of the interim report material plus an account of marketing costs, the likely impact of other farmed fish on silver perch markets and the export potential of silver perch.

A parallel study on the economics of silver perch aquaculture was undertaken by Mr W Johnson of the Queensland Department of Primary Industries but little information was available for the finalization of the present report.

This final draft report starts with an overview of the industry today, then describes the findings on various supply and marketing issues which impact on demand and prices, and concludes with the forecasts of the current and prospective demand and prices in Australia and overseas.

1.1 Scope of the Study. Terms of Reference

Part A

1. The current and projected demand (5 years) for silver perch in the domestic market for:
 - Live
 - Chilled whole and gutted
 - Chilled processed (fillets)
 - Value added (eg smoked)
 (taking into consideration the impact of increased silver perch production from all States)

2. The current and projected (5 years) specifications for silver perch in the domestic market for:
 - Live
 - Chilled whole and gutted
 - Chilled processed (fillets)
 - Value added (eg smoked)

3. The current and projected (5 years) prices for silver perch in the domestic market
 - Live
 - Chilled whole and gutted
 - Chilled processed (fillets)
 - Value added (eg smoked)

Part B.

4. The current and projected marketing channels for silver perch
5. The current and projected prices and marketing costs at different market levels
6. The projected demand and price of silver perch in the overseas market
7. The current and projected impact of other fish species on the demand and price of silver perch in particular farmed barramundi, farmed and wild caught snapper and farmed and wild caught golden perch
8. The potential for silver perch to replace imports of frozen fillets

2. METHODOLOGY

All desk research and interviews with farmers, researchers and fish wholesalers/distributors were conducted from August 20 to September 14, 1999 and were mostly carried out over the telephone. A second round of interviews were conducted with some persons in October as part of the Part B study.

Interviews were conducted with 17 farmers around the country and a dozen fish processors, exporters, retailers and wholesaler/distributors and a smaller number of chefs and food industry personnel in the eastern states.

Every attempt has been made to provide the most precise information available, however, because of the small number of farmers and wholesalers/distributors involved in most activities (sometimes only one), and the current rivalry between various enterprises, some data has been aggregated or masked to protect commercially sensitive information.

5. SILVER PERCH INDUSTRY OVERVIEW

There are approximately 70 licensed operations in Queensland and 140 in NSW, the two predominant states; production of silver perch in Victoria and Western Australia has been negligible. The farms are characterized by 4-8 ponds of about 0.1 to 0.25 hectares in size but there are about ten farms, mostly in Queensland, with much larger areas of growout ponds. There are several enterprises utilising recirculating filtered water technology to grow fish in tanks but their production to date remains negligible.

Thus, although the silver perch industry is characterized by a large number of licensed operations only a small minority is growing substantial volumes of fish and hence aggregate production has been low.

Small family companies and partnerships with limited funds predominate in the industry and there is only one substantial company, in NSW, whose primary function is the growing and marketing of silver perch.

The majority of growers are not reliant on silver perch aquaculture but on various agriculture or horticultural activities (or a mix of fish species) as the main source of income. They are mostly new to aquaculture and have entered the industry with limited funds and little expertise in aquatic animal husbandry or fish handling and marketing. Hence fish production and industry growth has been somewhat slow and certainly slower than most of these operators expected.

NSW Fisheries has been in the forefront with research and development support for the emerging silver perch industry principally through its research stations in Grafton and Port Stephens. At one time (1997/98) NSW Fisheries also had an extension officer available to assist silver perch growers. In Queensland, the Department of Primary Industries has a number of regional extension officers whose duties include the provision of advice and other assistance to fish and shellfish farmers.

The Silver Perch Growers Association has been instrumental in getting the growers around Australian to share information and generally foster the development of a unified profitable industry, and in 1998 undertook a generic promotion of silver perch to the restaurant and catering trade at the Catering Trade Fair in Sydney's Darling Harbour.

Marketing has until the past year or so been undertaken by individual farmers dealing with live fish specialist distributors but more recently there have been some joint marketing initiatives by several groups of farmers working under various arrangements or informal agreements.

A NSW group is now operating as Australian Fresh Fish company while another group centered in the Gloucester region of NSW operates as a cooperative and share a small processing facility. One NSW fish farming company has some of its fish grown under contract on other farms and also undertakes the sale of fish from independent growers.

Live fish is the principal product of the silver perch aquaculture industry and accounts for about 75% of production according to industry interviews, chilled whole fish represents about 20% of production and Sydney remains the major market for both of these products.

Other products such as gilled and gutted fish or fillets only represent a tiny part of the industry's output as detailed in the following sections. Sales outside NSW and export markets represent about a third of national production.

4. PRODUCTION AND SUPPLY

NSW production has dominated the silver perch industry by virtue of the larger output from the NSW farms (Tables 1 and 2) and the proximity of farmers to Sydney, the major market for silver perch and most other fish and seafoods. Queensland ranks second and the production from the other states is insignificant at this time.

Table 1. Silver perch production statistics (from NSW Fisheries)

Year	94/95	95/96	96/97	97/98
Production (tonnes) and farm gate price \$/kg	17 @ 9.74	29 @9.40	81@8.09	134 @8.80
No. of producing farms	24	30	31	47

Industry sources reported that these official statistics underestimate both the volume and value of production and that 1998/9 production was close to 200 tonnes with an average farm gate value of about \$9.50, with about 70% of the volume sold in the live form. Underreporting is seen by NSW Fisheries as detrimental to the allocation of management and research funds from government to the silver perch industry.

Table 2. shows the production of silver perch from Queensland over the past five years. Live fish accounts for about 90% of this output. This is the data provided in annual returns voluntarily submitted by some farmers to the Queensland Department of Primary Industries (Lobegeiger, 1999).

Table 2. Queensland production volumes and number of producing farms.

Year	94/95	95/96	96/97	97/98
Production (tonnes)	34.4	20.7	33.7	27.5
No. of producing farms	4	13	12	16

The government-industry estimate for 1998/9, quoted by Lobegeiger, was 63 tonnes. The industry estimate for 1997/8 was about 50 tonnes and 80 tonnes for 1998/99. So as with NSW, the departmental statistics are almost certainly underestimates of actual production volumes.

Table 3. summarises the sales data provided in annual returns voluntarily submitted by some farmers to the Queensland Department of Primary Industries. According to the annual reports (Lobegeiger 1999) most of the 1997/98 Queensland production (88%) was sold in Queensland in the live form at an average price of approximately \$10 per kilogram. The remaining 12% was sold interstate according to the report, and farmers advise that Sydney was the main interstate destination and Melbourne the other significant market.

More recent information suggests that interstate sales, mostly to Sydney, may have been as high as 40% in 1998 (W. Lee personal communication).

Table 3. Queensland silver perch marketing statistics (Source: Lobegeiger 1999)

Production (kg) and farm gate value \$/kg	Live fish	Gilled and gutted	Whole
1995/96	15,086 @ 9.77	345 @ 10.00	5,227 @ 8.09
1996/97	23,499 @ 10.64	0	9,142 @ 5.92
1997/98	22,023 @ 9.98	937 @ 7.38	4,432 @ 7.36

Interviews with farmers suggest that about 80% of the 1997/8 NSW production was sold in the live form, principally in Sydney, and a small volume in Melbourne, for an average farm gate price of approximately \$9.50 per kilogram (\$8.80 according to NSW Fisheries unpublished statistical data on the industry).

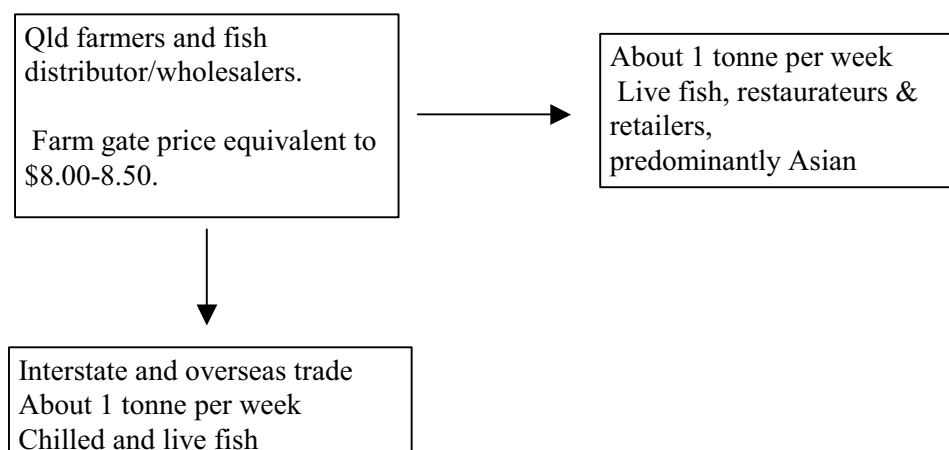
Earlier this year price levels in the silver perch market in Sydney, Brisbane and Melbourne fell by about one dollar per kilogram and the production value statistics from all areas are bound to be lower than those for the previous year. This decline in average price is reported by farmers and fish merchants alike to be due to widespread price cutting as several silver perch distributor/wholesalers are competing strongly for market share, in Sydney in particular.

4.1 Queensland Marketing Channels

The figure below demonstrates the current main trade flow of silver perch from farmers to markets within and outside of Queensland.

All of the sellers in this trade sell fish interstate and one also reported a small volume of exports. A tank is also maintained at the Raptis Colmslie Fish Market for live fish sale, to retailers mainly. Most farmers sell direct to restaurateurs, retailers and market intermediaries such as wholesaler/distributors (with a longer marketing chain to the consumers). A minority are not engaged in marketing fish themselves and just sell at the farm gate.

Figure 1. Principal Queensland marketing channels (August 1999).



Projected Marketing Channels

We do not anticipate much change from the above in terms of main trade flows in the next few years. However it is likely that in the long term as silver perch prices fall a little from current levels, supermarkets will buy fresh fish, from the farmers direct without any intermediaries.

Another likely development is some form of direct electronic trading via internet from the farmers to consumer or various market intermediaries in Australia or overseas.

4.2 NSW Marketing Channels

NSW Farmers have a greater number of outlets for their produce than their Queensland colleagues. They too rely heavily on the consumers of live silver perch sold by Asian restaurateurs or fish retailers, even though they have developed markets for chilled fish and fillets. Today the bulk of this trade is in Sydney via live fish distributors/wholesalers but a few farmers sell and deliver fish themselves.

The second most important product market for NSW producers is that for chilled whole fish in Sydney, sold by fish retailers serving a predominantly Asian consumer. The bulk of this distribution is undertaken by market intermediaries. Occasionally, one or two hundred kilograms lots of chilled fish are sold at the Sydney Fish Market auction or by a wholesaler inside the Pyrmont market site.

Both of these Asian market segments are widely seen as near saturated, and only capable of growth of about 20-30% over the next few years.

By contrast the non Asian retail trade is relatively small, more price sensitive, and capable of substantial growth in volume with market promotion and/or lower prices. This market segment is currently constrained by poor trade and consumer awareness of silver perch and price.

The success within the Asian community has positioned silver perch in the mind of many traditional fishmongers as a fish pleasing to the Asian palate alone and made those fishmongers without a significant Asian clientele reluctant to stock it.

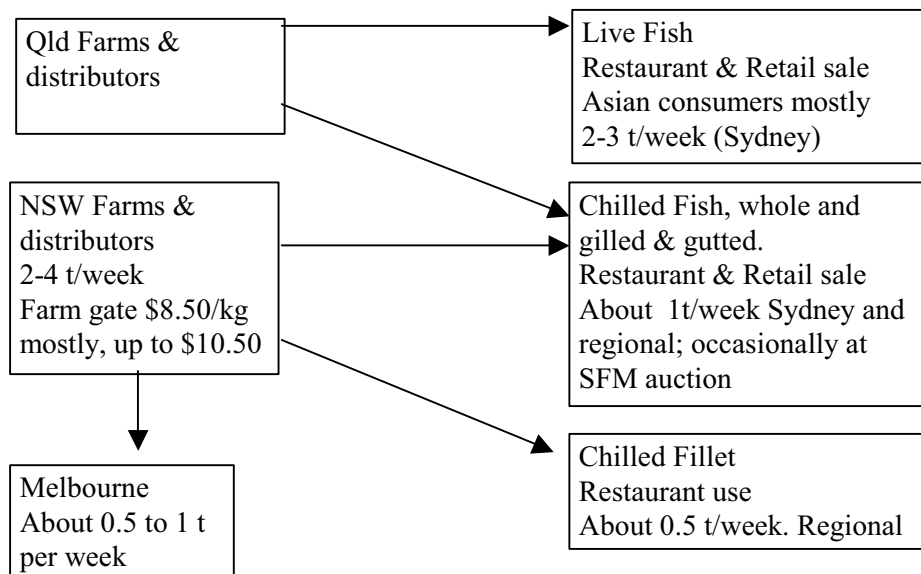
Another small but faster growing market segment for the chilled fish and fillets has developed in the past two years in the mainstream or non-Asian community principally in restaurants and hotels in regional areas near the farms and in Sydney. This distribution is mostly undertaken by farmer groups without any intermediaries and is potentially a more lucrative market segment for the farmers as it is capable of paying a higher price than wholesalers or retailers are currently prepared to.

Thus for farmers there is a two tiered market for chilled silver perch one with the restaurant trade and one for retail sale in the mainstream fish trade.

Melbourne is also a market destination for NSW grown fish, predominantly as live or chilled fish for consumption by the Asian community, from retail outlets or restaurants.

Figure 2 on the next page, summarises the common marketing channels for NSW fish. As in Queensland, fish can go direct to restaurateurs and retailers or via intermediaries such as wholesaler/distributors.

Figure 2. Common marketing channels for silver perch in NSW



Projected Marketing Channels

We do not anticipate much change from the above in terms of main trade flows in the next few years. However it is likely that in the long term as silver perch prices fall a little from current levels, supermarkets will buy fresh fish from farmers direct, without any intermediaries.

A likely significant development over the next couple of years is some horizontal and vertical integration in the silver perch industry as groups of farmers work together in growing/processing/marketing companies which encompass silver perch and other species in NSW.

Another likely development is some form of direct electronic trading via internet from the farmers to consumer or various market intermediaries in Australia or overseas.

4.3 Other States

Victoria and Western Australia have only a few aquaculturists interested in growing silver perch, mostly along with other species, but production volumes to date have been insignificant and likely to remain small over the next five years. In Western Australia the fish is grown along with marron in a polyculture arrangement.

Production of silver perch in these States is destined for local sale in the live form, or exported (from Western Australia), according to industry sources in these States. Western Australian fish in particular is unlikely to be marketed in the eastern States given the high transport costs to such distant markets and the competition from NSW fish.

Melbourne has a small trade in silver perch, a total of about 0.5 to 1 tonne per week from NSW and Queensland farms, principally live or chilled whole fish for the Asian community.

4.4 Production Costs

Most farmers had only a limited understanding or recall of the cost of production of fish. Few farmers were able to quote cost of production taking account of all costs including depreciation, the remainder did not have much idea of costs other than variable inputs such as fingerlings, food and electricity.

The quoted costs of production of silver perch were of course highly variable because of the great variance in farm size and expertise in the various companies and the different understanding of production costs. The figures quoted by farmers ranged from \$3.50 - \$8.50 per kilogram.

The lowest figures came from the larger operators in Queensland and did not include depreciation costs while the highest figures were reported by small scale producers in NSW who had taken account of depreciation.

Despite this lack of precision on costs many farmers anticipated production costs falling to \$5.00 per kilogram or lower within five years.

Mr. W. Johnson of the Queensland Department of Primary Industries is computer modeling the costs of farming silver perch. Using this model, Mr B Rhoades estimated that a 70 tonne per annum farm could produce and profitably market chilled fish in Sydney at a price of \$5.50 per kilogram if land costs were ignored.

From the information available from growers and other sources we have selected \$6.00-7.00 as the current production costs for a nominal 20 tonne per annum operation; \$6.00 for the more efficient or more northerly operation with a longer growing season and \$7.00 per kilogram for the less productive farm or those in a cooler location where there is a short growing season and fish are about a year or more in age when marketed.

4.5. Production Forecasts

Table 4 shows an *industry estimate* as well as the consultant's estimates of likely production for the coming year 1999/2000 and five years forward (2003/04). The industry estimate represents the aggregate of the estimates offered by the individual farmers interviewed plus an additional 20% for the combined output of the remaining (mostly smaller) operations around the nation.

Table 4. Forecast national silver perch production volumes

Annual production volume (tonnes)	Industry estimates	Consultant's estimates
1998/9	320	320
1999/2000	575	480
2003/04	1875	960

Australian aquaculture history, in particular that of the silver perch industry in the four years since the Ruello & Associates marketing study (NOFARIC 1995), indicates that the farmer's estimates of production growth are very optimistic.

We believe a 50% increase on last year's volume is a more likely outcome for 1999/2000 and a 100% increase is then possible over the next four years. Both sets of estimates in Table 4 will probably prove to be optimistic.

Patrick Hone of the Fisheries R & D Corporation recently estimated that Australian aquaculture has grown at approximately 15% per annum, or a doubling of volume, over the past five years. (Aquaculture. Towards 2000 Conference, Canberra, September 1999). A five year period for production doubling would result in an output of 640 tonnes in 2003/4.

The silver perch industry may be able to achieve a faster growth rate than this average five year doubling of output because it is on the verge of benefiting from substantial capital investment, improved/cheaper diets, other research and developments and recent promotional work.

5. FACTORS INFLUENCING THE SILVER PERCH MARKET

The marketing of fish is influenced by many factors ranging from the global economic situation, world seafood trade to more specific factors relating to a particular product or market segment. Consequently, we have focussed the following discussion on the more pertinent and immediate issues affecting silver perch in Australia today and in the foreseeable future of about five years; the interaction with and the impact of other species on the markets for silver perch are discussed at length in Section 8.

5.1 Supply and price levels and market information

The supply/price of silver perch is probably the main factor affecting the farm gate price. Closely related to this is the quality and quantity of market information available to farmers in assessing the best marketing channel and an appropriate price for their produce when selling to wholesalers, retailers or restaurateurs.

The farmer's difficulty in marketing is commonly compounded by a limited understanding of the complexity of fish marketing and the dynamics of the market for fresh fish in particular. Silver perch is just one of many fish and seafood products that fish merchants or restaurateurs may sell and most farmers are not well informed of the market supply and price situation for silver perch, let alone the other species that are alternatives for the consumers.

Table 5 below summarises the prices of fish which are commonly available in Sydney and can impact on the market success of silver perch, directly or indirectly. The interaction with key species are explored in Section 8.

Table 5. Price levels of silver perch and selected fish species (Sydney 1998/9)

Fish Species	Approximate average wholesale or auction price 1998/9 \$/kg
Cod Murray gilled and gutted wild	19.70
Salmon Atlantic farmed gilled and gutted	13.50
Perch golden gilled and gutted	13.35
Barramundi whole farmed	10.50
Barramundi wild	10.00
Tuna yellowfin wild gilled and gutted	9.30
Snapper plate size gilled and gutted, wild	9.00
Perch silver whole farmed	9.00
Swordfish head off gutted	8.65
Bream silver whole	8.00
Blue eye head off gutted	7.05
Trout rainbow gilled and gutted farmed	5.75

It is evident from the above table that some farmers are seeking prices well above those achieved by better known, well regarded fish. The current price levels coupled with the low consumer awareness of

the fish are principally responsible for the absence of silver perch from most fishmonger is window, and the supermarkets, despite the fish's many fine characteristics (outlined in Section 8).

The importance of fish price becomes more magnified when a fillet is produced because the typical 50+% waste incurred doubles the price difference between silver perch and any cheaper (or dearer) fish.

Some farmers hold onto fish for many months waiting for the price to improve or rise to a level they find acceptable; other farmers do not understand that fish wholesalers are unlikely to pay the same prices as the farmers receive from a direct sale to restaurants. There is a parallel here with farmers not understanding the full costs of production. Those selling fish directly to restaurants are not always accounting for the real cost of distribution to restaurants and hence overestimating the profit from such direct sales.

This practice of holding onto stock until market conditions improve may work with cattle or sheep but it would rarely prove to be profitable with a fish species that needs to be fed every day.

This paucity of knowledge has proven costly because it mostly deprives the farmer of cash flow and reduces their capability of quickly restocking ponds and generating further income from their capital and labour. Farmers holding onto their fish for a second year are also falling behind their colleagues in terms of average production costs/profits and competitive position.

There is also a loss in fish quality in some situations, according to fish buyers, where the fish is two years old and has inferior eating qualities.

Although some farmers are gaining top prices for silver perch by selling direct to more expensive restaurants without any market intermediaries, this is a limited market because of the small number of "white tablecloth" restaurants and the small portions common in "fine dining". They also are perhaps the most transient of customers as they are forever seeking new products and regularly changing their menu.

At the same time other farmers are undoubtedly selling fish for less than the common selling price, regarded as fair and profitable by many, because of a lack of market information and a pressing need for cash flow, but nevertheless undermining the market for the more informed or market wise farmers.

5.2 Fish Quality

Earthy taints in the fish flesh have been the critical quality parameter for the marketing of silver perch. In 1994, most farmers acknowledged that the purging of undesirable taints was a problematic job. This year most farmers reported that they experienced little trouble with earthy taints in *their* fish but that they were aware of *other farmers* who were not adequately purging fish.

Trade interviews with fishmongers and restaurateurs reveals that earthy taints are still a problem on occasions, apparently because farmers rely on purging times rather than routinely testing the results after purging (ie actually testing the fish to ascertain that the product is in fact free of detectable taints).

Another quality parameter of growing importance, but receiving insufficient attention is the fish shape and belly cavity fat content. Some fish merchants and restaurateurs have reported that the larger fish often have very large fat deposits inside the belly cavity and this significantly reduces the percentage of edible flesh from the weight purchased. The percentage of edible flesh is of paramount importance to anyone wanting to commercially produce fillets from the fish or sell a gilled and gutted product.

With live fish vitality and appearance are important. Wholesalers need to give their restaurant customers at least one full days warranty on the live fish therefore the wholesaler requires fish capable of remaining alive and healthy for about a week after pick up at the farm gate. This is difficult to achieve when there is scale damage and hemorrhaging. This can become a major problem given some consumers' concerns about animal welfare

Another area warranting industry wide attention is the “dumping” of road death fish (from the live fish trade) or other inferior grade product onto the Sydney auction market. This poor quality fish affects the image of the fish species and works to the detriment of the farmer selling good quality fish in this marketing channel.

5.3 Size grades and grading

The current trade in silver perch falls into four product groups, as follows:

1. Large whole fish for the Asian “shared plate” dining, mostly sold live. Ranging from 500 to 1000 grams.
2. Chilled whole fish for non Asian cuisine; sold mostly to retailers. Ranging from 400-1000g.
3. Chilled plate size fish “for one”, for western or eastern cuisine; mostly sold whole, or some gilled and gutted for western restaurants. Ranging from about 350-500 gram.
4. Fillets, mostly for western style restaurants. 100-200 grams, from fish 400 to 800 gram.

The larger fish (700 gram+) are usually in great demand because of short supply and commonly fetch a price premium of about 50-100 cents a kilogram over the smaller fish.

6. CURRENT AND PROJECTED DEMAND AND PRICES

Demand is a function of supply and price (and other factors, especially promotion) hence we have coupled the current demand and price for silver perch as shown below.

There is as yet no established or clear market demand for fillets or value added products such as smoked fish. Fillets are being produced in very small quantities and only to order while smoked fish production is more akin to a pilot project, and still commercially sensitive. Hence we are unable to put a price on these products themselves but instead have estimated the demand for the fish raw material used to produce fillets.

6.1 Current weekly demand and prices

(End of August 1999, farm gate \$/kg)

Live fish	3.75 tonnes @\$8.50 per kg 0.75 tonnes @\$9.50-10.00 Total 4.5 tonnes per week
Chilled fish	1.3 tonnes @\$8.50 per kg 0.40 tonnes @\$9.50-10.00 Total 1.7 tonnes per week
Fillet	300 kg fish /150kg fillet @ \$9.50 fish price
Processed	Very small usage in smoking Confidential.

The demand for silver perch is essentially uniform throughout the year, but as with seafood generally there is noticeably increased demand for live and fresh fish during the week leading up to Christmas, New Year (western and Chinese) and Easter.

6.2 Marketing Costs

As noted in Section 2 there are very few enterprises, sometimes only one, engaged in a particular marketing activity hence prices and marketing costs at different levels are reported here in general terms at the farm gate and retail end of the marketing chain, to protect confidential market information.

The retail price for live silver perch in Sydney in August was \$13.50-15.50 per kilogram according to store location. The retail price of chilled fish was about \$11.50-12.50 per kilogram. Information on marketing costs of live fish are unavailable but a dissection of marketing costs for packing and forwarding chilled fish to Sydney are shown below. The costs per kilogram for fillets or other chilled product are essentially the same.

The range in the individual costs in Table 6 reflects the different costs encountered because of the economies of scale in transport charges and materials purchased. The lower costs are of course available for those with the greatest purchasing power and negotiating skills.

Table 6. Marketing costs.

Materials or services	Cost (\$ per kilogram of fish)
Ice	0.10-0.50
Styrene case, plastic liner, tape and label	0.50-0.60
Road transport	0.25-0.50 or alternatively 2.00-3.00 for door to door parcel courier
Labour	0.10-0.25
Sydney Fish Market commission for auction sale*	12% of fish value for NSW producers or 9% for interstate producers

*This is applicable only to producers wishing to have their fish sold at auction. Wholesalers normally buy fish at a pre-agreed price and do not charge for services rendered.

Projected Marketing Costs

All of the above costs and charges (Table 6) are likely to increase with time, but probably in line with CPI inflation figures as there is considerable competition in the transport and packaging industries.

6.3 Projected domestic demand and prices

The *projection data in the table below are based on the assumption* that:

1. the resources invested in marketing and market promotion (personnel and funds) will remain at the low to modest levels of the past few years,
2. sea fish prices will continue to rise at a rate faster than inflation in the Consumer Price Index while production costs for silver perch will fall steadily, and
3. fish farm gate prices will essentially remain the same or fall marginally over the next five years, despite lower production costs due to industry development and economies of scale, because of the increased demand due to greater consumer awareness of the fish and products.

The Australian Fresh Fish group of farmers, for example, recently promoted their product at the 1999 Fine Foods Show and they are very confident that the demand for silver perch will grow at a very rapid rate, seemingly faster than suggested in the accompanying table.

It should be recognised that the level of demand will depend heavily on the investment (financial and human) in market development and promotion and this is more difficult for the farmers and consultants to forecast than production levels in the absence of a detailed marketing plan and dedicated funds. This is because the farmers are mostly relying on incremental growth of their production levels and using profits from this year to fund the following years production and market development.

We anticipate a volume growth of about 15% in 1999/2000 in the live fish market as it approaches maturity and then slower growth over the following four years (another 15%).

The fastest growth is expected in the demand for fillet and processed product because of its new market status and rapid growth from a very low baseline. Hence the projections for these products are the least reliable.

Table 7. Projected (annual) demand and farm gate prices for silver perch.

Product form	Year 1999/2000	Year 2003/04
Live fish	225 tonnes @\$8.50 per kg 75 tonnes @9.50-10.00	260 tonnes @\$8.00 per kg 86 tonnes @ 9.00
Chilled fish	80 tonnes @8.50 17 tonnes @9.50-10.00	160 tonnes @8.00 70 tonnes @9.00
Fillet	42 tonnes @8.50	100 tonnes ? @ 8.00
Processed	20 tonnes @9.00	100 tonnes ? @ 9.00
TOTAL VOLUME	459 tonnes	776 tonnes

Thus the projected demand of approximately 460 tonnes for 1999/2000 is remarkably near but unlikely to meet our projected production figure of 480 tonnes (Table 7). But as indicated earlier this projected production figure may prove to be a little optimistic.

The forecasted demand of approximately 780 tonnes for silver perch for 2003/4 is a little less than our 960 tonne production forecast in Table 7 and far less than the grower's anticipated output. However this figure is greater than double the current production levels.

Overall these data suggest that there is unlikely to be any great imbalance in supply and demand at a farm gate price of about \$8.00-9.00 per kilogram, a price which should prove to be very profitable for most farmers at that time.

If production costs and selling prices fall markedly or there is a substantial investment in promotion, then supply in five years is unlikely to meet this projected demand.

Finally, it should be remembered that fish marketing in Australia and internationally is dynamic, and unexpected events do occur which disrupt trade and affect demand and prices for varying periods.

7. PRODUCT SPECIFICATIONS

The following specifications are based on current preferences in the marketplace, ie what buyers are looking for to meet trade and consumer requirements, as well as our understanding of common preferences for fillets (because there is as yet no defined or established preferences for silver perch fillets).

No one in industry volunteered information on product specifications for future product development or emerging markets, so the following information represents both current and likely prospective requirements.

While the current market focus is on whole or live fish, the common consumer preference is for fillets and the fillet market will therefore increase in importance.

7.1 Live fish

Taste/flavour : No unpleasant flavours or taints.

Colour : A golden-silver appearance is the preferred colour, a silver colour is acceptable but darker coloration is undesirable. A dark grey colour is normally unacceptable.

Vitality : Fish are expected to remain alive for at least five days in a wholesaler's or retailer's store. Restaurateurs also prefer fish to be robust and healthy for at least five days but are currently content with less, as most wholesalers/retailers are only offering to provide credit for deaths reported within two days of delivery.

Size grading: Fish are expected to be true to size grade ordered. More than 10% out of grade is deemed unacceptable.

The preferred size grading is :

Large whole live fish for the Asian “shared plate” dining.

Ranging from 500 to 1000 grams, with 600-900 g the common preferred size; no more than 20% less than 600g or greater than 900g.

Other customers may have different requirements in the future.

Food Safety: Meet all relevant National Food Standards.

7.2 Chilled fish

Whole

Taste/flavour: as for live fish

Colour: as for live fish

Freshness: No unpleasant smells and a shelf life of at least one week at 5°C

Size grading:

Large whole live fish for the Asian “shared plate” dining.

Ranging from 500 to 1000 grams, with 600-900 g the most preferred size; no more than 20% less than 600g or greater than 900g.

Plate size fish

Ranging from 350 to 600 grams; tolerances according to customers preference.

(At this time different buyers have different requirements for plate size according to usage)

Fish are expected to be true to size grade ordered. More than 5% out of grade is deemed unacceptable.

Packaging And Packing:

15-16 kilogram lots in clean containers, preferably in new styrene cases with a polyethylene liner bag. Ten kilogram lots are also acceptable. Fish packed with sufficient ice or refrigeration to arrive at temperature less than 5°C.

Food Safety: Meet all relevant National Food Standards

Gutted fish

Taste/flavour: As for live fish

Colour: As for live fish

Freshness: No unpleasant smells and a shelf life of at least one week at 5°C

Size grading

As per customers requirements but fish are expected to be true to size grade ordered. More than 5% out of grade is deemed unacceptable.

Processing: fish to be cleaned in registered food processing premises, with essentially no kidney tissue or other organs adhering or hanging loose, and meeting all other customer requirements.

Packaging And Packing: 15 kilogram lots in clean containers, preferably in new styrene cases with a polyethylene liner bag. Ten kilogram lots are also acceptable. Fish packed belly side down with sufficient ice or refrigeration to arrive at a temperature less than 5°C.

Food Safety: Meet all relevant National Food Standards.

7.4 Chilled processed (fillets)

No established trade or defined specifications as yet but general fillet specifications follow:

Taste/flavour: As for live fish

Colour: As for live fish

Skin on /off: According to customer requirements

Bones in/out : According to customers requirements

Freshness: No unpleasant smells and a shelf life of at least one week at 5_C

Size grading:

International fillet sizes categories are shown below.

Grams	28-57	U60	57-85	60-115	85-141	115-170	115-225
Ounces	1-2	U2	2-3	2-4	3-5	4-6	4-8

More than 5% out of grade is deemed unacceptable.

Packing and packaging: Ten kilogram lots in clean containers, preferably in new styrene cases with a polyethylene liner bag. Fillets packed with sufficient ice or refrigeration to arrive at a temperature less than 5°C. Ice or refrigerant to be in sealed bag (and not to be in direct contact with fillets).

Food Safety: Meet all relevant National Food Standards.

7.5 Value added

No indication of likely products other than “smoked” confidential.

Specifications are according to customers requirements and would probably be a mixture of those outlined above for gilled and gutted fish or fillets.

8. MARKET INTERACTION BETWEEN SPECIES/PRODUCTS

The species/products nominated in the terms of reference viz. farmed silver perch, farmed and wild snapper, farmed barramundi and farmed and wild golden perch are all commonly sold as a plate size fish. Wild snapper, golden perch and barramundi however are also available as fresh fish in a wide range of sizes and the last is commonly available as a frozen fillet as well.

Other species in the plate size domestic fish market which may impact on the demand and prices of silver perch, in a small way, are rainbow trout (farmed) and silver bream (NSW), black bream (Victoria) and yellowfin bream (Queensland).

We will also discuss the likely interaction between different fish fillets in the domestic market as fillets are now outselling whole fish by a ratio of about 3:1 in the Sydney retail trade (Ruello & Associates 1999) and the silver perch and barramundi farming industry have both already identified fillets as an area for future development.

Table 8. Indicative price levels of selected whole or gilled and gutted (g&g) fish in 1998/99.

Fish/product	Wholesale or auction price \$/kg	Median Sydney Retail price \$/kg
Atlantic salmon g&g farmed	Around 13.50	g & g 20.00
golden perch g&g wild	Auction around 13.00	around 19.00
Barramundi whole farmed	Auction & wholesale around 10.00	About 15.00
snapper g& g wild Aust. & New Zealand	Auction and wholesale around 9.00	about 15.00
silver perch whole farmed	Auction 8.50	about 13.00
silver bream whole wild	Auction, around 8.00 in season	about 13.00
rainbow trout g&g farmed	Wholesale 5.70	10.50.

According to our interviews with Sydney fish merchants, the silver perch market is influenced by the supply and price of silver bream (in season), snapper and barramundi in the Asian and non-Asian market segments (retail and restaurant), and to a lesser extent by golden perch when its price occasionally falls to within two dollars (per kilogram) of silver perch.

Atlantic salmon prices are given in the above table merely to paint the full picture on farmed Australian fish. Atlantic salmon essentially operates in a prestige market segment of its own with negligible interaction with silver perch.

The impact of these species on the market for silver perch cannot be quantified at this time because we do not have detailed information on the prospective expansion in the volumes of different farmed

species or the likely expenditure on promotion and market development by the different aquaculture sectors or the individual companies.

There is empirical evidence, however, that a significant reduction in the price of these other species can have a negative impact on demand for silver perch at current price levels.

8.1 Golden Perch

Wild golden perch supply is limited by the freeze on the number of inland fishing licences in Victoria and South Australia and supply will probably fall in the medium and long term as NSW fishing licences are phased out in 2001. Hence, golden perch prices are likely to continue increasing at a moderate rate and the continuing high prices will differentiate it even more from silver perch.

Aquaculturists have mostly lost interest in farming golden perch in the last couple of years because of the continuing difficulty in growing the species commercially and the increasing appeal of farming Murray cod (in NSW and Victoria) and jade perch (in Queensland). The likelihood that intensively farmed golden perch will become a commercial reality in the short term is slim.

In short, the current and prospective high price levels of golden perch mean that it is unlikely to represent significant competition to silver perch in the foreseeable future.

8.2 Snapper and Barramundi

Farmed snapper supply has been very small (about 50-150 kg lots at most) and the quality highly variable. Therefore we have no useful indicative price levels on farmed snapper. However, on current and prospective indications on wild snapper supply and prices and confidential information on recent farmed fish sales in Sydney, it appears that farmed snapper can readily be sold at around \$9.00-10.00 per kilogram wholesale.

The Australian snapper farming industry is still in its infancy and production levels are growing from a very small base (estimated at less than 50 tonnes in 1998-9) hence the farmed snapper output over the next five years is unlikely to have a substantial impact on the silver perch industry. The limited supply and relatively high price of wild caught snapper also suggests that they too will have little adverse impact on silver perch marketing.

The barramundi farming industry is in a strong growth phase and expected to double its output in the next five years to about 1500 tonnes per annum according to industry sources. The greatest direct competition silver perch has in the marketplace now is with live barramundi which fetches about one dollar per kilogram more at farm gate level. Farmed barramundi has this price premium despite a larger annual output because it is more widely known and ordered than silver perch.

Snapper and barramundi therefore probably represent the greatest competition to silver perch in the medium to long term because they both:

- have a widely known and well regarded name,
- appeal across all ethnic groups in Australia
- can be grown to sizes where fillets and even outlets may be produced.
- have farmers with considerable expertise in fish marketing
- farmers are planning to grow large fish specifically for the fillet market

In the long term jade perch (barcoo grunter) or a theraponid hybrid may represent a problem in the marketplace because they have a faster growth rate and many of the attractive features of silver perch, according to farmers currently trialling these fish.

Nevertheless silver perch has four attributes that barramundi and snapper do not share:

- it is a physically robust fish, which can easily and quickly be scaled gutted or filleted with minimal damage, probably by machine as well as by hand
- it can produce skinless fillet which holds together well, raw or cooked
- whitish coloured flesh.
- oily flesh which appears to take overcooking without too much problem (a great benefit for home cooks or apprentice chefs who are not skilled at cooking fish).

Furthermore, silver perch has:

- a light flavour; acceptable/attractive to the average consumer (if there is no earthiness or other off flavours)
- appears to have average shelf life
- flesh rich in omega 3 oils

Therefore we believe that silver perch's best long term market potential lies as a fish for filleting particularly when production increases and costs fall to a level comparable with other species such as rainbow trout and sea fish such as flathead, morwong (sea bream) and wild barramundi.

8.3 Fish Fillet Market

We believe a \$6.00 farm gate price for fish represents a threshold level where silver perch (or barramundi) fillets can be produced skin-on and retailed at a price of \$19.99 per kilogram. This price level would expand the market appeal of silver perch to the major supermarkets.

Wild sea fish prices are bound to keep increasing over the next five years because of catch limits due to quotas or other fishing restrictions and we envisage a reversal of the current price situation, where farmed fish will be cheaper or no dearer than many of the more popular wild fish.

Table 9. Current retail price levels of selected fillets (September-October 1999)

Fish fillet	Median retail price \$/kg
orange roughy	25
snapper (fresh NZ fish raw material)	25
Atlantic salmon	23
tuna fillet	23
barramundi fillets (thawed from frozen wild fish fillets)	22
swordfish steaks	20
rainbow trout	17
flathead (wing off)	15
"Bream" (morwong raw material)	15

Rainbow trout fillets are likely to be a substantial competitor in the fillet marketplace given their current comparatively low price and further expansion and market development in the trout industry too.

While the impact of increasing output of all of these farmed species cannot be quantified now it is unlikely that the growth in output alone will automatically create problems in marketing silver perch. These farmed species do have some differences or unique characteristics and retailers and restaurateurs appreciate a range of products to sell.

The success of silver perch, or of any of the other species, in the marketplace will ultimately depend on the resources (human and financial), invested in market development and promotion, and this is extremely difficult to forecast..

However, given continued population growth in Australia and overseas, a sustained popularity of fish, and little likelihood of increases in sea fish landings we believe that the modest increases in aquaculture production volumes likely in Australia over the next five years, probably a doubling in tonnage, will readily be sold profitably here or overseas.

9. EXPORT MARKET PROJECTED DEMAND & PRICES

Only one enterprise reported that it was exporting silver perch fairly regularly, but no other information was made available. Another half a dozen individual farmers or groups had reported that they had shipped samples overseas to at least six countries (Singapore, Hong Kong, China, Japan, Italy, UK and the USA), over the past four years.

One experienced fish processor/exporter advised that he had made several trial shipments overseas and was quietly confident that this would lead to regular sales in due course, but did not want to elaborate because of commercial reasons.

Most of the farmers who had made trial shipments of fish reported that the fish were well received and that they were hopeful of some commercial sales in the near future but that they could not be more specific because they were awaiting further news or because their information was confidential.

In addition to these reports, we were also advised of :

An Asian buyer who wants 9-10 tonnes per week, but no indicative price levels were discussed by this prospective buyer.

An Asian buyer interested in a 20 tonne container per month at a price of about \$5.50 - \$6.50 per kilogram.

These two reports are somewhat difficult to accept because the first has no indication of likely prices while the latter is an incredibly large order for what is still a new product even though it is at a price that seems credible.

New products such as silver perch do not gain instant acceptance overseas despite the optimism and upbeat talk of some visitors to trade expos such as the Catering Trade Fair or Fine Foods. We believe the most credible and encouraging forecast on silver perch export potential was that of the experienced fish exporter mentioned above; his prognosis was that silver perch would find a market but at a price similar to that of other table fish species.

Our estimates of future export demand for silver perch, on the next page, are based mostly on our professional understanding of world fish trade because there is as yet no empirical data on silver perch to work from.

Our assessment assumes that:

1. Export sales will be slow to expand given that a new freshwater species will take some time to gain market acceptance in the face of the competition from the more established/better known species shown in tables 10 and 11 below.
2. Australian farmers are not likely to sell their fish overseas for much less than local prices, and that export price will be therefore be similar to current average farm gate prices for domestic sale.
3. Packaging and freight cost of about \$3.00 or more per kilo for chilled or live fish for export will continue as a substantial impediment to export sales.

Estimated overseas demand for silver perch:**1999/2000** 50 tonnes at about \$7.50-8.00 farm gate price**2003/2004** 200 tonnes at a farm gate price of about \$7.50-8.50

We would expect most of this trade to be in the chilled whole fish form over the next few years and that other product forms (fresh fillets, frozen whole fish etc) would follow after about five years or so as production costs fall in Australia.

Table 10. Overseas fish prices from INFOFISH Trade News No 16/99, 1 September 1999.

Species	Product form & grading	Indicative Price \$/kg	Price Reference Market area	Origin
Rainbow trout farmed	Whole fresh	4.62	Auction Billingsgate London	UK
Lemon Sole	Whole fresh selected	10.05	Auction Billingsgate London	UK
Sea Bass <i>Dicentrarchus labrax</i>	Whole fresh	15.72	Auction Billingsgate London	UK
Tilapia farmed	Chilled large	9.07	Primary wholesale New York	USA

Table 11. European fish prices from Globefish European Fish Report 8/99, 15 August 1999.

Species	Product form & grading	Indicative Price \$/kg	Price Reference Market area	Origin
Turbot farmed	Fresh whole 0.5-1 kg /piece	13.50	Spain ex farm	Spain
Turbot wild	Fresh Whole gutted	14.88	UK cif	Scotland
Sturgeon	Fresh Whole 1.5-2 kg/piece	13.50	France cif	France
Eel <i>Anguilla</i> spp.	Fresh Gutted and cleaned	13.35	Germany c& f	China
Atlantic salmon	Fresh head on gutted 2-3 kg/piece	5.35	Germany c& f	Norway

Sea Bass farmed <i>Dicentrarchus labrax</i>	Fresh Whole fresh 450-650 gms	12.80	Croatia wholesale	Croatia
Sea Bass Wild	Fresh Whole fresh 1-2 kg	31.50	Italy c&f	France
Rainbow trout	Fresh Whole gutted	3.98	Italy c&f	Italy
Sea bream farmed <i>Sparus auratus</i>	Fresh whole 450-650g	9.28	Italy cif	Greece

cif = Cost, insurance and freight

c& f = Cost and freight

10. IMPORT REPLACEMENT POTENTIAL

The table below shows the average wholesale price of frozen imported fillets on offer by two leading Sydney wholesalers on 15 October 1999. (Very little volume of fillet is imported to Australia in the fresh (chilled) form).

The frozen fillet prices are fairly steady in the short term but most of these have shown a gently rising trend over the past ten years.

Table 12. Imported fillet wholesale prices in Sydney, October 1999.

Fish fillet	Price \$/kg
Orange roughy skinless boneless	18.00
Barramundi skinless boneless	11.30
Ling skinless boneless	9.50
Leather jacket skinless boneless	8.00
Red snapper (Lutjanidae) skin on	8.00
Smooth dory skinless boneless	7.50
Blue grenadier(hoki) skin on	5.60
Nile perch skinless boneless	5.50
Hake skin on	4.50+
Red cod ski on	3.80

Current silver perch farm gate prices are such that, even if labour costs were ignored, a silver perch fillet could not be produced at a price to match even the most expensive fillet in the table above.

The best selling fish in retail stores in a recent Sydney survey (Ruello & Associates 1999) included blue grenadier and Nile perch fillets which can be purchased by a retailer or restaurateur for less than \$6.00 per kilogram and are commonly retailed at a special price of \$9.99 per kilogram. Hake is not commonly sold as a fresh fillet but is mostly imported frozen and sold “anonymously” as fried fish.

Silver perch, with a fillet yield of about 50% skin on, is unlikely to ever be produced in Australia at a price that it could match these fillet prices.

In the medium to long term (5+ years) silver perch prices will fall and the fillets will probably be available skin on at about \$20.00 per kilogram in the cheaper retail outlets; at this time blue grenadier, hake and Nile perch prices will have increased but will probably still be much cheaper than silver perch. Orange roughy prices will then probably be around \$30.00 per kilogram based on their history of steadily rising prices in the face of fixed or declining quota.

To conclude, silver perch is unlikely to replace the imported frozen fillets discussed above, with the possible exception of orange roughy, in the foreseeable future of some ten years.

11. CONCLUSIONS

This study has shown that silver perch is currently consumed mainly in Asian cuisine, but it has many favourable attributes that will allow it to gain greater popularity and increased demand from the mainstream domestic market and overseas as well.

The majority of the silver perch production is currently being sold at profitable prices, albeit at prices not entirely pleasing to some growers. Much of the current marketing difficulties reported by some farmers actually represent an unrealistic price expectation resulting from a lack of information on the supply and demand for silver perch and a limited understanding of the fish/seafood market in general. Some farmers have not accepted prices most other growers found profitable and consequently there have been supply shortfall in the marketplace while there were market size fish in the water losing value.

The larger producers are profitable now and anticipating even higher profit levels within the existing fish/seafood marketing channels in the next few years as their output increases and production costs fall further.

Smaller producers currently targeting the restaurant and catering trade without any intermediaries, and seeking new markets here and overseas, are also happy with returns and likely to become even more profitable as their production levels grow beyond 20 tonnes per annum.

It is difficult to precisely forecast future demand for silver perch at this time because the fish is still essentially unknown in the domestic market and overseas and it is facing some competition from several farmed fish. While the volume of fresh fish from Australian seas is unlikely to grow the output of these other farmed fish species is growing steadily too and this will influence the market for silver perch but not in an overtly negative manner because Australian and overseas markets are capable of clearing increasing volumes of farmed fish at profitable prices.

Consumer and trade reaction to sample tastings of silver perch in the past year or so has mostly been very positive and there are encouraging reports about the prospects for producing a smoked product for domestic and export sales. Furthermore, there are unconfirmed reports about imminent export opportunities which will undoubtedly add to sales and industry profits but cannot be quantified at this time.

The demand for silver perch will ultimately be determined by the price level farmers are prepared to sell it for and the resources they invest in promoting this fish and any processed products. The data available suggests that demand in five years at a farm gate price of \$8.00/9.00 per kilogram will be similar to supply levels.

If farm gate prices steadily fall to \$6.00 per kilogram for whole fish in the medium to long term, as is widely anticipated, the demand will expand tremendously because the fish can then be retailed at a \$9.99 per kilo special price point and be cheap enough to be sold as a boneless skin-on fillet for under \$20 per kilo. At such prices the fish and fillets will have appeal to the supermarket chains which have so far found the fish to be unattractive for a variety of reasons including its price. It will, however, still not be price competitive with imported frozen fillets other than orange roughy.

The long term future for fish farming lies with fillets. The Australian consumers preference for in home and out of home consumption is overwhelmingly for a skinless boneless fillet rather than a fish with its head and bones.

Silver perch can produce a very attractive skinless boneless white fillet so its long term market success will ultimately be determined by the industry's ability to meet this almost universal consumer want in fish. In conclusion, overall the market outlook for silver perch is very positive.

12. ACKNOWLEDGMENTS

We would like to acknowledge the cooperation and assistance of the following persons in this project:

I Lyall, D Ogburn and S Rowland from NSW Fisheries. K Ryan of Norcoast, NSW.

R Cheetham, W Johnston, W Lee, and R Lobegeiger from Queensland Department of Primary Industry. B Sambell from the Queensland Aquaculture Association. M Fantin and C Phillips from the Australian Barramundi Farmers Association.

S Bennison from the Western Australia Aquaculture Council; R Fotedar from Curtin University, J Lang from Hill River and G Whisson, Perth, Western Australia.

Sydney chefs : V Cherkoff, G Colosi, S Manfredi, J Susman, and T Wakuda.

NSW growers : K Barden, M Beveridge, I Charles, S Clift, L Fraser, M Gilbert, N Lambert, T. Lyster, B Malcolm, A Pratt, B Rhoades, C Terry and L Terry.

Queensland growers: D Dilger, J Johnson, M Hickey, R Mamino and S. Moore.

A number of fish wholesalers, exporters and processors around Australia assisted with information and deserve acknowledgment but shall remain anonymous in order to preserve confidentiality of information.

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