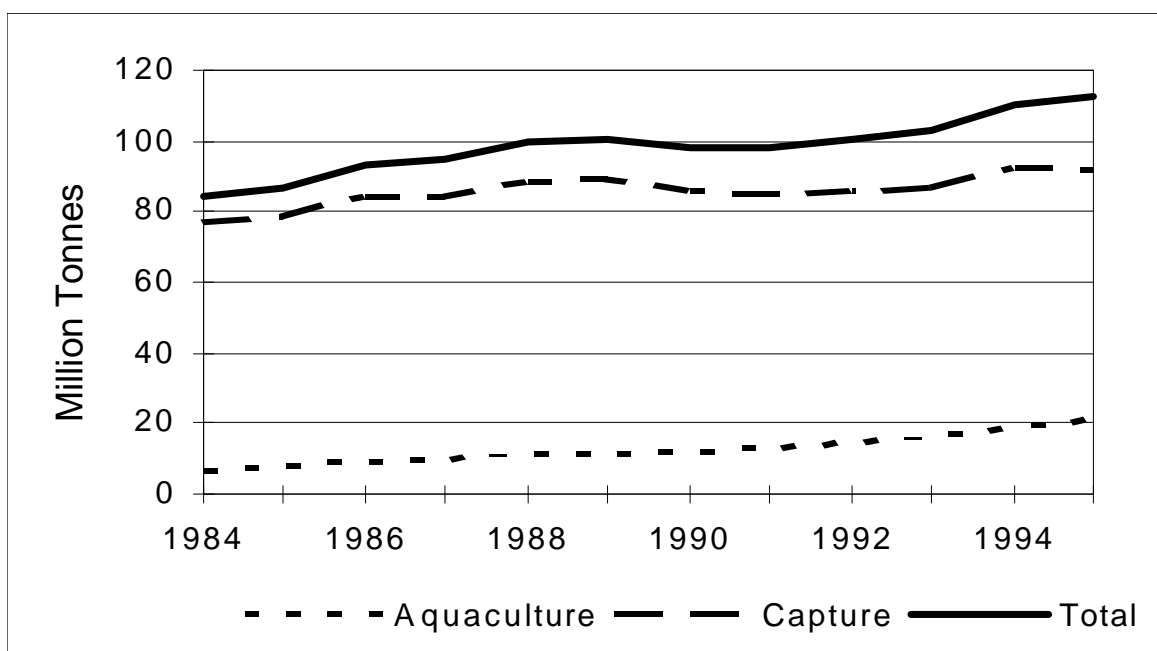


8 AQUACULTURE

8.1 Introduction

Aquaculture is the farming of marine or freshwater biota, including finfish, crustaceans, molluscs, seaweed, algae, and reptiles such as crocodiles. There has been steady growth in worldwide aquaculture production since the 1950s, with the relative importance of aquaculture increasing markedly over the last decade. Aquaculture contributed 8.0 per cent of world fishery production in 1984 increasing to 18.5 per cent, or 20,940,000 tonnes¹, in 1995 (figure 8.1).

Figure 8.1 - Aquaculture Vs Capture Fisheries ²

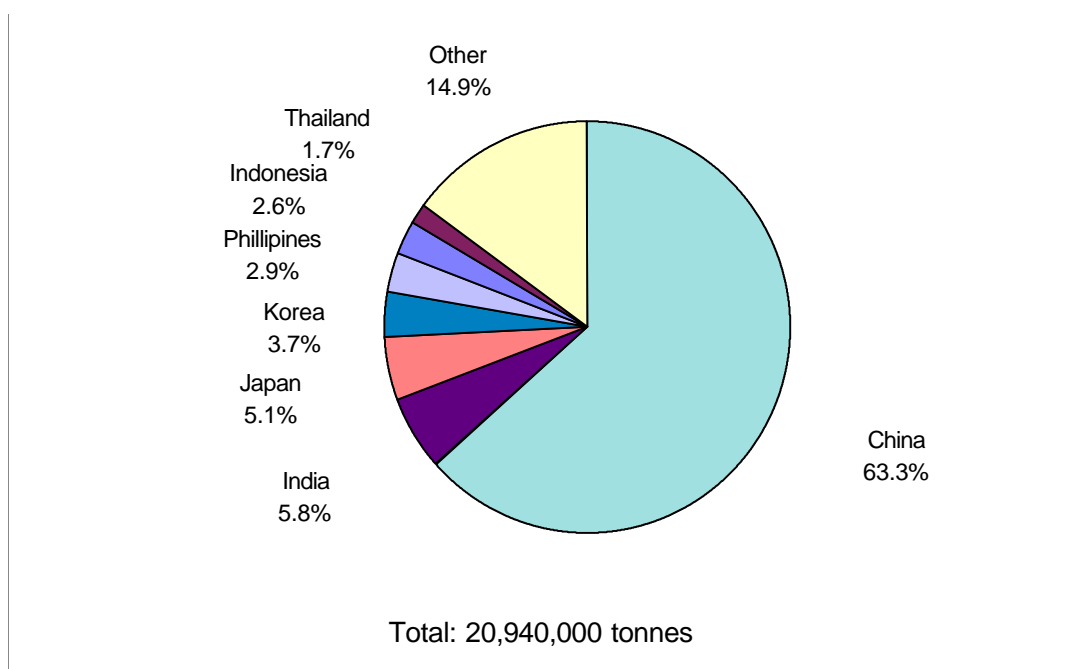


¹ FAO, 1997, Fishery Production Statistics, Fisheries Department, Food and Agriculture Organisation of the United Nations: Rome, Italy, website <http://www.fao.org/waicent/faoinfo/fishery/trends/catch/catchf.htm>

² FAO, 1997, Fishery Production Statistics, URL: <http://www.fao.org/waicent/faoinfo/fishery/trends/catch/catchf.htm>

Asia produces over 90 per cent of world aquacultural output, with China alone producing in excess of 12 million tonnes, representing 60.2 per cent of that nation's total aquatic production (figure 8.2).³

Figure 8.2 - World Aquaculture Production ⁴

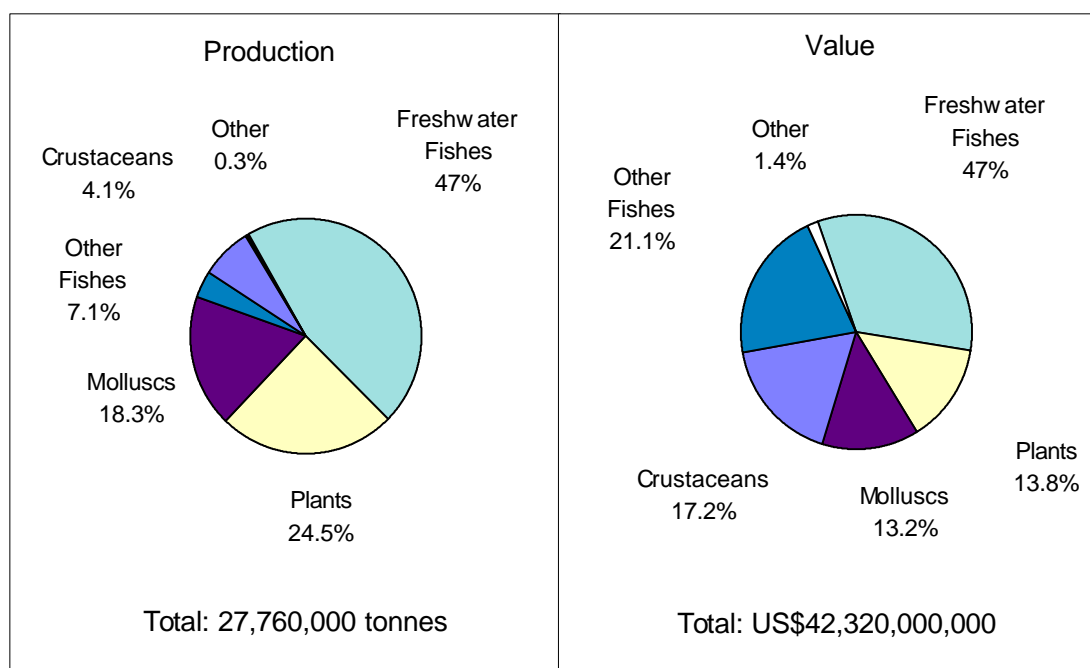


World aquaculture production is centred on freshwater fishes (particularly carps), plants and molluscs (figure 8.3).

³ FAO, 1997, Fishery Production Statistics, URL: <http://www.fao.org/waicent/faoinfo/fishery/trends/catch/catchf.htm>

⁴ FAO, 1997, Fishery Production Statistics, URL: <http://www.fao.org/waicent/faoinfo/fishery/trends/catch/catchf.htm>

Figure 8.3 - World Aquaculture Production by Type



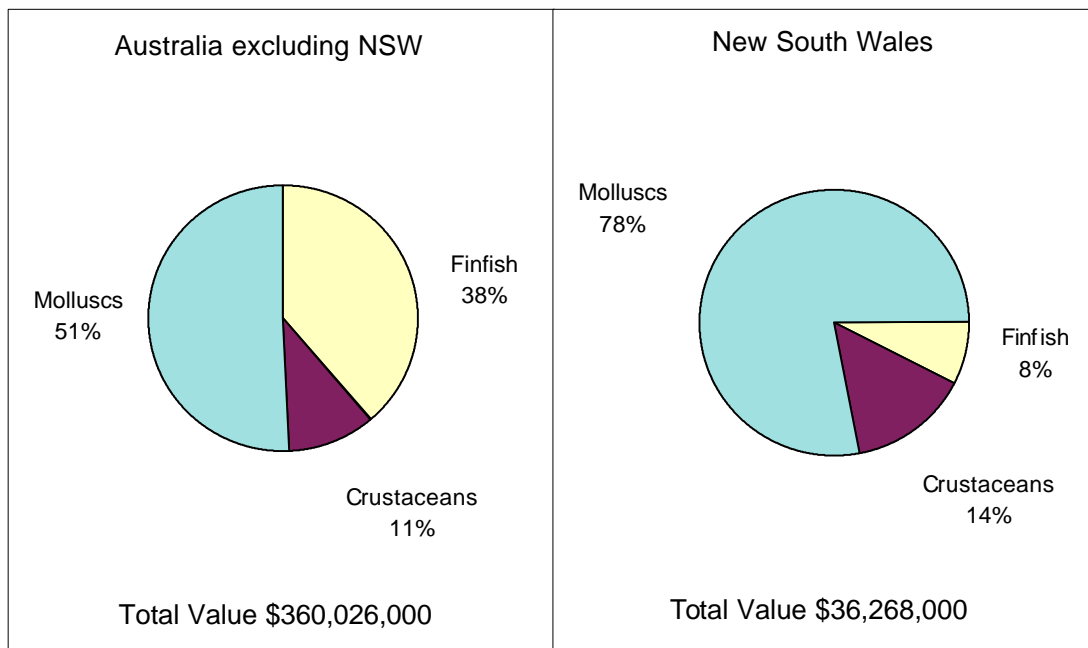
By world standards, Australia is not a major aquacultural nation. Australia's total aquacultural output of around 26,117 tonnes in 1995-96⁵ represents just 0.12 per cent of total world production. In 1995-96 the value of New South Wales aquacultural production was ranked sixth among Australian states. Approximately 77 per cent of the State's aquacultural production by value consists of oysters, with prawns (13 per cent), trout (6 per cent), and freshwater crayfish (1 per cent) making up the bulk of the remainder⁶. New South Wales also produces silver perch, ornamental fish, mussels, barramundi and eels on a relatively small scale. Figure 8.4 shows the value of aquacultural production for New South Wales and the rest of Australia by the principal

⁵ D Brown, K Landeghem, & M Schuele, (1997). *Australian Aquaculture*, Australian Bureau of Agricultural and Resource Economics, Canberra, p 3

⁶ D Brown, K Landeghem, & M Schuele, (1997). *Australian Aquaculture*, Australian Bureau of Agricultural and Resource Economics, Canberra, pp 4, 91

species groupings. The most notable aspect of New South Wales aquaculture is the relatively low proportion of finfish.

Figure 8.4 - NSW and Australian Aquaculture Production by Value ⁷



8.2 Potential of Aquaculture in NSW

With static or declining wild capture fisheries, growing demand for protein from an expanding world population, and growing doubts in relation to the sustainability of existing aquaculture producers, there are likely to be further opportunities for the expansion of the New South Wales aquaculture industry. Greater control over the end product and growing consumer awareness of the

⁷ D Brown, K Landeghem, & M Schuele, (1997). *Australian Aquaculture*, Australian Bureau of Agricultural and Resource Economics, Canberra, pp 2, 91

health aspects of eating seafoods should also contribute to export and import-replacement aquaculture opportunities.⁸

The Standing Committee heard from a broad spectrum of witnesses enthusiastic about the prospects for greater aquaculture production in New South Wales. For example, Mr Barry Jonassen, representing the NSW Institute of Freshwater Anglers, stated:

I believe that aquaculture is the fishing industry of the future. I believe that to take the pressure off the wild stocks, be they ocean or inland, aquaculture is the necessary way to go. The demand for fish is ever-increasing. The fish stocks, as we read and see, are apparently diminishing. If we are to maintain the food stocks for the table, the only direction to head is more and more aquaculture, adequately supervised.⁹

Mr Neville Whiffen, aquaculture developer, highlighted existing opportunities for import replacement:

Woolworths, Coles and Franklins have fish bays. I shop regularly and I can find all the fish I want—not in fish shops but in supermarkets. It is spreading all over Australia. Supermarkets are preparing filleted fish and whole fish packed ready to use. These days it is important to have food which people can take home and cook in a hurry when they get home from work. The marketing side of aquaculture in Australia has changed. Most of the fish is coming from overseas. ... They are selling imported [fish] not grown in Australia, and that is no way for us to get employment.¹⁰

⁸ P J Kailola, M J Williams, P C Stewart, R E Reichelt, A McNee, & C Grieve (1993). *Australian Fisheries Resources*, Bureau of Resource Sciences and the Fisheries Research and Development Corporation, Canberra, p 166

⁹ Evidence of Mr Jonassen, 24 March 1997, p 14

¹⁰ Evidence of Mr Whiffen, 3 April 1997, p 37

Similarly, Mr Michael Bamford, mussel grower, commented:

... we have got 1200 tonnes of mussel being imported into New South Wales from New Zealand every year. It is the same old story. We are providing jobs for New Zealanders by eating their mussels when we could be growing them right here and providing jobs for New South Welshmen.¹¹

Dr John Glaister, Director of Fisheries, agreed that there were many opportunities for aquaculture in New South Wales that were yet to be explored but argued that any new ventures would need to take the State's geographic constraints into account:

I believe aquaculture can be an important industry for New South Wales. ... in terms of production value, at the moment it is quite limited. Most [of the] focus on aquaculture in Australia has been on marine aquaculture, and as we have the highest population concentration on coastal settlements I think the focus for marine aquaculture in estuarine areas is probably misplaced in that such development could possibly alienate existing habitat important to all of our fisheries.

I believe that the exposure of our coast would limit the potential for cage culture and mariculture centres. There are only a very few sheltered ports. And most of the high energy coast and the prevailing weather conditions would limit the expansion in that area. So I think the most likely avenue for the development of an aquaculture industry lies in the inland, in fresh water.¹²

Dr Glaister later expanded on the last point:

... my view is that if we are looking at expanding our aquaculture industry, then it lies in the inland. In particular,

¹¹ Evidence of Mr Bamford, 28 January 1997, p 36

¹² Evidence of Dr Glaister, 19 May 1997, p 16

an area that is worth considering is the use of saline water in areas where we have got significant problems, particularly in the south-west.

... Species like snapper could be perhaps raised in inland saline water. Although this water includes magnesium salts rather than sodium salts, the fish may be able to adapt to that. That is certainly an area that we are interested in pursuing.¹³

Dr Glaister also saw considerable potential in polyculture, where enterprises undertaking integrated aquacultural and agricultural activities could significantly increase output in both spheres. Dr Glaister stated:

One of the requirements for the use of freshwater aquaculture is that the water is not returned to the river. So farmers are the people best placed to be able to multi-use water. An example that I would give you would be the Mailler farm at Jerilderie. He is a very successful rice and wheat farmer. He basically uses the water for aquaculture. Then that water, with the nutrients added through aquaculture, is used in the watering of several crops. He uses the water about five times. So my feeling is that someone like him, who is a very innovative person who has a lot of expertise in other forms of agriculture, could make a significant contribution.¹⁴

Dr Stuart Rowland, NSW Fisheries Scientist, supported this view, suggesting that freshwater aquaculture had "enormous potential because of the availability of sites and the ease of using or disposing of effluent water, unlike the marine environment".¹⁵

¹³ Evidence of Dr Glaister, 19 May 1997, p 38

¹⁴ Evidence of Dr Glaister, 19 May 1997, p 39

¹⁵ Evidence of Dr Rowland, 4 April 1997, p 17

8.3 Obstacles

While aquaculture has great potential, some obstacles to its further development in New South Wales exist. These include: environmental considerations such as threats to wild stocks from the use of wild-caught juveniles, effluent discharge, and disease and species translocation; post-harvest issues including marketing; and administrative or social obstacles such as the development approval process and community opposition.

8.3.1 Use of Wild-caught Juveniles

Aquaculture ventures that rely on the collection of juveniles from the wild pose risks to the sustainability of existing fisheries. While the South Australian tuna farming industry is the major user of this technique in Australia, there is some pressure from local and offshore investors to allow the harvest of juvenile eels in New South Wales for grow-out here or overseas.

Since 1992, when 45 permits to harvest eels from farm dams were granted, export markets for live eels have been established in Hong Kong, Taiwan and Europe, in addition to local sales in Sydney. The eel catch in 1994 was 286 tonnes, with 25 tonnes sourced from impoundments, 42 tonnes from farm dams, and 219 tonnes from estuaries.¹⁶ The draft NSW Fisheries Eel Aquaculture Policy states:

Commercial catches of eels from the wild appear to be decreasing as more and more dams and impoundments are heavily fished. Of particular concern are the anecdotal reports of the considerable effort of unlicensed fishers who harvest and sell eels illegally.¹⁷

The Policy also states:

¹⁶ NSW Fisheries Eel Aquaculture Policy, 3rd Draft, 4 May 1997, NSW Fisheries Policy Paper A97/1, p 2

¹⁷ NSW Fisheries Eel Aquaculture Policy, 3rd Draft, 4 May 1997, NSW Fisheries Policy Paper A97/1, p 2

NSW Fisheries recognises the potential for an eel farming industry to evolve in NSW that has the capacity to generate export dollars and stimulate employment in regional areas. Experience ... has shown that the Department should be pro-active in establishing guidelines to promote the development of a viable aquaculture industry and to ensure that development is environmentally sustainable.

NSW Fisheries will promote the small-scale development of an eel aquaculture industry in NSW recognising that until juvenile eel resources are quantified, the eel aquaculture industry will be regarded as experimental in nature. Policy will regulate the rate at which the eel aquaculture industry will develop in NSW.¹⁸

Dr Glaister described the Department's efforts to balance the fostering of a new eel aquaculture industry with the preservation of the existing fishery:

... it is a very huge market. The difficulty with eels is that they are not able to be artificially induced to breed in captivity. They spawn somewhere in the ocean, and basically the young elvers come back to land. There is a real demand for glass eels, or elvers or baby eels, because they are worth some tens of thousand of dollars per kilo, but there have also been some spectacular collapses of eel fisheries in other parts of the world, and that basically [is] what has driven the demand for Australian eels.

We are adopting a very cautious approach, as are the other States, particularly Queensland and Victoria, and limiting the commercial harvest of eels and the collection of baby eels because of that concern about potentially over-fishing.¹⁹

¹⁸ NSW Fisheries Eel Aquaculture Policy, 3rd Draft 4 May 1997, NSW Fisheries Policy Paper A97/1, p 1

¹⁹ Evidence of Dr Glaister, 26 May 1997, p 63

Mr O'Conner, Director Fisheries Management, added:

We do have two operators who are licensed to experiment with techniques to collect those baby eels and to supply a limited quantity - I think it is 50 kilos per year - to the eel aquaculture industry in New South Wales, to enable them to develop their techniques while we do our homework in trying to decide what quantity of baby eels can actually be harvested from the rivers without impacting on the eel resource.²⁰

8.3.2 Effluent

Economically viable aquaculture inherently relies on relatively intensive production practices. Some aquaculture activities rely on naturally occurring food sources, such as the production of filter feeders like oysters and mussels. Others involve feeding, such as the production of finfish through cage-culture. Both practices often result in effluent discharges significantly greater than would be the case under natural conditions. This problem can be exacerbated by the decomposition of unused food which has settled on the river or ocean floor. Particulate nutrients derived from either effluent or diet supplementation can lead to sedimentation. Dissolved nutrients and sedimentation can in turn lead to a number of adverse environmental and public health outcomes, including algal blooms, shading of the water column, and benthic blanketing.

ABARE has cited sedimentation and biofouling (growth of aquatic organisms on cages et cetera) as a limiting factor to the expansion of cage cultured finfish, such as tuna and Atlantic salmon.²¹ The disposal of pond effluent has also been

²⁰ Evidence of Mr O'Conner, 26 May 1997, p 63

²¹ D Brown, K Landeghem, & M Schuele, (1997). *Australian Aquaculture*, Australian Bureau of Agricultural and Resource Economics, Canberra, p 6

identified as a major constraint to the environmentally sustainable expansion of the Australian prawn farming industry.²²

NSW Fisheries' effluent policy presently varies with species. Zero discharge is required for land-based silver perch, golden perch, Murray cod and yabby operations. Land-based barramundi operations are permitted to discharge effluent into the aquifer only, whereas trout and prawn farms may discharge effluent into streams and estuaries under certain conditions.

Mr Calvin Terry, President of the NSW Silver Perch Growers Association, suggested that freshwater fish farms could limit these negative outcomes through the use of effluent storage ponds and the re-use of effluent water for irrigation of cereal, fruit and vegetable crops and forestry.²³

8.3.3 Disease

A number of witnesses expressed concern that aquacultural activity may spread disease, particularly the farming of species not native to the area in question. For example, Mr Terry Maloney, Secretary of the South West Angler's Association, referring to barramundi production in the south of the State stated:

The barramundi picorna-type virus is a virus which affects the barramundi. Very little work has been done on whether that virus is transmittable to our native species.

I believe that some work has been done in Queensland in recent times that suggests that the virus can in fact be contracted by some other native species. Our concern with these barramundi grow-out complexes—and there is one at Grong Grong—was that bringing juvenile barramundi into the Murray-Darling system without any assurances that the virus would not affect our native fish was almost as silly as

²² N Preston, I Macleod, P Rothlisberg, & B Long (1997). Environmentally sustainable aquaculture production - an Australian perspective, *Developing and Sustaining World Fisheries Resources*, 2nd World Fisheries Congress, CSIRO, Collingwood Victoria, p 474

²³ Evidence of Mr Terry, 20 February 1997, p 15

bringing cane toads, prickly pears and European carp into the country. The virus did get into the Grong Grong establishment; it was quarantined for a few weeks a couple of years ago. The suggestion that the testing procedures were adequate and the virus could not get there proved to be entirely incorrect.

... if a virus like that was to gain a foothold in the Murray River it may spell the end of Murray cod, golden perch and any other natives that are susceptible.²⁴

Mr Michael McManus, another freshwater angling representative, expressed similar concerns:

There are a lot of fish farms, usually trout and yabbies, and there is no reason why it cannot continue to expand in those types of species. I would be reluctant to bring species from outside the catchment into the area, because I think that would be fraught with danger - such as bringing Queensland fish, such as barramundi or something like that into the area. I think that could lead to trouble through the bringing in of foreign viruses and so on. But, certainly, there is no reason why trout farming and yabby farming cannot continue and increase.²⁵

Dr Glaister described the perceived disease problem with barramundi farming in New South Wales as follows:

The concern with this particular virus is that it is undetected in young animals up to, I think, 21 days or something like that. So, if you have got fingerlings that are older than 21 days, you can tell whether they have got this bug or not. But, in younger animals it is impossible to detect. So the interest in raising barramundi has met with fierce opposition from people concerned about the

²⁴ Evidence of Mr Maloney, 2 April 1997, p 85

²⁵ Evidence of Mr McManus, 24 March 1997, pp 13-14

untoward introduction of this virus that may potentially impact some of our native fish.²⁶

Dr Glaister and Mr O'Conner noted that NSW Fisheries were pursuing funding for research into this particular virus and that the Department had prohibited the importation into New South Wales of barramundi younger than 21 days. Dr Glaister added:

I might add that the focus on the picorna-like virus in barramundi is really peculiar in that I think there could equally be viruses that have not as yet been discovered or named in a range of things that routinely happen now. I think people are right to be cautious.²⁷

8.3.4 Species Translocation

Species translocation occurs when species are introduced into an area in which they are not native. Translocated species can displace or negatively affect native species in a number of ways.

Barg et al have written:

Aquaculture is the principle reason for the introduction of freshwater fishes and experience has shown that the introduced species will eventually enter the natural ecosystem (either through purposeful release or accidental escape). Thus, non-native species in culture can adversely impact local resources through hybridization, predation and competition, transmission of disease, and changes in habitat, e.g. burrowing, plant removal, sediment mobilisation and turbidity.²⁸

²⁶ Evidence of Dr Glaister, 26 May 1997, p 97

²⁷ Evidence of Dr Glaister, 26 May 1997, p 97

²⁸ U C Barg, D M Bartley, A G L Tacon, & R L Welcomme (1997). Aquaculture and its environment: a case for collaboration, *Developing and Sustaining World Fisheries Resources*, 2nd World Fisheries Congress, CSIRO, Collingwood Victoria, p 463

The Standing Committee received evidence in relation to species translocation from numerous witnesses, particularly in relation to silver perch. For example, Professor Robert Kearney, former NSW Director of Fisheries Research and presently Head of the Department of Resource, Environmental and Heritage Sciences, University of Canberra, argued:

... there is a need for restrictions and I believe that things need to be kept tightly under control. There are disease problems with hatcheries and aquaculture ventures. Australia's record in this area is reasonably good and we are improving with our environmental controls. I believe environmental controls in these sorts of ventures should be strong and obviously based on science and we need to make sure that the risks are minimised.

However, I am not one who believes we should not tolerate a manageable amount of risk and I do not have a particular problem with having silver perch aquaculture operating on the east coast. I would make sure all of those operations are above flood levels and all other requirements are there for proper environmental control and that environmental control must be rigorous. I do not have a hang up with them being east of the Divide.

They have been released in many of our rivers, together with other species. It is foolish to pretend they have not been. I do think the risk is minimal.²⁹

NSW Fisheries' Introduction and Translocation Policy requires that all stockings of fish into New South Wales waters are conducted under a Departmental permit. The Policy also states that further introductions or translocations of native or non-native species into the State's waters will not be permitted, with the exception of:

- the stocking of salmonids into those waters where they have been traditionally stocked;

²⁹ Evidence of Professor Kearney, 12 May 1997, p 54

- the stocking of golden and silver perch into farm dams in the eastern drainage located above the 1/100 year flood level;
- the stocking of golden and silver perch into impoundments in the Hunter river system (this policy to be reviewed in 1999);
- the stocking of marine or estuarine fish into NSW waters, which will be evaluated on a case by case basis; and
- the aquaculture of fish outside their natural range provided adequate controls can be put in place to ensure that the fish or associated disease cannot escape.

In addition, the extension of the geographic range of any of these species will not be permitted without undertaking an environmental assessment and consultation with key interest groups.³⁰

8.3.5 Development Approval and Interdepartmental Integration

Standing Committee heard examples of difficulties encountered by aquaculture operators and developers in gaining the relevant development approval to set up their aquacultural enterprises. For example, Mr Michael Bamford, President of the New South Wales Cultured Mussel Growers Association, described the ongoing difficulties that his enterprise, Eden Shellfish Pty Ltd, has encountered over nearly 20 years in having its mussel growing development application for Twofold Bay, Eden, processed and in achieving security of tenure over its existing site. Mr Bamford explained that he had first applied for a permit to grow mussels in 1976 and had received a temporary scientific permit in 1979. Mr Bamford then claimed that he was informed by the Department in 1980 that he would qualify for a crown land lease for the purposes of mussel growing, but that little happened in this regard until 1986 when he was again told by the Department that he should qualify for a lease. Mr Bamford began marketing his mussels in 1988, still under a scientific lease, and production peaked in 1993 at 53 tonnes. The lease issue is yet to be resolved. Mr Bamford outlined the

³⁰ NSW Fisheries Introduction and Translocation Policy, NSW Fisheries Policy Paper R94/1, August 1994, pp 4-5

major exercises that his business has so far conducted in attempting to get its development application approved:

The Department of Planning directed Fisheries to tell us to go to the local council and get a DA. When we did so in April 1993 it landed us in the Land and Environment Court, with the contestant being another development, Boydtown Pty Ltd. So then we had to fight a court case, ... and this court case is reported to cost \$128,000, of which our part was about \$30,000. So that resulted from the directive of the Department of Planning.

... we are now under the scrutiny of every department. And last, but not least, we have just seen our application process go on for so long we are now coming under the Threatened Species Act, which was only passed in February 1996, and we have got to put up a full statement. We have done a registered business management plan, as directed. We have done an EIS, as directed. And we have done a fauna impact statement, as directed. All up, there has been \$100,000 worth of paper work and consultancy, as directed. And now we are in the middle of the National Parks and Wildlife Service telling us what interaction whales will have with our project.

... I have over a quarter of a million dollars worth of equipment sitting out there. I have four men employed constantly on the project, and another two when we are harvesting, plus myself and my wife on shore doing the business.³¹

Mr Bamford claimed that the environmental impacts of mussel growing were minimal as mussels are filter-feeders, utilising existing nutrients in the water and not involving any additional feeding³². Mr Bamford added that Twofold Bay has the highest mussel growth rate in the world, with a minimum harvest of 10

³¹ Evidence of Mr Bamford, 28 January 1997, pp 31-32

³² Evidence of Mr Bamford, 28 January 1997, pp 38-39

tonnes per hectare in as little as 12 months, but that the industry and export opportunities were being constrained by red tape and bureaucratic inaction:

You could get an export product out of here. Actually, six years ago we had an inquiry from Italy for 400 tonnes per annum of the mussels that they had sampled here from my permit area. They rang me up for two years and said, "How are you going? Have you got your Crown land lease? Can you make production on it?" Anyway, they gave up in the end. I said, "Look, I can't see where I am ever going to get to production like that." But they would have taken 400 tonnes per annum.³³

Mr Neville Whiffen, aquaculture developer, also described to the Standing Committee his difficulties in gaining approval for a major aquaculture research and production development south of Grafton:

My own proposal would have been one of the best aquaculture operations in the world. ... which involved six universities sharing the common expensive items like power generation, standby generation, effluent control, waste disposal, and refrigeration. By putting all those items together at one location as I propose it would save each company millions of dollars, it would save each university a very large amount of money, and for the first time in Australia we would have six major universities working together sharing facilities.

... I met with an interdepartmental committee around a table as big as this one that had representatives of 10 individual departments including Aboriginal Affairs, Development, Fisheries, Land and Water Resources. It was frustrating, devastating and terrible. Every single person around that table had a reason why we could not grow fish on the coastal areas of New South Wales.³⁴

³³ Evidence of Mr Bamford, 28 January 1997, p 37

³⁴ Evidence of Mr Whiffen, 3 April 1997, p 36

Mr Whiffen stated that one of the reasons for not allowing the facility was species translocation. Mr Whiffen noted that NSW Fisheries conducted its silver perch research outside Grafton, stating:

That is translocation of species by the State Government. If it is good enough for the State Government surely it is good enough for industry. I went to Fisheries first and they referred me to the Department of State Development.³⁵

Mr Whiffen was particularly critical of the Department of State Development, stating:

The activities of the Department of State Development—and I include Fisheries as well—are cumbersome, at times insensitive and certainly not conducive to the investment of private capital in new ventures.³⁶

In relation to the environmental conditions applied to aquacultural developments, Dr Rowland suggested that:

The EPA has a difficult task and it is relatively new. As I mentioned at Grafton, it appears to many—including industry and us—that the EPA has targeted the aquaculture industry because it is an easy target. It is point source pollution, whereas some of the broader polluters of the river are difficult to come to grips with.³⁷

While claiming that NSW Fisheries has done a lot to encourage aquaculture in New South Wales, Mr O'Conner conceded that the development approval process was a major obstacle to the industry's growth:

One of the reasons that, I guess, those industries have not developed is because of the complexities of the planning legislation in New South Wales. When you look at

³⁵ Evidence of Mr Whiffen, 3 April 1997, pp 36-37

³⁶ Evidence of Mr Whiffen, 3 April 1997, p 36

³⁷ Evidence of Dr Rowland, 4 April 1997, p 20

something that is going to take off in our estuaries, for instance, or in the near-shore waters off the coast, then the number of agencies involved, the number of approvals that are required, is extremely complex. If you look at the mussel industry in Twofold Bay, you begin to understand some of the problems and complexities that exist there.³⁸

Mr Whiffen suggested that an inter-departmental body charged with dealing with aquacultural development approval be set up and supervised by the Advisory Council on Aquaculture, stating:

... I would like to recommend that you first of all give to your State Government departments these objectives. The role of State and Regional Development is to bring industry, investors and government together with a one-stop shop so that instead of having 10 different agencies all telling you what you cannot do, there is a one-stop shop saying, "If you do this we can help you do it". We will then have a great deal of growth in New South Wales.³⁹

8.3.6 Departmental Research and Extension

Dr Rowland was critical of recent funding cuts to NSW Fisheries aquaculture research and extension activities, particularly in relation to silver perch. Citing the success of aquaculture initiatives in other Australian states, Dr Rowland stated:

In New South Wales, we really have not got a major aquaculture strategy in place to develop new industries over and above what we have. ...

I do think that there is somewhat of a lack of commitment, foresight and planning in our department towards aquaculture. We did have a period in the late 1980s when

³⁸ Evidence of Mr O'Conner, 19 May 1997, p 40

³⁹ Evidence of Mr Whiffen, 3 April 1997, pp 37-38

we were really looking for new industries, and that is why we did select silver perch and there was some marine fin fish work at Port Stephens, which you are probably familiar with. But over the last few years we seem to have lost the impetus, and we find that either loss of staff or budget cuts on these facilities are affecting the research and extension output. I think that significantly more could be done if the Government chooses to have a large aquaculture industry in New South Wales.⁴⁰

Dr Rowland added:

The communication about aquaculture issues is virtually non-existent. We really do not have any planning mechanism other than a few policy people in head office, but very little is directed towards forward thinking and forward planning for the industry. It is more day-to-day issues with the current aquaculture industry and it is a major shortcoming that we have not got a strategy in place to look ahead, select species, evaluate sites, support industry, and so on in the long term. That is the basic reason why the industry is static and, in fact, is declining in New South Wales.⁴¹

Dr Glaister rejected this criticism of the Department, stating:

In terms of an aquaculture strategy, I believe that with the legislation allowing for the development of an aquaculture industry development plan that we have the mechanism to go down that track. We had in fact started, and are in the process of developing, a strategy for the oyster industry, our most important aquaculture industry. ...

In terms of forward planning, we have devoted an amount of resources into, particularly, the aquaculture management

⁴⁰ Evidence of Dr Rowland, 4 April 1997, pp 17-18

⁴¹ Evidence of Dr Rowland, 4 April 1997, p 23

area ... Regarding prawn research, there has been quite a bit of research done by New South Wales. In fact, New South Wales was the first State to undertake such work. That has been taken up by other States. The difficulties of prawn aquaculture in this State has been that, unlike Queensland, it is basically only a crop every year or a crop every two years, whereas in places like Queensland, with high temperatures, they are able to generate more productivity. So I think that is a big attraction, plus the fact that there is a large area of coastal land available for aquaculture in Queensland, whereas in New South Wales we do not have that.

... We are commencing a review of our aquaculture activities very soon, as soon as the oyster strategic plan is in place. We will then, logically, go on to other aquaculture activities, including inland.⁴²

Referring to the setting of NSW Fisheries aquaculture research priorities, Mr O'Conner said:

... in terms of the department priorities for aquaculture research, there have been regular meetings over at least the last seven or eight years that I have been involved in where we have discussed priorities for aquaculture research. ... That is how our priorities have been set.⁴³

8.3.7 Marketing

The Standing Committee heard that a major flaw in the development of aquaculture in New South Wales was a lack of research into the marketability of species being considered for aquaculture prior to large scale production. The lack of demand for silver perch was the most cited example of this shortcoming (see section 8.4.1.5). NSW Fisheries were particularly criticised for focussing

⁴² Evidence of Dr Glaister, 19 May 1997, pp 16-17

⁴³ Evidence of Mr O'Conner, 19 May 1997, p 18

on aquaculture research and development without adequately considering the market opportunities for the end product. Dr Glaister answered this criticism as follows:

We have not got a brief in our Act to be involved in the marketing of seafood in New South Wales, and that is an area that I believe needs some attention, particularly, as I say, with things like silver perch.⁴⁴

8.3.8 Social Conflicts

Proposed aquacultural activities can be resisted by local communities. Barg et al have written:

Cage culture installations sometimes have raised aesthetic concerns and conflict with tourism and traditional fisheries, and the enclosure of some public waters for culture has deprived other users of access.⁴⁵

The Standing Committee has heard a number of Australian examples of resistance to aquaculture developments on aesthetic or tourism grounds. These include opposition to salmonid cage culture in Tasmania and the growing of mussels on rafts in Twofold Bay near Eden.

8.4 Specific Industries

The New South Wales silver perch and oyster industries received considerable attention during the inquiry, primarily due to their specific problems. This section examines the difficulties encountered by these industries.

8.4.1 Silver Perch

⁴⁴ Evidence of Dr Glaister, 19 May 1997, p 38

⁴⁵ U C Barg, D M Bartley, A G L Tacon, & R L Welcomme (1997). "Aquaculture and its environment: a case for collaboration", *Developing and Sustaining World Fisheries Resources*, 2nd World Fisheries Congress, CSIRO, Collingwood Victoria, p 464

The Standing Committee received much evidence in relation to silver perch production and considers the manner in which the selection, production, and subsequent marketing of the species was carried out to be an important case study for government and the State's aquaculture industry.

8.4.1.1 Advantages

The Standing Committee heard that in the late 1980s NSW Fisheries identified silver perch as an aquaculture opportunity on the basis of a number of criteria, namely its physical, behavioural, biological, and reproductive attributes. Silver perch's desirable physical attributes included:

- attractiveness;
- scaled & relatively thick skinned for easy handling;
- flesh that is white, moist, and firm;
- few bones, easily filleted and skinned, making for easy processing;
- good keeping qualities chilled or frozen.

Silver perch's desirable behavioural attributes included:

- schooling characteristics;
- active near water surface and edge, making for easier feeding;
- adapts well to pond culture with high stocking densities.

Silver perch's desirable biological attributes included:

- wide temperature tolerance (2-38 degrees Celsius);
- omnivorous, allowing the use of cereal-based feeds;
- good food conversion ratio (1.6-2.3);

- rapid growth, with growth of up to 3g per fish per day and sexual maturity achieved in 2-3 years.

Silver perch's desirable reproductive attributes included:

- high fecundity, with 150,000 eggs produced per kilo of female body weight;
- well understood reproductive process;
- hormone induced spawning;
- established hatchery production.

Silver perch production was also considered well suited to inland New South Wales due to:

- availability of relatively unpolluted water;
- abundant land at relatively low prices;
- widespread availability of clay soils suitable for pond construction;
- opportunity for zero effluent discharge through settlement and evaporation and/or reuse via polyculture (for example irrigation).⁴⁶

The Standing Committee also received evidence from a number of past and present NSW Fisheries officers involved in the early stages of the silver perch project. Professor Robert Kearney, former Director of the Fisheries Research Institute and currently with the Faculty of Applied Science at the University of Canberra, stated:

I was as much responsible for us going into silver perch research as probably any other person, with the possible exception of Stuart Rowland. We went into it after a lot of research into trying to select a species that would be appropriate for New South Wales future aquaculture

⁴⁶ Information supplied to the Standing Committee by Dr Rowland at Grafton, 20 February 1997

development. We unashamedly copied the catfish industry in the United States to some degree. We looked at their success and looked at the areas in which we had at least comparative similarity and preferably a comparative advantage.

You are aware that the catfish industry in the United States is about a 250 thousand tonnes fishery which is about twice Australia's total fishing catch. We selected silver perch because it had market potential. ...⁴⁷

Dr Geoffrey Allan, Research Scientist at the Fisheries Research Institute, described some of the specific characteristics that made silver perch an attractive aquaculture species. In relation to the existing hatchery industry, Dr Allan said:

The fingerling industry was based on supplying fingerling stock to farms. That industry is worth several million dollars a year in Australia. That meant that the technology to supply fingerlings and the actual supply would not be a strain on developing aquaculture. That is almost unique among other species being considered for aquaculture throughout Australia.⁴⁸

Dr Allan also asserted that the species has a relatively high flesh recovery when processed and, referring to the rapid growth rate of silver perch, stated:

... the species grows very rapidly, from approximately 50 grams through to market size from October to May-June, so a summer-autumn period. That is as fast as any other species growing in Australia and in fact it rivals the growth and production of carp, tilapia and channel catfish, which forms the basis for industries around the world.

⁴⁷ Evidence of Professor Kearney, 12 May 1997, p 52

⁴⁸ Evidence of Dr Allan, 12 May 1997, pp 11-12

It grows very fast. It grows in quite dense situations, so you can farm it with a lot of its stock density. For a given area of ponds you can produce quite a large number of fish. From our research, we can produce around about 10 tonnes per hectare per year. That is equivalent to any other species, carp, tilapia or catfish.⁴⁹

In relation to the omnivorous nature of silver perch, Dr Allan stated:

Around the world most diets for species are based on fish meal. In Australia we produce little or limited fish meal. If we are going to have an aquaculture industry in Australia, we are not going to be able to rely totally on that. In general, in fish farming the nutrition costs anywhere between 50 to 80 per cent of the total operating costs, so we recognise the importance of the diet product.

With silver perch we had an omnivorous species with the potential to use Australian agriculture products.⁵⁰

8.4.1.2 Disadvantages

The Standing Committee heard that while silver perch had many advantages in relation to aquacultural production, there were also a number of potential problems in the production process. These include algal tainting, effluent disposal, bird predation, and species translocation. While the Standing Committee received conflicting evidence in relation to the seriousness of these, Dr Allan affirmed:

In terms of protecting the water environment, silver perch is a very environmentally responsible industry.

⁴⁹ Evidence of Dr Allan, 12 May 1997, p 12

⁵⁰ Evidence of Dr Allan, 12 May 1997, p 12

You have to dig ponds so there is some sort of land change, but I do not believe that it presents an environmental problem at all.⁵¹

8.4.1.2.1 Quality Control

The primary quality control problem facing the industry is that of off-flavours in the flesh as a result of algal and bacterial tainting. The practice of keeping the fish in clean water for a period prior to marketing, or purging, significantly reduces or eliminates these off-flavours, but is a relative expensive and land and capital intensive undertaking.

Dr Rowland describing the purging process as follows:

The muddy taste in all fresh water fish, all species, is derived from two main compounds—soluble compounds produced by blue-green algae and a group of bacteria called actinomycetes. The compounds are absorbed by the fish and stored in the fat. Those compounds are eliminated from the fish if they are placed in clean water without those compounds. You can add a little bit of salt to the water—it does not have to be salted. The period of time in the water depends on the degree of off flavour, the temperature and the fattiness of the fish. We recommend these things to industry, and it is up to it to undertake that.⁵²

Referring to the length of time required for purging, Dr Allan stated:

It basically depends on the concentration of the off flavours in the flesh of the fish. The two compounds are geosmin and 1-2 methylisoborneol. That causes that off flavour. If they are in a high concentration it takes longer for purge a

⁵¹ Evidence of Dr Allan, 12 May 1997, p 6

⁵² Evidence of Dr Rowland, 4 April 1997, p 21

fish. Generally from one to two weeks are more than enough to get rid of the strongest flavour.⁵³

Dr Allan related to the Standing Committee the experiences of the Taiwanese silver perch industry with respect to purging:

If I recall correctly, there was about 200 tonnes a year grown and that production has since declined and they are concentrating on higher value marine species in Taiwan. Taiwan is a country where land costs are extremely high and space is limited. It is a very different environment from Australia.

My understanding is that they have had a temporary move away from silver perch in Taiwan and it has been mainly driven by the off flavour problem. They need to purge the fish. That takes up space and that is much more expensive in Taiwan than Australia, because of land costs.⁵⁴

A number of witnesses supported the use of saline water in purging. Mr Whiffen claimed that saline water not only assists purging but renders fish flesh firmer, stating:

... if one takes freshwater fish like silver perch and it is taken through gradations into semi-saltwater—not 35 parts per thousand as sea water is but 15 or 16 parts per thousand. If one keeps them there for three weeks, all the muddy flavour has gone and the fish will be firm. However, no-one is doing that commercially. ... It (off-flavour) has given aquaculture a bad name because the Government has been pushing silver perch and people have eaten silver perch from a pond and it is no good. There is a market for good filleted fish, particularly if it is firm, white, and has a good clean taste. We can grow them.⁵⁵

⁵³ Evidence of Dr Allan, 12 May 1997, p 22

⁵⁴ Evidence of Dr Allan, 12 May 1997, p 5

⁵⁵ Evidence of Mr Whiffen, 3 April 1997, p 40

Mr Whiffen added:

We are currently working on inland aquaculture so that you can add salt if you wish to firm it up. It is an enzyme matter: the enzymes in fish soften the flesh, but that is not good because they become floppy. You can progressively add salt for three weeks and produce a very firm fish. Then you have to take the salt out [of the water] with a membrane. ... You can put salt in and you can take salt out, no problem.⁵⁶

Dr Allan supported saline purging primarily for flesh-firming, stating:

Straight salt water will kill silver perch, but transferring them to a saline water will help them regulate their off flavours, but so will fresh water. I think the advantage of salt water would be for other textural changes rather than a real advantage to off flavours.⁵⁷

The Standing Committee also received evidence relating to product of variable quality reaching the market through unlicensed growers. Mr Terry expressed concern in relation to unpurged and poorly handled fish, stating:

The quality is dubious because a lot of them do not have the infrastructure on their properties to deal with chilling and handling and packaging of fish, which, although licensed growers do not have to have, through our association we are making sure that they do have those facilities near at hand or on the property.⁵⁸

Mr Terry was critical of NSW Fisheries allowing farm dams east of the Great Divide to be stocked with silver perch due to the risk of species translocation and added:

⁵⁶ Evidence of Mr Whiffen, 3 April 1997, pp 41-42

⁵⁷ Evidence of Dr Allan, 12 May 1997, p 23

⁵⁸ Evidence of Mr Terry, 20 February 1997, p 14

It creates several different problems in that if they stock their farm dams fully with commercial quantities of fish they have water quality problems. Then, if the dams overflow, that low oxygen water or whatever goes into rivers and streams as well.⁵⁹

Mr Terry was also critical of NSW Fisheries' policing of the industry, particularly unlicensed growers marketing their product via licensed third parties.

Mr Terry said:

People are stocking farm dams with fish to sell and they are unlicensed. In fact, some of them are our members, and I have written to all the ones who are not licensed growers to say, "If you are selling fish, we want to know why you have not got a licence."

... We would like Fisheries to ... do something about policing of people who are selling fish.

... From my point of view, the licensing division is not even looking at it as an issue, yet there are a lot of fish in farm dams east of the divide, and people are selling them on the market, which affects us as growers. We have to go through the whole system, and it can take 12 months to get a licence, yet people are quite able to stock their farm dams and sell their fish as long as they do not get caught.⁶⁰

⁵⁹ Evidence of Mr Terry, 20 February 1997, p 6

⁶⁰ Evidence of Mr Terry, 20 February 1997, p 6

8.4.1.2.2 Effluent Disposal

The EPA and NSW Fisheries have imposed a policy of nil water discharge from silver perch farms in an effort to prevent species translocation, the spread of disease, and pollutants entering waterways. Dr Rowland believed that these relatively strict effluent guidelines were appropriate:

We have fairly tight conditions on silver perch farms, for obvious reasons. We do not want these fish to escape if they are not in the body of water if they are east of the Great Dividing Range, and we do not want them escaping if they are west either. We do not want water getting back into the river that might carry phosphorus, nitrogen, pathogens or whatever. The policy that has been set up by the department—it is probably the only species, outside the oyster industry, that has a specific policy—is very tight: people must have an effluent evaporative settlement dam and they are not allowed to release water into the wild. I do not think that they are terribly restrictive; they are responsible and environmentally sound.⁶¹

Despite this, the NSW Silver Perch Growers Association expressed concern that certain aspects of the environmental regulation of the industry were inadequate. Mr Terry stated:

We need more understanding of our water use, and we need more liaison with Fisheries on how to deal with our effluent. They have a policy that our effluent ponds have to be twice the size of our biggest pond to treat the effluent water. The EPA has guidelines to deal with that effluent water. Preferably, they say, you re-use your water. If I have got 500 ponds of half a hectare, regardless of how many I have got, my effluent pond only needs to be as big as two of my other ponds... . That, to me, needs to be looked at seriously because even an inch

⁶¹ Evidence of Dr Rowland, 4 April 1997, p 21

of rainfall on 20 ponds or whatever can put a lot of water in your one effluent pond.⁶²

Referring to water re-use, Mr Terry said that he believed more research and extension by NSW Fisheries was necessary to ensure that growers were aware of and adopted the best re-use technology, adding:

I do not think just having a settlement pond is good enough. The CSIRO has done a lot of work on improving water quality on farms. Fisheries has given us a nil discharge. That is the policy. There is to be no discharge at all to rivers from fish farm effluent. Most people are happy to deal with that, but if you have got a large farm and you only have an effluent pond twice the size of your biggest pond to deal with your effluent water, I think we can use channels and use technology a lot more to improve that water and re-use it.⁶³

8.4.1.2.3 Bird Predation

Some silver perch growers have had difficulty in controlling birds, particularly cormorants, that prey on fish kept in grow-out ponds. The Standing Committee is aware that some growers have resorted to shooting these birds.

Mr Terry told the Standing Committee that his Association is presently investigating a new, oil-based, bird control product and added:

The association has taken the policy that we adhere to National Parks and Wildlife policy on dealing with birds. ...

We have taken the view that if people cannot manage their bird problem without shooting them, then they need to consider netting or scare lines or things like that. It is not the association's policy that they shoot birds. It is not

⁶² Evidence of Mr Terry, 20 February 1997, pp 7-8

⁶³ Evidence of Mr Terry, 20 February 1997, p 8

an option. We encourage all members to deal with the problem by other than shooting.⁶⁴

Dr Allan agreed that shooting was undesirable and stated:

I believe there is a range of solutions to bird predation on fish, none of which involve shooting. I don't believe it is acceptable for an industry to be based on shooting birds. There are ways of excluding birds from ponds. To start with, my personal belief is that for young fingerlings it is total exclusion. For larger fish it is the judicious use of certain types of triangular wires which I understand work reasonably well. They are the most effective ways.

Our Department has been involved in putting in a research submission to try to look at some of those different ways to improve them but my personal belief is that industry cannot be based on shooting any of our wildlife.⁶⁵

8.4.1.2.4 Silver Perch Translocation

Silver perch are native to the Murray-Darling system, and are not found east of the Great Dividing Range except in systems where they have been accidentally or intentionally introduced.

Despite NSW Fisheries having a policy of restricting silver perch farming to west of the Great Divide, stocking of farm dams in the eastern drainage is allowed. Mr Terry was critical of allowing such dams to be stocked with silver perch, and gave the Standing Committee an example of how this could contribute to the accidental introduction of silver perch into river systems east of the Great Divide:

In fact, people in Coffs Harbour that I know had one holding dam above two smaller dams, and the whole lot ran

⁶⁴ Evidence of Mr Terry, 20 February 1997, p 8

⁶⁵ Evidence of Dr Allan, 12 May 1997, pp 14-15

during the flooding at Coffs Harbour into the river [Coffs Creek], and they had silver perch in those dams, a non-native species, in two of the dams that were flooding into the river. Apparently they did not escape, but that is a situation that can arise. We would rather see silver perch left west of the divide. There is no reason for them to be in the rivers here if they are a non-native species. We do not know what can happen, what diseases they contribute, what they do to wild stocks of anything else in the rivers.

... We would like Fisheries to do something about that, particularly for east of the divide, to use eastern freshwater fish, not western ones.⁶⁶

8.4.1.2.5 Lack of Departmental Support

A number of witnesses were critical of NSW Fisheries for what they perceived to be a decrease in the Department's commitment to the silver perch industry after earlier encouraging silver perch production.

Dr Rowland described the funding and staffing arrangements at the silver perch research station outside Grafton as follows:

Since 1990 the research at Grafton has been funded by CR funds and FRDC grants, which between 1990 and 1993 enabled us to employ two technicians and myself; there were only three of us there over those three years. Since then we have had a small FRDC grant enabling the appointment of one position, a Cooperative Research Centre grant, and a large grant from Australian Native Fish, which is a private company. That grant enabled us to build nine new research ponds, a shed, and to employ three technicians. The CRC and FRDC grants were completed last year. We have since obtained another FRDC grant on the fish meal replacement and nutrition research. The ANF grant finishes about now; late March or early April.

⁶⁶ Evidence of Mr Terry, 20 February 1997, p 6

During most of this time I have been the only CR-funded position on site. At the height of these grants we employed seven people on the research facility, plus an extension officer. For the first 12 months the extension officer was funded by OLMA or NOFARIC; it is currently funded by TAFE. That funding runs out in June. Last June there were eight positions at the facility. It is a large research facility.⁶⁷

Dr Rowland claimed that the continued development of the industry will be undermined unless NSW Fisheries devoted more resources to silver perch research and extension, stating:

We are struggling now to operate it [the Grafton Research Station]. In the last six months there has been—and there will continue to be—a significant reduction in research output and a significant reduction in extension. The extension officer has done an absolutely outstanding job. He was a technician for several years at Grafton. He is a very capable person. He has done a tremendous job liaising with the silver perch industry and the freshwater aquaculture industry in general. He has run workshops, he visits farms, and he is constantly talking to industry. The loss of that position will, I think, be very damaging to the future of the industry.

... Extension is vital in these new industries. If we look overseas, there is a major extension component in aquaculture industries. It is even more vital in Australia, where we have a very poor knowledge base in the aquaculture industry because it is so new.⁶⁸

Mr Terry claimed that existing information dissemination and extension services were inadequate, with his Association fielding many enquiries from potential new entrants to the silver perch industry. Mr Terry stated:

⁶⁷ Evidence of Dr Rowland, 4 April 1997, p 18

⁶⁸ Evidence of Dr Rowland, 4 April 1997, p 18

We try our best to advise them, but you need people going around and looking at their properties and talking to them, asking them how much money they have got, and telling them the cost to get involved. There is a lot of interest in it, but there are a lot of mistakes being made, and they will be made in the future because there is not the back-up there to advise them from go to whoa. Most of them have not got a clue what to do.⁶⁹

Referring to NSW Fisheries' perceived lack of commitment to the industry, Mr Terry stated:

As far as I know, they have stopped all interest in it. In a nutshell, that is it. It seems that they [the Department] have decided not to be involved in it, or they have left it up to the industry from now on to develop itself. There are a hell of a lot of questions that need answering, and we need a lot of support to develop the industry. ... There is one liaison officer for the whole of the State to deal with people who want to get into the industry.

It seems to me that Fisheries have said, "Okay, we have had research for six years on these fish, with diet research and so on. Okay, that is fine, and we will let them get on with it now." ...

There are a huge number of things that we need to find out to successfully grow the fish. To me, the biggest problem is that there is no back-up. It seems that they are not going to continue with research funding on the fish, and that is a big disappointment, but there simply is not enough support for people who want to get into the industry. And there is a lot of money floating around to get into it.⁷⁰

Mr Terry added:

⁶⁹ Evidence of Mr Terry, 20 February 1997, p 10

⁷⁰ Evidence of Mr Terry, 20 February 1997, p 9

It seems disappointing to me that despite its potential there seems an utter lack of commitment to it. I do not know why that is. When you look at the water use out west - and we can give you these figures if you like, just for your own interest. One megalitre of water produces one bale of cotton worth \$200. One megalitre of water produces a tonne of fish worth between \$5,000 and \$10,000, with a hell of a lot less damage to the environment. We do not use chemicals and other products that are harmful to the environment. When you look at that value, that is 500 per cent more value than the cotton industry, which is regarded as a high value industry, a major rural industry. It pales to insignificance.⁷¹

8.4.1.2.6 Marketing

The most serious long-term problem facing the silver perch industry is that of market acceptance. The Standing Committee heard much evidence in relation to the need for more effective marketing of silver perch, both within Australia and as an export commodity. Some witnesses raised doubts as to the veracity of market research conducted by NSW Fisheries prior to recommending silver perch production.

Professor Kearney claimed that the Fisheries Research Institute generally conducted limited research into a species' market potential prior to committing itself to a major research project into its suitability for aquaculture, stating:

There would have been no point in us going into major aquaculture research for a species that had no market potential, and, therefore, it was always a prerequisite for Dr Allan ... and myself and other senior staff to seek information on market potential of species that we might do and to seek industry input.⁷²

⁷¹ Evidence of Mr Terry, 20 February 1997, p 15

⁷² Evidence of Professor Kearney, 12 May 1997, p 62

Professor Kearney described the Department's initial market evaluation work as follows:

... we brought a senior Japanese sushi bar owner who owned a chain of 20 sushi bars in Japan to Australia. I personally prepared the fish which Stuart Rowland killed and did the preliminary processing on. He got very annoyed because after he had tasted the fish he said it was clearly the best freshwater fish he had ever eaten in the world and he wanted to buy 100 tonnes on the spot and thought we had hoodwinked him a bit because we did not actually have any. We were in the process of working out whether we should grow it. ...

We also had the Sydney food technology group at Ryde involved in taste tests. We did various cooking tests. Their response was overwhelming. We did freezer tests and all sorts of other tests on the species when we had only very small quantities of it. It was significant that the major criticism of the Japanese sushi bar owner was that the particular fish he had tasted was very fatty and he doubted we would be able to maintain the high fat content year round. In fact, the fish he had eaten had not been fed for four months. We had been putting them on a diet to try to reduce the fat content for some other tests we were doing. There is absolutely no doubt that their fat condition can be maintained year round.⁷³

This initial feedback was then used to justify further research into the aquacultural production of silver perch.

Mr John Roach, President of the Master Fish Merchants Association, claimed that supply characteristics were driving investment in aquaculture rather than market demand. Mr Roach stated:

⁷³ Evidence of Professor Kearney, 12 May 1997, pp 52-53

Part of the problem with the aquaculture is that ... they said, "Here's a fish that can be grown" and they went ahead and grew that fish without investigating the marketing side of it. We find we have a major problem at the moment with, say, silver perch. To produce silver perch, anecdotal evidence suggests from the farmer that it costs about \$9 a kilo to produce, but the market can only command about \$7 a kilo, so there is someone taking a \$2 a kilo loss on all silver perch produced. It does not add up. What should have happened was to start at the other end and say: What can we sell out of a list of products that can be grown; what promotion can be put towards those, and go ahead and market from a consumer point of view.⁷⁴

Mr Samuel Gordon, Executive Officer of the Master Fish Merchants Association, was critical of NSW Fisheries for not conducting more market research before encouraging the development of the silver perch industry, adding:

Unfortunately, the result seems to have been, and it is not just silver perch but also freshwater cray fish, ... People invest large amounts of money, which it does require, only to get to the end of it and find out there is no market. I think the fisheries department have acted irresponsibly and perhaps that comes back to the problem that their mandate at the moment only goes to growing it or catching it.⁷⁵

Dr Rowland agreed that the Fisheries Management Act limited the ability of the Department to do detailed market research, stating:

As I understand it, it is not the department's role because of the Act, so we leave it alone. We get to the fish production end of it and we leave the marketing and promotion of seafood in general to others.⁷⁶

⁷⁴ Evidence of Mr Roach, 14 April 1997, p 62

⁷⁵ Evidence of Mr Gordon, 14 April 1997, p 70

⁷⁶ Evidence of Dr Rowland, 4 April 1997, p 25

Dr Glaister conceded that the silver perch industry had significant marketing problems and may be more suited to Asian palates⁷⁷ and stressed:

There really does need to be a commitment by the people interested in aquaculture themselves to adequately market the product. The production that we have at the moment in New South Wales could more than flood the Sydney fish markets. The demand for silver perch is not high in New South Wales. So, the most likely source of that market growth for the species is as an export. I think the farmers themselves need to be able to tap into potential markets in South East Asia.⁷⁸

Nevertheless, Dr Glaister asserted that the Department was doing what it could to assist in the marketing of silver perch and gave the following example:

I was recently down the south coast and had discussions with the manager of the Eden fish processing company Stephen Brown, and I mentioned to him the difficulty with marketing of silver perch as being one of the impediments to developing that as an aquaculture candidate. Mr Brown was quite interested in pursuing that, and I have sent him printed material that we have on silver perch and also put him in contact with a couple of the farmers who are very keen to try to market silver perch.⁷⁹

8.4.1.2.7 Long Term Industry Viability

The Standing Committee heard divergent views in relation to the long-term viability of the silver perch industry. When asked if many silver perch operations were presently financially viable in the long-term, Mr Terry replied:

⁷⁷ Evidence of Dr Glaister, 19 May 1997, p 38

⁷⁸ Evidence of Dr Glaister, 19 May 1997, p 39

⁷⁹ Evidence of Dr Glaister, 19 May 1997, p 17

Fully operational, yes; fully viable, maybe not, and that includes nearly all of them. It is a precarious situation. Even ANF have 20 hectares or so, and they are probably just breaking even.⁸⁰

Dr Rick Fletcher, Director of Fisheries Research with NSW Fisheries, was equivocal in relation to the industry's long-term viability, but suggested that reducing production costs would benefit the industry. Dr Fletcher stated:

It could be a viable industry. ... biologically there is little impediment to it. Probably the major impediment at the moment is one of marketing and on that I have not the expertise to judge. ... Certainly from a research perspective we have overcome most of the major hurdles and are continuing to reduce some of the cost involved with silver perch production, including setting up selection lines for faster growth. We have undergone feeding trials to come up with the best feed and low cost feeds, as well as locally produced feeds, and reducing fish meal. These are all of benefit. However, there are other aspects beyond the control of what our research can do which may or may not mean that silver perch is ultimately a successful large aquaculture industry.⁸¹

While agreeing that it would be essential to lower production costs, Dr Allan was more optimistic about the future of silver perch. Referring to the long-term pricing of silver perch, Dr Allan stated:

... I see there is an immediate market at the moment for live fish and that is what is actually being sold now at around \$10 a kilo to the farmers and that is a market of a few hundred tonnes. That is shown out by the only studies I am aware of.

⁸⁰ Evidence of Mr Terry, 20 February 1997, p 12

⁸¹ Evidence of Dr Fletcher, 2 April 1997, p14

Once we get past that stage of a few hundred tonnes, I am sure the price the farmers will receive will be substantially lower than that ... but I believe it will be a price at which the farmers will be able to produce the fish at some profit.
...

I would that say in Australia we import about 45,000 tonnes a year of fish, not tinned fish, but fresh and frozen, whole and filleted fish, and the average price of those imports is somewhere between \$2 and \$5 a kilo. I believe we can grow silver perch somewhere in that band width and sell it to make a profit. I do not think there is a marketing problem.

If you ask the farmers at the moment can they sell silver perch for \$5 a kilo and make a profit they would say no. They can grow and market silver perch at \$10 a kilo, with less than 100 tonnes being produced. As the volume goes up... They will get into the market for the cheap product and at that stage the farmers will have developed the technology and have the experience to produce commercial silver perch at an acceptable price.⁸²

Dr Rowland cited “a general lack of support and promotion” as a major factor in the industry’s struggle to become viable, but conceded that it is a technical industry that is not easy to get into⁸³. Dr Allan also emphasised the technical nature of the industry, suggested that operators would take some time to learn how to produce efficiently, and compared it with the establishment of the prawn farming industry in Australia, stating:

The farmers start off with a technology package developed by New South Wales Fisheries and they decide which parts of that package are important for them to learn about in their circumstances. That takes several years. During that time they kill a lot of fish. In many ways I would be

⁸² Evidence of Dr Allan, 12 May 1997, p 4

⁸³ Evidence of Dr Rowland, 4 April 1997, p 21

surprised if a majority of farmers were making money, but if you asked me that question in five years time, I am sure the answer would be different. There are some commercially viable farmers and their numbers will grow and the viability of that farming will grow, but that is my best guess.⁸⁴

Professor Kearney suggested that economies of scale through large scale production would assist the industry in becoming viable, stating:

I am reasonably confident that nobody has gone into it big enough to make it go. When we did the developmental research, we said all along, and I can provide the documentation on this, that for someone to really make a go of it they must do it on a large scale because of the need for purging and other things affecting marketing require a constant quality of product and a product that is available year round.

Clearly, we saw as one of the targets people like Macdonalds who still import 100 per cent of their fish and the other food chains require constancy in supply. We estimated that until someone was producing of the order of 1,000 tonnes a year they would not be able to get the market share and maintain the consistency of quality that was required. In fact this has been born out by a number of very small operators getting into the market and producing variable quality product which has detracted from the species' standing in the market place.

... I have no doubt that if a large enough player comes into the silver perch industry in this State, they will make a lot of money.⁸⁵

⁸⁴ Evidence of Dr Allan, 12 May 1997, p 6

⁸⁵ Evidence of Professor Kearney, 12 May 1997, pp 53-54

Despite the current marketing problems being experienced by silver perch growers, Dr Rowland was enthusiastic about the future of silver perch aquaculture in New South Wales and suggested that import replacement might be a viable market segment for the species. Dr Rowland stated:

On the big picture and in the future, the massive market is in the white fish that Australians consume. ... we import 70 per cent of the white-fleshed fish that we eat in Australia. It is imported from South America, New Zealand and so on. Much of it comes in very cheap product, but also a lot of it comes in the middle range. To me that is where we need to target silver perch, paralleling the catfish industry ... If we can get production costs down low enough, that massive market of processed product in the supermarkets, food chains, hotels and hospitals is there for the taking, that is, if we can get the price structure right and the production costs right.

Silver perch is the only species that can get into that area. That area is also serviced partly by the wild fisheries industry and as their products decline ... we must farm those fish or continue to import them.⁸⁶

8.4.2 Oysters

The Standing Committee received much evidence in relation to the problems of the State's oyster industry which have seen Sydney rock oyster production almost halved since its peak of around 10,000 tonnes in 1976-77.⁸⁷ The New South Wales oyster industry is presently divided into two main interest groups, based primarily on the size of individual operations and attitudes towards farming Pacific oysters. These groups are represented by two organisations, the Oyster Farmers' Association of NSW, representing the larger interests, and the NSW Farmers' Association Oyster Division, some of whose members are

⁸⁶ Evidence of Dr Rowland, 4 April 1997, p 25

⁸⁷ NSW Fisheries Research Institute (1995). *New South Wales Commercial Fisheries Statistics 1940-1992*, Cronulla, pp 303-308

attempting to farm Pacific oysters commercially following the species' introduction to waters around Port Stephens. This separation among the industry has been blamed by the Department for hindering progress, with Dr Glaister stating:

Not the least of the problems are that there are two quite distinct camps, the Oyster Farmers' Association and the New South Wales Farmers' Oyster Section. That division is based largely on the size of holdings but also fundamentally on how the introduction of the exotic Pacific oyster impacted on individuals.

It has caused enormous drama and has split families and communities, and the Fisheries Department has been largely the meat in the sandwich.⁸⁸

The main issues brought to the attention of the Standing Committee were the questionable viability of certain oyster producers, declining estuarine water quality, administrative problems within NSW Fisheries, the Departmental research programme's perceived lack of commercial focus, and the absence of marketing tools to counter falls in consumer confidence.

8.4.2.1 Industry Viability

The viability of smaller enterprises was questioned during the inquiry by the Oyster Farmers' Association of NSW. In evidence, Mr Richard Roberts, in his capacity as President of the Oyster Farmers' Association of NSW said:

The salient point is the fact that members of the Oyster Farmers' Association of New South Wales produce around 70 per cent of the State's oyster crop. ... about 4 per cent of the permit holders—the people who own the leases in New South Wales—produce about 50 per cent of the New South Wales oyster crop; about 20 per cent produce 90 per cent; and about half the permit holders in the industry produce no oysters at all. So for various historical reasons

⁸⁸ Evidence of Dr Glaister, 7 July 1997, p 38

the industry comprises a lot of people who are simply not in any way commercial; they are people who are just sitting on leases.⁸⁹

Mr Roberts added:

Statistics available, principally through the Australian Bureau of Agricultural and Resource Economics surveys of all rural industries in Australia, clearly show that anybody who produces less than \$22,500—I think that is the figure at the moment—in gross earnings from beef, wool, wheat or oysters is not considered to be a commercial farmer. In the case of the oyster industry, that would represent about 50 bags of production. This means that by ABARE standards about 70 per cent of permit holders in the industry would be looked upon as being uncommercial. Using ABARE's figure that would bring in a net income of around \$10,000. An average family man on social security would get \$23,556 a year. So there is a significant poverty trap at the bottom end of the oyster industry in New South Wales.⁹⁰

In contrast, the NSW Farmers' Association, in a submission to ACIL Economics, authors of a strategic plan commissioned by the NSW Oyster Industry Plan Steering Committee, wrote:

... the size of an oyster production enterprise should not lead to a judgement that it is not a legitimate farming enterprise. Each farmer has a set of criteria they use to determine the 'success' of their farming enterprise. ... Many small oyster farming enterprises are professionally run and are considered by the manager to be economically

⁸⁹ Evidence of Mr Roberts, 2 April 1997, pp 69-70

⁹⁰ Evidence of Mr Roberts, 2 April 1997, p 70

successful, when measured against the subjective 'success' criteria of the grower.⁹¹

Difficulty in obtaining commercial loans is another factor perceived to be contributing to the industry's problems. Oyster leases are presently granted for an initial term of 30 years, following which leases are renewed every 15 years. The Oyster Farmers' Association of NSW claimed that most leases had now been issued for more than 30 years and had moved to renewal every 15 years. The Association supported 30 year lease renewals, with the ability to renew mid term, or Torrens title over oyster farms to provide growers with better security of tenure and thereby improve their ability to borrow against their holdings.⁹²

8.4.2.2 Environmental Problems

Environmental degradation and the consequential decline in water quality and productivity has also been identified as a major threat to the oyster industry's viability. In its Strategic Plan, ACIL Economics identified declining water quality and the introduction of the Pacific oyster, an aggressive competitor, into Port Stephens (once the largest oyster growing estuary) as the two major causes of the decline in the State's oyster production.⁹³ With respect to the effect of declining water quality on industry viability, the Strategic Plan states:

The current wisdom is that the oyster industry is vulnerable to various changes in water quality which result from environmental degradation and increasing population density along coastal rivers and estuaries. Given the intrinsic preference of the majority of Australians to live along the coastal fringe, some conclude that a viable oyster industry is simply incompatible with nearby human habitation. Moreover, the filter-feeding attributes of the

⁹¹ NSW Farmers' Association as quoted in ACIL Economics Pty Ltd, *Oysters at the Crossroads: A Strategic Plan for the New South Wales Oyster Industry*, May 1997, p 22

⁹² Submission 86, Oyster Farmers' Association of NSW, p 12

⁹³ ACIL Economics Pty Ltd, *Oysters at the Crossroads: A Strategic Plan for the New South Wales Oyster Industry*, May 1997, pp 7-8

oyster allow untoward organisms to be concentrated, posing potential health risks to consumers, and requiring constant vigilance in the interests of consumer safety ...

The alternative approach, which ACIL recommends ..., proceeds from the premise that the oyster is a uniquely valuable indicator of the environmental health status of rivers and estuaries. ...

In essence, if NSW coastal waterways are fit to support oysters which are healthy for consumers, they will pass muster on any more general water quality grounds. Concern about oyster disease or contamination should be primarily directed at the causes of the problems, namely the pollution sources, not at turning the oyster industry into a convenient scapegoat or considering it expendable.⁹⁴

Mr Laurie Derwent, Fisheries Manager - Oysters, New South Wales Fisheries, emphasised differences in productivity between individual oyster producing areas as the primary factor contributing to the abandonment of leases. Mr Derwent stated:

If I could be bold enough to suggest, the oyster industry has developed over 100 years, its methods have changed, and the area in which oysters are grown—and grown successfully these days—is different from what it was late last century. From my current project I believe that there are a number of areas that are suitable for oyster farming but perhaps are not necessarily available for oyster farming for various planning reasons, or they have not been made available for various planning reasons. I think the object of the aquaculture industry development plans that are mentioned in the Fisheries Management Act are to help identify those areas. At the same time, there are a lot of areas that are currently held as leases, and have been for many years, that are not suitable for commercial oyster

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ACIL Economics Pty Ltd, *Oysters at the Crossroads: A Strategic Plan for the New South Wales Oyster Industry*, May 1997, pp 2-3

cultivation using today's methods, and the industry is still holding those for a range of reasons. Of course, that is basically looking at the areas that are suitable for growing oysters. But there is a lot of work that could be done, if resources were available, in developing oyster farming technology suitable for New South Wales conditions. The joint research project involving triploid oysters I saw as being of a high priority. The problems with pollution and disease in oysters, including QX disease, which I was involved in, are something of a black shadow over the oyster industry.

... the healthy rivers aspects are ones that certainly must take priority because, no matter how well oysters grow, if they are not coming out of clean waters, the marketplace is not likely to be very happy about it, even if the oysters can be treated for the pollution that is affecting them.⁹⁵

8.4.2.3 NSW Fisheries Administration of the Oyster Industry Criticisms

The Oyster Farmers' Association of NSW was critical of the administration of its industry by NSW Fisheries. The Association submitted:

The OFA has major concerns regarding the incapacity of NSW Fisheries to manage the NSW oyster industry, particularly the basic administrative and management requirements as prescribed in the Fisheries Management Act 1994. This problem is exacerbated by the need to service such a high proportion (70 per cent) of permit holders who are non-commercial.⁹⁶

The Association claimed that the numerous geographic relocations of the Department in the last decade and constant staff changes had made it "impossible to build sound and stable management structures, let alone pursue

⁹⁵ Evidence of Mr Derwent, 28 July 1997, pp 9-10

⁹⁶ Submission 86, Oyster Farmers' Association of NSW Ltd, p 1

stable and predictable policy directions and retain any corporate memory". The Association also considered that, given the importance of the oyster industry in New South Wales, the number of Departmental staff devoted to the industry was disproportionately few.⁹⁷

In evidence, Mr Roberts reiterated this view and stated:

... the New South Wales oyster industry is the largest single fishery in New South Wales. We have about 25 to 30 per cent of the gross value of production of all commercial fishing in the State, yet the number of resources within the Department which are looking after this sector are blatantly totally inadequate. There is one person on the administrative and policy side full-time; there is a second person part-time, and on top of that there are probably three to four people working on things such as lease renewal and administration. Yet when you turn to the commercial sector, which is two to three times bigger than us in financial terms, it has staff of 70 to 80 plus. That is not referring to people involved in the research side of the industry, just on the sheer management and administration. When I entered the industry years ago a far greater proportion of people were working on the oyster industry but over time the Department's commitment to this sector has declined.⁹⁸

Mr Roberts gave an example of how this perceived lack of resources was affecting the administration of the oyster industry:

The principal areas which New South Wales Fisheries administers in respect of our industry are oyster leases and aquaculture permits. The aquaculture permits were new under the 1994 Fisheries Management Act. Again, this is where you start to find the lack of resources coming through. Oyster leasing, which is the renewal of leases or

⁹⁷ Submission 86, Oyster Farmers' Association of NSW Ltd, p 5

⁹⁸ Evidence of Mr Roberts, 2 April 1997, pp 70-71

the granting of leases, has involved massive backlogs in the renewal of leases that are a little complex. The worst case I heard of recently involved a lease—given that leases last for only 15 years—that was still in the too-hard basket 18 years after the application was made. I personally have a lease which I have applied for which has now been floating around for—I am guessing now; I think it is about six years, and it is no closer to resolution today than it was the day that I made application for it.⁹⁹

Mr Roberts also claimed that the Department had failed to collect oyster lease rentals and Quality Assurance Program levies, claiming that between 15 and 20 per cent of the value of the former and around 50 per cent of the latter are not being collected.¹⁰⁰

The criticisms of the Oyster Farmers' Association of NSW received some support from the ACIL Economics Strategic Plan, which stated:

Fisheries has recently begun to chase up unpaid rent payments and growers failing to submit a production return, but it must also develop a process to ensure routine compliance by all growers with public liability insurance payments and industry levies.

ACIL's overall assessment is that, notwithstanding the difficulties it confronts, Fisheries' performance is mediocre at best. The main problems are: a lack of policy development expertise (or reactive rather than pro-active policy), poor follow through of policy decisions, and insufficient timeliness in handling routine administrative tasks. ... To be fair to Fisheries, two important contributing factors are the construction of the *Fisheries Management Act*, and the level of funding.¹⁰¹

⁹⁹ Evidence of Mr Roberts, 2 April 1997, p 71

¹⁰⁰ Evidence of Mr Roberts, 2 April 1997, p 72

¹⁰¹ ACIL Economics Pty Ltd, *Oysters at the Crossroads: A Strategic Plan for the New South Wales Oyster Industry*, May 1997, p vii

Departmental Response

In response to these criticisms, Dr Glaister stated:

... the system of leases has been a manual one up until recently. There was a loss of significant staff from New South Wales Fisheries when it was moved to Orange, then back again. I believe that quite significant corporate memory was lost with that move, and that has caused some problems in the oyster lease section.

We are developing a geographic information system, a computer-aided system, to allow more rapid automated turnaround on oyster leases. That is in its development stage and is progressing very well. I expect that the problems that we have will fade once that is in place.¹⁰²

Mr O'Conner expanded on these comments:

... we have put a lot of effort into improving the administration of the oyster lease area in recent years. In addition to a geographic information system, we are resurveying all leases in the State to ensure that we have a very precise - that is, within one metre - description of where those leases are located. We have also developed a comprehensive database to try to ensure that we manage the transfer of leases and the lease administrations more efficiently.

Specifically with regard to your comment on rentals and levies being overdue, certainly it is a routine practice in the department to send out reminder letters. There are also policies in place to ensure that no transfers of leases, et cetera, take place without all those payments being up-to-date. But, beyond that, there is also provision in the Act

¹⁰² Evidence of Dr Glaister, 26 May 1997, p 47-48

for us to take more draconian action in terms of cancellation, or suspension, of leases and permits after a defined period. We are approaching the period with regard to some of those levies to be able to take more substantial action in the near future.

All I can say is that we are chasing those things up on a routine basis. The proportion that you are talking about is something like 16 per cent of oyster growers who appear not to be paying their rentals or levies on schedule.

... There is provision in the Act to cancel or suspend permits or leases where they have not been up-to-date with their payments for a period of, I think from memory, two years. Some of those levies have not been in place for that period of time as yet, and so that provision in the Act has not been open to us.¹⁰³

8.4.2.4 NSW Fisheries Oyster Research Programme

The Oyster Farmers' Association of NSW was also critical of the NSW Fisheries oyster research programme. The Association submitted:

Over the years many oyster farmers have been critical of the research program of NSW Fisheries believing it has been of little relevance to their needs. This criticism may be in part due to the lack of consultation of NSW Fisheries researchers with the industry before and during the research and the lack of extension services to communicate results and its application. Many oyster farmers believe that the research has been primarily geared at obtaining higher degrees or publishing scientific papers rather than fostering the industry.¹⁰⁴

¹⁰³ Evidence of Mr O'Conner, 26 May 1997, p 48

¹⁰⁴ Submission 86, Oyster Farmers' Association of NSW, p 8

In addition, the Association's submission was critical of the Department's extension services and doubted the value to the industry of work into establishing an oyster hatchery, stating:

Moves by NSW Fisheries to investigate commercial oyster hatchery technology in NSW, while welcome, have been technically orientated without encompassing the broader economic and management needs of the industry.

The Sydney rock oyster industry has been developed around the use of wild caught oysters, and it appears that there is little support for a hatchery from Sydney rock oyster farmers. In these circumstances a hatchery would most likely fail commercially.

It appears to the OFA that the hatchery proposal is being proposed to assist in the development of abalone and other shellfish in NSW. The OFA is opposed absolutely, to the use of oyster R & D funds for the development of facilities for other shellfish.¹⁰⁵

In evidence, Mr Roberts added:

... New South Wales Fisheries has always had a fisheries science bent, to the exclusion of everything else. One of our suggestions is that maybe New South Wales Fisheries would be better going back to being a commodity division within the Department of Agriculture. When New South Wales Fisheries was previously a part of that Department, we had access to its marketing and economics people, rural adjustment and other areas within the department. We are now totally isolated from that. I do not think it is a healthy situation to have that narrow focus and we do not get a whole-of-industry approach.¹⁰⁶

¹⁰⁵ Submission 86, Oyster Farmers' Association of NSW, p 9

¹⁰⁶ Evidence of Mr Roberts, 2 April 1997, p 79

NSW Fisheries rejected these criticisms, claiming that the oyster research programme would be of direct benefit to growers. Dr Allan described the programme as follows:

At the moment our research is primarily concentrated on developing single seed oysters and on genetically improving the strain of oysters to allow oysters to be grown to market size approximately one year earlier than those currently being farmed.

We have identified that the biggest problem in the industry today is that ... it takes three to four years to produce a market size oyster. Together with that, with all the problems of habitat degradation and in some cases the Pacific oyster, it costs the farmers too much money to make a marketable crop. ...

Our next step was to look at whether we can selectively breed the oysters for faster growth or disease resistance ... a couple of generations of breeding from selective lines have shown that we can significantly improve growth rates for oysters. Our other focus has been to look at inducing triploidy, to produce oysters with three sets of chromosomes rather than two. These oysters are sterile. Instead of putting their energy and resources into their sexual development, their gonads, they are putting that into their growth.

With Sydney rock oysters, that means that those triploid oysters grow 30 to 40 per cent faster than the normal diploid oysters and they taste the same. When we combine our triploiding with our mass selection and our hatchery technology, we believe we have an animal that will give the industry an opportunity to make money by turning up a crop one year earlier than they might have otherwise done.¹⁰⁷

¹⁰⁷ Evidence of Dr Allan, 12 May 1997, pp 7-8

8.4.2.5 Post Harvest Marketing Support

Elements of the oyster industry were also critical of the lack of oyster marketing by the Department. The Oyster Farmers' Association of NSW submitted:

NSW Fisheries provides no promotion or marketing services to the NSW oyster industry. NSW Fisheries supported the OFA in its efforts to introduce a promotion and marketing program, at the same time as the introduction of the QAP levy. ... At all times the impetus and drive for this program has come from the OFA.¹⁰⁸

The Association specifically supported the introduction of a seafood marketing levy to allow the industry to promote its product and speedily react to market developments. Mr Roberts stated:

... there was going to be a promotion levy for the oyster industry imposed on the industry but that was scuttled because of opposition from some oyster farmers, most of them at the bottom end of the industry, ... The State Government at the time was prepared to put in what they were calling loans—basically, they would never be repaid—for a quarter of a million dollars, and all of that fell through, which was unfortunate because a key part of that was crisis management. In the current climates that we have been going through, with the problems in Wallis Lake and further north, those particular programs would have been invaluable.¹⁰⁹

The Master Fish Merchants Association supported the latter proposition, with Mr Gordon stating:

At the moment there is a lot of concern that there could be a form of market collapse. We have seen a market collapse

¹⁰⁸ Submission 86, Oyster Farmers' Association of NSW Ltd, p 10

¹⁰⁹ Evidence of Mr Roberts, 2 April 1997, p 73

recently with the Wallis Lake oyster scare where we had a market collapse of 85 percent in sales of oysters and 30 percent in fish across the board. ... We would be overly optimistic to believe that there are not going to be other market collapses in the future.

Where we are in a difficulty at the moment is that we are unable to afford, as an industry, to put some positive media back in to try and get the sales to recover at a faster rate. At the moment we are very much in a situation where we look on helplessly and hope that, after a period of time, the public will get their confidence back. Again we have not got the statistics to work out just how damaging this is to the industry, but it would not be an exaggeration to say that millions of dollars have been lost since the Wallis Lake tragedy.¹¹⁰

The Standing Committee supports the introduction of a broad-based seafood post harvest levy, including oysters, to facilitate quality assurance, product development, and seafood promotion (see Recommendation 6).

8.5 Conclusions and Recommendations

The Standing Committee considers that soundly managed aquaculture, particularly inland aquaculture, represents a major opportunity for New South Wales to expand its seafood production in an ecologically sustainable way. While recognising the need for rigorous environmental safeguards, the Standing Committee believes that the present absence of a coordinated development approval process is the major obstacle to the expansion of the State's aquaculture industry. Accordingly, the Standing Committee recommends:

¹¹⁰ Evidence of Mr Gordon, 14 April 1997, pp 64-65

Recommendation 25

That an interdepartmental task force be formed to identify geographic zones within New South Wales suitable for specific types of aquacultural development. This task force should consist of representatives from NSW Fisheries, the Department of Urban Affairs and Planning, the Environment Protection Authority, the Department of Land and Water Conservation, and other relevant agencies and be charged with developing a strategic plan which:

- outlines clear and zone-specific criteria against which aquaculture development applications will be judged. These criteria should include environmental parameters;
- can be used as the basis of aquaculture development plans as provided for under Part 6 of the *Fisheries Management Act 1994*;
- provides for a predetermined period of community consultation, including public advertisement of proposals and provision for public submissions; and
- nominates a lead agency to act as the point of contact in the development approval process and coordinate the responses of other agencies.

The Standing Committee also considers that the marketability of a species should be thoroughly investigated before significant research is conducted into its suitability for aquacultural production. The Standing Committee believes that those engaged in seafood marketing are best placed to comment on a species' likely market value and recommends:

Recommendation 26

That NSW Fisheries be given a statutory obligation to consult with relevant seafood marketing bodies prior to committing significant funds to research the suitability of particular species for aquacultural production.

