

STOCK SUPPLIES

Stock supplies of Golden Perch and Silver Perch are relatively unlimited but Murray Cod and Catfish are still in limited supply.

Supply of fingerlings to the public requires that orders be booked in advance as fish are not a shelveable product. Delivery can only take place when the fish are ready for packing.

GROWTH RATES

Fry take about five to 10 weeks to obtain a length of 50 mm. We recommend that fingerlings must be about 50 mm or more in length, to show optimal survival and growth rates. In Queensland, small fingerlings have been supplied with disappointing survival and growth rates. Larger fingerlings show good survival rates and up to double the growth rates of smaller fingerlings.

Expected growth rates would be about 568 per year although Golden Perch can double this after the second year with fish exceeding 4 kilos in three years.

Survival and growth rates vary according to conditions.

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Factors affecting the future of native fish

By Bruce Malcolm,
Uarah Warm Water Fish Hatchery, NSW

The decline in natural populations of Australian native fish has been a result of the following:

- (i) Man's need to alter the natural flow patterns of our rivers to ensure adequate water supplies for irrigation.
- (ii) The pollution of rivers and streams by effluent and misuse of chemicals.
- (iii) The stocking of non-indigenous species of fish.
- (iv) The ever increasing numbers of recreational fishermen.

Because of the decline in natural populations and increasing demand the potential now exists for viable commercial operations to supply this demand.

These commercial operations may be directed towards a grow out system to supply commercial markets, a fish out to accommodate the angler, a tourist related operation or a system to encompass all three.

(I) Man's need for regular and large amounts of water, mainly for irrigation, led to the construction of dams and weirs which have altered the natural flow patterns of many of our major rivers.

As a result once normal spring floods are now rare and below normal summer water temperatures have greatly affected the spawning patterns of many fish.

Weirs along rivers have restricted the passage of fish upstream to spawning sites, and although there are fish ladders on some weirs most of these are poorly designed and quite ineffective. Desnagging programs on rivers to maintain or increase flow rates have had a detrimental affect on the natural habitat of native fish.



(II) Pollution of rivers, streams and lakes has been a problem in some areas. This is particularly evident in irrigation areas where extremely large amounts of herbicides are used. The water when drained from these areas after irrigation, often drains back into major rivers.

Since 1860, we have released directly or indirectly a number of non-indigenous species into our rivers, including English perch (Redfin), brown trout, Atlantic salmon, brook trout, rainbow trout, lake trout, common carp, talapia, gambusia and others.

Because of the introduction of these species, populations of native fish have been affected, some to the extent of being in danger of extinction.

The ever increasing number of recreational anglers fishing threatened populations must also affect the survival of native species especially those endangered.

Naturally we will not change the flow patterns of rivers, ban the use of chemicals or remove introduced species, so it is obvious that the decline of wild stocks of native fish will continue.

In years to come in NSW, the quantity of fresh water native fish supplied by professional fishermen will decrease as no new inland professional fishing licences are being issued, and as the number of fishermen declines so will the supply.

At present in NSW there is closed season for professional fishermen running from the end of August till the start of December. During this period, a lot of freshwater native fish reaching the consumer is supplied by illegal fishermen (poachers) with prices of \$8/kg being common and up to \$20/kg for Murray Cod.

It is therefore obvious the potential for commercial rearing of our native fish to meet the needs of recreation anglers and the table market does exist and will grow.

We have established the fact that this potential exists.

COMMERCIAL FARMING

(i) location of the farm with respect to

(a) climatic conditions (allowing optimum growth rates),

(b) market access (whether direct to restaurant or through wholesalers).

(ii) Design and construction of grow out ponds, relating to size, depth or species being considered.

(iii) Whether it is to be an intensive or extensive system.

At this time an intensive system (by this I mean similar densities to salmonid farming) should not be considered. (More research is required).

(iv) Running costs. An extensive system incorporating grow out and fish out facilities in my opinion has the most potential.

Normal farm dams in NSW with seasonal fluctuations in water levels and self sustained natural food should support up to 500 kg/ha of live fish. (Ref Barlow and Bock in print).

With supplementary feeding (using natural food such as shrimps and forage fish) a much higher carrying capacity would be expected, 1000 kg/ha would not be unreasonable.

At \$6/kg a return of \$3,000/ha per year should be possible allowing a two year period for fish to reach 1 kg, being the optimum market size.

There are of course factors to be considered, including potential disease problems.

POTENTIAL DISEASE PROBLEMS

Naturally, diseases are more likely to occur when fish are stressed, whether it be due to overcrowding, poor water quality, lack of food, lack of oxygen or a combination of factors. Good management and common sense is the basis for success in any business venture, and is crucial in an aquaculture enterprise, especially when one or two years production can be lost in a day because of bad management.

Australia has been fortunate up till recently, being relatively free of exotic diseases which are a problem in aquaculture industries in other parts of the world.

Most of the external parasites which affect native freshwater fish are relatively easily identifiable and treatments are straight forward and effective.

The potential problem exists with bacterial and viral diseases being imported into Australia from Asia with exotic species and in the water in which they are shipped. Often it is not possible to detect the diseases as they are internal and hence show no external symptoms. This problem is compounded by today's fast transport, whereas in the early days of importing fish and eggs transit times were fairly long. Therefore, fish and eggs which were diseased would die at sea, overcoming the problem.

One good example of this problem is the bacterial disease commonly known as goldfish ulcer disease involving the bacteria *Aeromonas Salmonicida*. This disease was first detected and confirmed in Australia at a goldfish farm in Victoria in 1980 and suspected since 1974.

The relevant authorities did nothing to eradicate the problem. By the end of the summer of 1984 this disease was detected in wild populations of goldfish as far north as Candobolin and ulcerated fish found as far north as the NSW/Queensland border and throughout the Murray-Darling system.

To date there have been no reported deaths of native fish in the wild related to this disease, but it is possible that mutant strains of the related bacteria could have disastrous effects.

Since the disease was detected, relevant state authorities have done absolutely nothing to prevent it spreading.

Quarantine of goldfish entering other states from the affected area would have been a logical step.

When an exotic disease occurs in farm animals, an immediate quarantine is enforced, and the infected animals disposed of, but when fish are involved, state authorities responsible for controlling these serious problems choose to bury their heads in the sand and pretend there is nothing to be concerned about.

I support the comment by Dr John Humphries that this spreading of GUD could have been prevented. This is only one example of the potential threat to our industry and it's about time federal and state authorities did the job they are paid to do.

In 1975, strict controls were placed on the importation of live or dead salmonids and their eggs to protect salmonids in Australia from the possible introduction of foreign diseases, yet virtually nothing has been done to protect our native warm water fish.

Banning a token number of exotic species is incomprehensible. This potential disease problem still exists.

There appears to be more concern for our non-indigenous trout population than for our native fish.

There is, I think, a logical answer to the problem:- Breed the exotic species in Australia. This would expand an already established industry and employ more people. It would then be possible to monitor and control the distribution of these species.

Accompanying this, there must be legislation in place by the Commonwealth Government banning the importation of all exotic species of fish and an outlining of measures to be taken when a potentially dangerous disease outbreak occurs.

GOVERNMENT RELATIONSHIP WITH THE INDUSTRY

The relationship between the fish farming industry in NSW and the Division of Fisheries (now under the control of the Department of Agriculture) has not been good.

We have been in the situation of being treated as though we do not exist. We operate under a permit system, having to re-apply every 12 months, to operate a business which in some cases costs many hundreds of thousands of dollars to establish.

There is no liaison between departmental staff and fish farmers regarding fish farming policy along with a failure to answer correspondence, refusal of interviews to try to sort out problems, refused access to broodstock and a general disregard to the industry.

It is an intolerable situation, when on one hand we have a Department of Agriculture which will bend over backwards to assist farmers and on the other shows total contempt for the fish farming industry.

If fish farming is going to survive and realise the potential that does exist, then government departments will have to recognise the existence of the industry, be willing to improve the relationship, and work with us — not against us.

The fish farming industry does have a future, we have species of fish which are high in demand and bring good market prices, suitable climatic conditions, the ability to provide continuity of supply and a declining natural population, but how bright the future is will depend more on high ranking public servants accepting that serious and potentially serious problems do exist and taking steps to alleviate such problems.



Jack Hutchings of Brisbane was at AquaFarm 86 to promote Freshwater Australia Crayfish Traders.



Jenny Vincent, DPI Information Centre, Brisbane, promoted DPI publications at AquaFarm 86 in Brisbane.

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Establishing a marron farm

By Nick Samios,
Managing Director,
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THREE major factors of significant importance to the viability of any aquacultural venture are capital outlay, production yields and costs and returns. I shall attempt to outline in brief the breakdown of these factors. However I shall make some basic assumptions firstly.

1. Ponds are design built for the purpose. There is absolutely no money in throwing marron into farm dams. It is a complete waste of time, money and effort.
2. The property in question should have a good clay base with water holding qualities.
3. Proper management is strictly adhered to. Management will undoubtedly make or break the farmer.

CAPITAL OUTLAY (COMMERCIAL SCALE)

The most sought after information regarding commercial marron farming has always involved the capital outlay associated with the establishment of a commercial marron farm.

Costings per pond are set out on Page 127. Always remember that costs involved in any particular case could vary depending on a variety of factors.

PRODUCTION YIELDS

I cannot accept the incredible statements being made by certain farmers within the industry in Queensland. Marron production cannot be established by way of mathematical calculations, as some farmers seem to think. Accurate production figures in Queensland are not available. I firmly believe Ken and Allan Pascoe's farm at Kennelworth to be the most successful farm to date in Queensland.

