Queensland Government
Department of Primary Industries

DPI Notes

Fish stocking:
A guide to optimal release sizes and release strategies for impoundments

Michael Hutchison, Thomas Gallagher, Keith Chilcott, Bob Simpson & Glynn Aland, Agency for Food and Fibre Sciences (Fisheries and Aquaculture), Southern Fisheries Centre, Deception Bay.

The information provided below is based on research carried out in south-east Queensland, but can also be applied to fish stocking in impoundments in other parts of Australia. It should be regarded as general advice to assist groups or individuals in their fish stocking activities, and not as a blueprint for success in all situations.

What size fingerlings should we stock?

It is widely believed that stocked fish are more likely to survive if released at a large size rather than a small size. This is indeed often the case, as larger fish tend to be more robust and are less likely to be eaten by whatever predators are present. Research in Queensland has shown that fish released at a length of 50 mm or longer generally stand a better chance of survival than those released at a smaller size. But there are situations where it can be just as effective to stock smaller fish, and this may translate into money saved if the smaller fish can be purchased at a reduced rate.

In impoundments where the number and variety of potential fish predators is low, there may be no advantage in releasing larger fish. For a group with a set amount of money to spend on fingerlings, it can be more cost-effective to purchase a larger number of small fish (that is, provided you can negotiate a lower price per fish with the supplying hatchery). On the other hand, in impoundments that have established populations of predators such as barramundi, fork-tailed catfish and even mouth-almighty, it can be a waste of time to release smaller fish – we recommend only releasing fish larger than 50 mm in these cases.

The following section provides stocking guidelines for four of the most commonly stocked recreational fish species in Queensland.

Australian bass

- Stock bass of 50 mm or larger in dams with mouth-almighty or fork-tailed catfish;
- Avoid stocking bass into impoundments dominated by barramundi, as survival is likely to be very low;
- If predator numbers are low, and if you can buy 35-45 mm bass for less than 80% of the price of 50-65 mm bass, then stock the 35-45 mm bass;
- Avoid stocking 20-30 mm bass unless you can get them at less than 40% of the price of 50-65 mm bass.

Barramundi

- Stock barramundi of 50 mm or larger in impoundments with mouth-almighty or fork-tailed catfish;
- In impoundments with few predators (including other barramundi), it can be just as cost-effective to stock barramundi as small as 20-30mm if they can be obtained at a lower cost than larger fingerlings. Small barramundi will quickly grow to a size where they are safe from most predators.

ISSN 0155 - 3054
Produced by: DPI Fisheries, AFFS
Created November 2002
File No: F0140
No of pages (5)

Golden Perch

- Stock golden perch of 50 mm or larger in impoundments with large populations of Australian bass or spangled perch;
- Avoid stocking Murray-Darling Basin (MDB) strain golden perch in impoundments dominated by barramundi as survival is likely to be very low (DPI does not have sufficient data to comment on survival of Fitzroy strain golden perch);
- There is some evidence that MDB strain golden perch do not fare well when stocked in impoundments containing Australian bass.

Silver Perch

- Avoid stocking silver perch into impoundments dominated by barramundi, mouth almighty, banded grunter or fork-tailed catfish;
- Stock silver perch of 50 mm or larger in impoundments with large populations of Australian bass or spangled perch;
- If predator numbers are low, it can be cost-effective to stock silver perch as small as 35mm if they are cheaper than larger fish.

Impoundments dominated by barramundi

As noted above, research has shown that it is very difficult to establish Australian bass, MDB strain golden perch or silver perch in an impoundment dominated by barramundi. Fish stocking groups and individuals in areas where both barramundi and these other species are permitted to be stocked must make a choice as to whether they want a barramundi or a bass/perch fishery in the longer term. If bass have been stocked several years before barramundi, large bass will persist for a while but subsequent stocking of bass will most likely have poor success.

Stocking at low water levels

Survival of stocked fish is often highest if the fish are released when impoundment water levels are high. When water levels are low, predators and competitors are concentrated into a smaller area and can have a big impact on the newly released fish. The situation is likely to be worse if the impoundment has experienced a *rapid* drop in water level, so that there has been no chance for a new balance between fish populations and the available food and habitat resources to be reached. We recommend against stocking if a dam has been rapidly drawn down to less than 15% of its full supply volume or less than 20% of its full supply surface area.

When should we stock?

It's best to stock as early in the season as possible - before Christmas if the fingerlings are available. This will give the fish a chance to grow past the size where they are susceptible to a wide range of predators before temperatures drop in autumn and growth slows. Stocking fish late in the season (March, April, May) means they miss the optimal growing period and will remain small for a longer period. For example, if barramundi are stocked before Christmas, they will often reach legal size by late the following summer (14 months). However, if they are stocked late in the season, they may not reach legal size until the second summer after stocking.

It is best to release fish during the cooler parts of the day so there is less chance of them suffering temperature stress.

Where should we stock?

It is a good idea to divide batches of fingerlings into smaller groups for release at various points around an impoundment. This will spread the risk and lessen the chance of dropping all the fingerlings onto a school of predators. In many cases, a good approach is to seek out some sort of cover, such as weed beds or woody debris, in reasonably shallow water where the fish can find somewhere to hide and are unlikely to encounter large numbers of predators. Cover in deep water, and open deep water, are more likely to harbour predators, particularly in the daylight hours.

Contact your state fisheries agency for advice on where you are permitted to stock and with what species.

The information in this document is taken from ***Fish stocking in impoundments: A best practice manual for eastern and northern Australia***; Fisheries Research and Development Corporation Project No.98/221, November 2002 QI02103; ISSN 0727-6273; published by DPI Fisheries, Department of Primary Industries, Queensland. Copies of the report may be obtained from the authors, DPI Fisheries or the Fisheries Research and Development Corporation.

Further information

- Contact the authors at:
  Southern Fisheries Centre
  Department of Primary Industries
  PO Box 76
  Deception Bay Queensland 4508
- DPI Call Centre: Phone 13 25 23 (Queensland residents) between 8 am and 6 pm weekdays; non-Queensland residents phone 07 3404 6999;
  email callweb@dpi.qld.gov.au
- DPI's Fishweb website: www.dpi.qld.gov.au/fishweb ■