

# State and Territory Updates

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## Downstream movement of fish in Victoria

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### *Victorian Legislation and Policy*

There are a number of legislative constraints to the installation of structures that obstruct fish movement within Victoria. These include the *Conservation, Forests and Lands Act 1987*, *Fisheries Act 1995* and the *Water Act 1989*, while the *Flora and Fauna Guarantee Act 1988* lists the prevention of passage of aquatic biota as a Threatening Process.

There are also strategies such as the Victorian State Fishway Program, Victorian River Health Strategy (2002), Melbourne Water fishways program and the Catchment Management Authority's Regional Catchment Investment Plans that are designed to protect and enhance aquatic communities, such as through the provision of fish passage.

While not specifically addressed to date, a number of these Acts and Strategies could be applied to the impacts on downstream movements of aquatic fauna.

### *Research to Date*

Very little research has been conducted specifically into downstream fish movement apart from a recently completed three year study that used trapping and radiotelemetry to investigate the impact of weirs on the downstream movement of adult Murray-Darling Basin fish (O'Connor *et al.* 2003, this workshop proceedings).

Other completed studies that have investigated fish movement and shed some light on downstream fish movement include a carp study (Stuart and Jones 2002), Murray cod radiotracking project (Koehn *et al.*), and a brief assessment of fish entrapped within the Yarrawonga canal (Koehn this workshop).

The Victoria State Fishway Program identified around 2500 barriers (McGuckin & Bennett, 1999) and has installed around 70 fishways, reopening around 5000 stream km to upstream fish passage. Fishways have included rock-ramps, particularly for coastal species, some culvert modifications (roughening of surface/gradient modification) and several vertical-slot fishways.

Victoria also has a Redundant Weirs Program which is identifying and prioritising weirs for potential removal. To date, removals have involved only small structures such as culverts, however, once the review is complete, it is hoped that more significant structures could be removed.

These Programs have resulted in a number of other agencies such as Melbourne Water and some Catchment Management Authorities establishing their own fishways programs.

### *New Projects*

Some project about to commence which should also contribute to knowledge of fish movement include the:

- MDBC/Barmah-Milewa Forum study of lateral fish movement using radiotracking around regulators in the Barmah-Milewa forest (Matthew Jones);
- MDBC/Barmah-Milewa Forum study of fish recruitment in the Barmah-Milewa forest (Alison King);
- Otolith microchemistry studies for the Victorian State Fishway Program (diadromous fish movements) and the ARC and CRC projects investigating dispersal and connectivity (David Crook);
- Lake Nagambie radiotracking project looking at fish movements to and from a stocked lake for Fisheries Victoria. (David Crook); and the



- MDBC Murray River Fishway Assessment Project which has used radiotelemetry to look at fish movements around Lock 7 and will be installing PIT tag readers on all new Murray River fishways.

Also proposed is a radiotracking investigation of the fate of fish moving upstream through the Yarrowonga fishlift for the MDBC. This study includes some scoping of downstream fish movement in relation to the impacts of an irrigation canal and hydroelectric system.

### *Engineering works to Date*

No significant works to date apart from the modification of two tidal barriers to release fish previously trapped. These works mostly related to water quality issues and a susceptible to fish-kill events.

### *Main Issues*

- Losses of fish to irrigation/hydroelectric systems.
- Lateral fish movement past regulators.
- Requirement for improved understanding of ecological significance of downstream fish movement.

### **References**

McGuckin, J., & Bennett, P. 1999 An inventory of fishways and potential barriers to fish movement and migration in Victoria. Department of Natural Resources and Environment. ISBN 0 7311 4402 3.

O'Connor, J., O'Mahony, D., & O'Mahony, J. 2003. Downstream Movement of Adult Murray-Darling Basin Fish Species. Final report to Agriculture, Fisheries, Forestry Australia. Freshwater Ecology, Arthur Rylah Institute for Environmental Research. Department of Sustainability and Environment. ISBN 1 74106 406 6.

Stuart, I., & Jones, M. 2002. Ecology and Management of common carp in the Barmah-Milewa forest. Final report to Agriculture, Fisheries, Forestry Australia. Freshwater Ecology, Arthur Rylah Institute for Environmental Research. Department of Sustainability and Environment. ISBN 1 74106 369 8.