

# *Downstream movement of fish in New South Wales*

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## **Cameron Lay - NSW Fisheries**

Like most states in eastern Australia, investigations in NSW of downstream fish migration have been the poorer cousin in comparison to work on upstream movement. Efforts to quantify the scale and magnitude of native fish migration and the associated capital works expenditure to facilitate this process have focussed almost exclusively on upstream movement. However recent research and development assessments have begun to recognise the importance of downstream movement of adults, juveniles and larval fish through the following projects.

### *Downstream Transport of Larval and Juvenile Fish*

The findings of this recently completed project and its associated recommendations are included as a separate report within these proceedings. In addition, NSW Fisheries has recently commenced research into the drift of larval and juvenile Eastern Freshwater Cod in coastal streams of northern NSW.

### *Weir Removal Program*

NSW Fisheries, in conjunction with the Recreational Fishing Trusts and the World Wildlife Fund have commenced a Weir Removal Program. The program aims to ameliorate the impact of redundant structures through decommissioning or removal. Weir removal provides direct benefits for downstream migrants through the removal of physical and behavioral barriers and indirect benefits through the restoration of natural flows to assist in the dispersal of eggs and larvae. To date, the program has facilitated the removal of 14 weirs and road crossings throughout NSW including Muswellbrook weir on the Hunter River and the Branch River Crossing on the Branch River.

### *High Fish Passage*

NSW Fisheries and the Sydney Catchment Authority have undertaken a project to construct a fishway at Tallowa Dam on the Shoalhaven River. The project has entered into the design phase, however some uncertainty exists surrounding the associated works (multi-level offtake and hydroelectric development)

and the potential impact on downstream fish passage. This issue will be subsequently addressed as the project evolves.

### *Hydroelectric Developments*

One of the most significant challenges for the provision of downstream migration in NSW are proposed low-head "run-of-the-river" hydroelectric developments. Following a feasibility report from the NSW Sustainable Energy Development Authority (SEDA), numerous weirs on the main stem of the Murray and Murrumbidgee Rivers have been identified as potential sites for hydroelectric developments. NSW Fisheries has expressed concern over the impact of turbines and storage operation on downstream migrants (adults, juveniles, larvae and eggs). Approval has been given for works that incorporate the construction of a downstream diversionary device to exclude the majority of the fish from passing through the turbines and a fishway to facilitate upstream movement. The increased cost associated with these additional works has prevented the realisation of these projects to date.

Significant knowledge gaps still exist with respect to fish passage and hydroelectric developments in Australia. To progress hydroelectric developments in NSW, a greater understanding of mortality through turbines, the functionality of downstream diversionary devices and the level of compensation (in terms of improvements in upstream passage) necessary to offset the negative impact of the development is urgently required.

