

# Downstream movement of fish in the Australian Capital Territory

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### Geographic Context

The Australian Capital Territory (ACT) lies entirely within a single river catchment (the upper Murrumbidgee) within the Murray-Darling Basin. The ACT covers 2,400 km<sup>2</sup> with about 60% of the Territory being hilly or mountainous, and no lowland or floodplain rivers are present (Anon 1998). Altitude in the ACT ranges from approximately 440 to 1911 m. ASL. The fish diversity is low with only 11 native species and nine alien species recorded. Due to its inland and upland location, there are no diadromous fish species occurring naturally in the ACT (Lintermans 2000; Lintermans & Osborne 2002).

### State Policies

There is no formal policy for downstream fish movement in the ACT. The focus of fish passage policy and management activities in the ACT has been on upstream fish movement.

### Research and Structures

The ACT has a relatively small number of impoundments and weirs, and consequently has a relatively small fish passage program. There are currently only three fishways in the ACT (two vertical slot and a single rock-ramp fishway), with all three fishways designed to facilitate upstream movement. The vertical slot fishway on the Murrumbidgee River at Casuarina Sands was monitored between 1980 and 1990 with 6 species recorded moving downstream through the fishway (**Table 1**). Whether these represent local movements or part of larger scale movements is unknown. The monitoring program was only capable of detecting movement by larger individuals

(> ~100 mm), so any movement by smaller species was undetected. Fish tagged at the Casuarina Sands fishway have been captured in Lake Burrinjuck, approximately 40 km downstream (Lintermans unpublished data).

Other research projects have encountered downstream movement, but were not specifically designed to investigate this phenomenon. For example, monitoring of the fish community in the Molonglo River downstream of Lake Burley Griffin found that the ages of the majority of Golden Perch present corresponded with the ages of stocked fish in the lake upstream, suggesting that the golden perch population in the rivers was largely derived from downstream displacement of fish from the lake (Lintermans 1997, 1998b). Similarly monitoring in the Cotter River has recorded downstream displacement of Macquarie perch and Trout cod from Bendora Dam, a drop of 45 m onto a concrete apron, with individuals of both species apparently suffering no ill effects.

Movement studies have been completed for Mountain galaxias *Galaxias olidus* (Lintermans unpublished data), Two-spined blackfish *Gadopsis bispinosus* (Lintermans 1998a) and Macquarie perch *Macquaria australasica* (Ebner and Lintermans unpublished data) in the ACT and are underway for Trout cod *Maccullochella macquariensis*. The majority of these studies were focussed on small-scale movements or habitat use and were designed with investigation of downstream movement (in the sense of this workshop) in mind. There is a clear need for further studies to investigate the requirement for downstream movement in a number of native freshwater fish species, and to clarify the importance of localised movement and larger-scale migratory movements.

Table 1. Fish species recorded moving downstream through a vertical slot fishway on the Murrumbidgee River, ACT.

Murray cod	<i>Maccullochella peelii</i>
Macquarie perch	<i>Macquaria australasica</i>
Brown trout	<i>Salmo trutta</i>
Rainbow trout	<i>Onorhynchus mykiss</i>
Redfin perch	<i>Perca fluviatilis</i>
Carp	<i>Cyprinus carpio</i>

## References

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