

# NSW DEPARTMENT OF PRIMARY INDUSTRIES

## JOHN HOLLIDAY STUDENT CONSERVATION AWARD

– 2008 –

**2008 WINNER**

Katherine Dafforn



**Winner of the 2008 John Holliday Student Conservation Award**

*Picture from left to right: NSW DPI's Chief Scientist, Prof. Steve Kennelly, Mrs Sue Holliday (John Holliday's wife)  
Ms Katherine Dafforn (winner) and the Minister for NSW Dept Primary Industries – Ian Macdonald*

**OTHER ENTRY RECEIVED FOR 2008**

Robert Rolls

\*\*\*\* 2008 WINNING ENTRY \*\*\*\*

## **Shallow moving structures promote marine invader dominance**

**By Katherine Dafforn**

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### ***Summary***

Global increases in urban development have resulted in severe habitat modification in many estuaries. Most are now dominated by artificial structures such as pilings and pontoons, which tend to increase the availability of free space. Recent research suggests invaders may be better able to exploit these pilings and pontoons than are native species.

We compared the number of invertebrate invaders on settlement plates that were fixed (similar to pilings) versus moving (similar to pontoons) at depths of 0.5 m and 2 m. Invaders as a group were most abundant on shallow (0.5 m), moving plates (essentially floating surfaces), and were more abundant than native species on all treatments. Future management strategies should take into account the potential for shallow, moving structures such as pontoons to enhance invader dominance and strongly consider using fixed structures to reduce opportunities for invaders.

# Generalist-feeding fish show minimal dietary response to a small environmental flow release in a regulated river

By Robert Rolls

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## Summary

Flow regulation affects the distribution, composition and abundance of river fauna including algae, macroinvertebrates and fish. Environmental flow programs are designed to maintain critical aspects of the natural flow regime, such as flow variability, low flow events, floods, to therefore maintain or restore river ecosystems. Due to the changes in the abundance and availability of prey sources for predators in regulated rivers, there is the potential that the abundance of predators, such as fish, can be influenced by the changes to food webs. Alternatively, populations of opportunistic or generalist-feeding fish may tolerate flow regulation by altering their diet to reflect food sources that are available, thereby maintaining populations. Therefore, opportunistic feeding fish may show changes in diet due to flow regulation and environmental flow releases.

Flow regulation is a growing feature of the Hunter River catchment, coastal New South Wales. In February 2007 an environmental flow was released from Lostock Dam to restore natural flow variability in the regulated Paterson River. Changes in the diet of Australian smelt (*Retropinna semoni*) and Cox's gudgeon (*Gobiomorphus coxii*) following this flow release were compared to samples from neighbouring regulated and unregulated tributaries. Both fish species showed differences in diet due to different habitat preferences, although neither species had differences in the diet composition following the flow release when compared to nearby regulated or unregulated tributaries. The generalist and opportunistic diets of these two species explained the lack of an influence of the flow release on prey consumption patterns, along with only moderate impact of flow regime change associated with regulation of the Paterson River. Maintenance of natural flow variability through the use of environmental flow releases is therefore recommended to maintain the food web to support native fish populations in a region of NSW with rapidly growing human demands for water.