

## Special issue

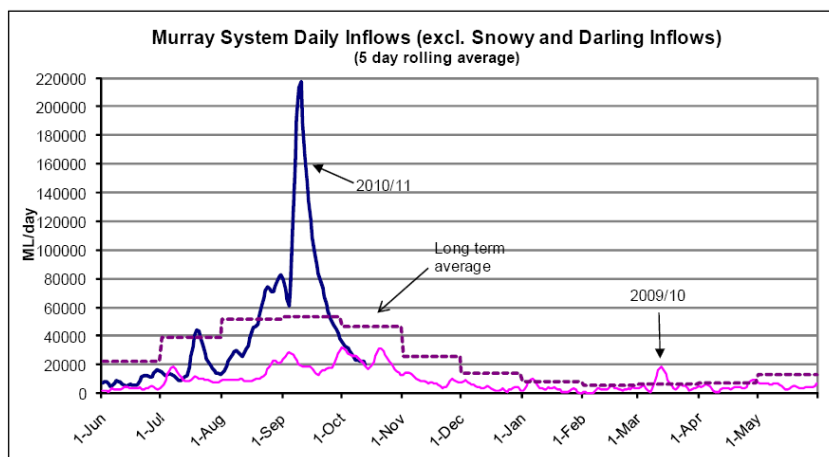
# Murray Darling Basin

The Murray–Darling Basin is 3,375 km long, more than 1 million square kilometres in area and is one-seventh of the Australian land mass. It is an area of national and international importance. It's timely with the release of the Guide to the Murray Darling Basin Plan to focus on news from the Basin and on research and activities relevant to other significant inland freshwater systems.

## NEWS FROM THE BASIN

### Water!

Water flows to such iconic areas as the Barmah-Millewah Forest, Menindee Lakes, the Great Darling Anabranch and Lakes Alexandrina and Albert are providing a welcome sight for communities throughout the Basin. It's been a long time between drinks for some of these areas. With the widespread rain, both floods and environmental water is adding much needed flow to the system. In some areas, the environmental water was allocated but was borrowed for critical human and industry needs during the drought. The releases will enhance and sustain the natural benefits associated with the flooding.



The 5 day rolling average daily inflow in the Murray River system, as at 13 October. The recent spike, while welcome, has not led to a sustained increase in flow consistent with long-term averages. Available from :

[www.mdba.gov.au/files/weeklyreports/WR101015-](http://www.mdba.gov.au/files/weeklyreports/WR101015-)

### Guide to the Murray Darling Basin Plan released

The Guide is the first part of a three-stage process consisting of the Guide, the proposed Basin Plan and the Basin Plan. The plan will have significant implications for native fish in the basin. The Guide provides an overview of the proposed Basin Plan and an additional opportunity for feedback before the formal consultation and submission process begins. The guide has three parts:

Volume 1 - an overview of the key elements of the proposed Basin Plan.

Volume 2 - the technical information and approaches used for the development of the proposed Basin Plan.

Volumes 3 - 21 - information for the 19 Basin regions which relates to the policy issues in Volume 1.

[http://www.mdba.gov.au/media\\_centre/media\\_releases/basin-plan-guide-released-for-public-discussion](http://www.mdba.gov.au/media_centre/media_releases/basin-plan-guide-released-for-public-discussion)

## Too much water for at least one aquatic weed

Recent inflows into the South Australian reaches of the Murray River have reduced the growth and vigour of water plants *Hydrilla verticillata* (a native) and the recently discovered *Elodea canadensis* (introduced). Both are difficult to control for a number of reasons, including that they occur in flowing water and that environmental impacts of control measures are a major concern. The higher inflows appear to be reducing the growth of both species due to sediments and nutrients being washed away and diluted. While both species are considered weeds, hydrilla is a natural component of the river's ecosystem and is actually suppressing the growth of the exotic elodea. Read more at:

[http://www.samdbnrm.sa.gov.au/Portals/7/PDFs/Water/Media%20release%20land%20water%20weed%20control%202010%20final%20\(3\).pdf](http://www.samdbnrm.sa.gov.au/Portals/7/PDFs/Water/Media%20release%20land%20water%20weed%20control%202010%20final%20(3).pdf)

## Macquarie perch moving house

Macquarie perch are facing a housing shortage with the upgrade of Cotter Reservoir. These fish use snags, rocks and reed beds in relatively shallow water to shelter as juveniles and to avoid becoming a cormorant's breakfast. These areas will be drowned out when the Cotter Dam wall is raised. Researchers have been looking at how to provide new shelters by looking at what constructed habitat the Macquarie perch prefer. They found that both adult and juvenile fish will use constructed habitats and that their preference was for rock piles. For more information, including watching Macquarie perch using some of the different constructed habitats on offer, see:

[www.youtube.com/watch?v=V3GxTcl0-Ds](http://www.youtube.com/watch?v=V3GxTcl0-Ds)

[www.youtube.com/watch?v=bHFSNB43cr8&feature=related](http://www.youtube.com/watch?v=bHFSNB43cr8&feature=related)



Macquarie perch. Photo: Gunther Schmida

## Kids teaching kids

350 students from 27 schools across the SA Murray-Darling Basin put their passion for the environment into action as part of the annual South Australian Kids Teaching Kids Environmental Conference. At Laratinga wetlands the students, from Years 5 to 11, got involved in activities aimed at increasing awareness and knowledge about the natural environment, river systems, resources and indigenous culture. Students got their hands dirty planting 200 native trees to revegetate part of the wetlands and propagated seeds for future revegetation work. Activities were coordinated by the South Australian Murray-Darling Basin Natural Resources Management Board in partnership with the District Council of Mount Barker. For more information contact Alexandra Taylor at [alex.taylor@samdbnrm.sa.gov.au](mailto:alex.taylor@samdbnrm.sa.gov.au) or visit:

[www.samdbnrm.sa.gov.au/Portals/7/PDFs/media%20releases/Media%20release%20ONRM%20Education%20kids%20teaching%20kids%20post%20event%202010%20final.pdf](http://www.samdbnrm.sa.gov.au/Portals/7/PDFs/media%20releases/Media%20release%20ONRM%20Education%20kids%20teaching%20kids%20post%20event%202010%20final.pdf)



Year 5 and 6 students and a Department of Environment and Natural Resources staffer enjoying activities at Laratinga Wetland, South Australia. Photo: Alexandra Taylor

## Fishy Forum

The recent Native Fish Forum in Canberra, hosted by the Murray–Darling Basin Authority, gave over 130 scientists, water, catchment and fisheries managers and recreational fishers an opportunity to hear about new science and on-ground action in aquatic restoration and also to build much needed networks. The agenda and book of extended abstracts is available:

[http://www.mdba.gov.au/system/files/NFS-2010-fish-forum-abstracts\\_Final.pdf](http://www.mdba.gov.au/system/files/NFS-2010-fish-forum-abstracts_Final.pdf)

## Demonstrating the 'Bidgee Demo Reach ...

I&I NSW recently teamed up with the ACT Government's Conservation Planning and Research Unit to hold a workshop on fish friendly farms, the Native Fish Strategy and the Upper Murrumbidgee demonstration reach at Tharwa. Attendees learnt about local fish of the region, the condition of the waterways, water quality and what they can do at a local scale to help rehabilitate fish habitat. Participants also had the chance to talk to researchers about electrofishing and other techniques used to monitor fish within demonstration reaches. The workshop was funded by the Natural Resources Advisory Council.



An electro-fishing demonstration on the Murrumbidgee River. Photo: C. Carruthers

## ... and habitat works underway

The first of the on-ground works for Upper Murrumbidgee Demonstration Reach have been completed. Five kilometres of riparian improvement, particularly willow removal, has been followed up with revegetation and fencing in the Bumbalong Valley. This Demonstration Reach aims to rehabilitate a 100km section of the upper Murrumbidgee River for native fish. The works at Bredbo were funded by Caring for Our Country, coordinated by the ACT government and completed by the Murrumbidgee CMA and Greening Australia. For more information, contact Luke Johnston at [Luke.Johnston@act.gov.au](mailto:Luke.Johnston@act.gov.au).

## A blooming nuisance

Blue-green algae are making an unwelcome appearance in several impoundments in NSW. Windamere (currently at Red Alert level), Copeton and Pindari dams have all been affected. The species identified are potentially toxic and may cause gastroenteritis in humans and poison dogs and stock. Boiling the water does not inactivate algal toxins. Blue-green algae are usually very obvious, appearing as clumps or specks in the water and are often associated with a strong musty or earthy odour. Updates can be obtained from the Algal Information Hotline on 1800 999 457 or visit [www.water.nsw.gov.au](http://www.water.nsw.gov.au).

## Carp busted from the Balonne

The St George leg of the Carp Buster fishing series saw 381 keen anglers put up with wet weather for the opportunity to rid the Balonne River of some carp. Carp have invaded many waterways in South West Queensland and the Carp Buster fishing series helps raise the awareness of the threat of European Carp to waterways and native fish. The heaviest carp of the competition weighed in at 4.43kg. For more information: [www.qmdc.org.au/publications/download/804/media-releases/2010-media-releases/major-carp-haul-for-st-george.pdf](http://www.qmdc.org.au/publications/download/804/media-releases/2010-media-releases/major-carp-haul-for-st-george.pdf)

## 3500 people exposed to habitat

The first ever Narrandera Fisheries Centre's 'Fish & Family Fun Day' saw more than 3500 people take part in a range of hands-on, fish-related activities. Talks, stalls and activities were offered by Native Fish Strategy staff, Fishcare volunteers, fisheries researchers and other involved in Demonstration Reaches. This meant that as well as enjoying fishing and cooking demonstrations and perusing sponsors' stall, people had the opportunity to learn more about how habitat rehabilitation improves the wellbeing of native fish. For more information about the event:

[www.dpi.nsw.gov.au/aboutus/news/recent-news/fishing-and-aquaculture/fish-and-family-fun-day](http://www.dpi.nsw.gov.au/aboutus/news/recent-news/fishing-and-aquaculture/fish-and-family-fun-day)



'Bringing native fish back' was the theme for the Native Fish Strategy stall. Photo: C. Carruthers

## Red alert for red spot

In June 2010, there was a serious outbreak of the fish disease known as 'Red spot disease' in native fish species in the Barwon-Darling River, between Bourke and Brewarrina. Red spot, or epizootic ulcerative syndrome (EUS), was diagnosed in bony herring, Murray cod, golden perch and spangled perch. The outbreak followed high flows and occurred at relatively low water temperatures (< 16<sup>o</sup>). This disease was first found in the Murray Darling Basin in bony herring in 2008 and hadn't been seen before in Murray cod, golden perch and spangled perch. This represented a significant extension of the disease, as previously it had only been reported in coastal areas. EUS is a notifiable disease in NSW. The disease can cause severe ulceration and has the potential to seriously affect our inland native fishes. If you see or catch a fish with lesions or ulcers that could be caused by red spot disease, contact the Manager, Aquatic Biosecurity and Risk Management on 02 4982 1232. A reporting form is available at:

[www.dpi.nsw.gov.au/fisheries/pests-diseases/reporting](http://www.dpi.nsw.gov.au/fisheries/pests-diseases/reporting)



Ulcers and lesions caused by EUS, or red spot disease. Photo: Craig Boys

## Blackwater bad news for Wakool fish

The recent fish kill event along 150km of Thule Creek and Wakool River is not unusual given the rapid inundation of Koondrook Perricoota forest after a long period of drought. The water quality exiting the forest is extremely poor: it is known as 'blackwater' and has almost zero dissolved oxygen (DO). More good falls of rain and cooler temperatures were expected to ease the situation. More information is available from:

[www.mdba.gov.au/media\\_centre/media\\_releases/wakool-and-mid-murray-water-quality-alert%20](http://www.mdba.gov.au/media_centre/media_releases/wakool-and-mid-murray-water-quality-alert%20)

## Helping Wakool fish in the future

A project is under way to improve delivery of water flows and help prevent fish kills in the Edward-Wakool river system. This is timely given the recent fish kill event. Researchers have been using electrofishing to find out just how many fish and what species there are in the system. Tagged fish are now being tracked via 28 listening stations set up in Yallakool Creek and Wakool River. This will show fish movement patterns and locate important refuge sites where fish survive when flows are reduced. Researchers are asking anglers who come across a listening station not to disturb it, as each receiver has been specifically placed to collect important data. Anglers finding tagged fish are asked to release them and call Narrandera Fisheries Centre on 02 6958 8200. For further information on the project please contact I&I NSW senior fisheries technician Ian Wooden on 02 6958 8203.



These juvenile carp were surviving the very low DO levels experienced in stretches of Thule Creek and the Wakool River. Photo: Luke Pearce.

## Follow-up flows for Gunbower Creek fish

Water destined for downstream users on the River Murray was diverted into the National Channel and on to Gunbower Creek, before returning to the River at the Koondrook Spillway. In recent years Gunbower Creek has been operated at low levels and this has put native fish populations under stress, which is affecting their breeding success. The flow, combined with the recent inflows to the Murray River, will provide a spawning cue for native fish and deliver food resources into Gunbower Creek. A second pulse of water will be delivered in November. Read more at:

[www.nccma.vic.gov.au/News\\_and\\_Events/Media\\_Releases/index.aspx?ItemDetails=3775&cld=MasterMR](http://www.nccma.vic.gov.au/News_and_Events/Media_Releases/index.aspx?ItemDetails=3775&cld=MasterMR)

To see Gunbower Creek transformed by the flood flow, watch:

[www.abc.net.au/local/videos/2010/09/30/3026081.htm?site=shepparton&section=video](http://www.abc.net.au/local/videos/2010/09/30/3026081.htm?site=shepparton&section=video)

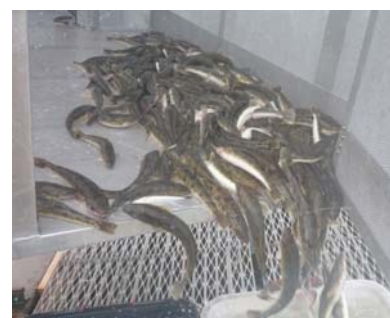
## For fish, one flow is not as good as another

Recent research is indicating that the scale of flow and connectivity are particularly important for fish. Fish respond to the speed, turbulence and chemical characteristics of the water, and, at scales ranging from centimetres to several kilometres. Variations between fast and slow moving water are also important. This work is highlighting a common misconception that prior to the construction of dams and weirs the Murray River was a slow-flowing river that ceased to flow in droughts. What is now recognised is that the river in its unregulated state would have had a permanent base flow sufficient to provide a diversity of slow- and fast-flowing habitats including small waterfalls in certain locations. The life histories of many of the native fish of the Murray River would have evolved under these conditions. For more information about this work by Mallen-Cooper and Zampatti, see:

[www.mdba.gov.au/system/files/NFS-2010-fish-forum-abstracts\\_Final.pdf](http://www.mdba.gov.au/system/files/NFS-2010-fish-forum-abstracts_Final.pdf) and scroll to page 49.

## Congolli in the Coorong

Up to 20,000 congolli swam into the Coorong during a six week operation in which the Goolwa Barrage boat lock was used as a temporary fish passage. For the last four years, the fish have not been able to breed because low water levels meant the Lower Lakes were not connected to the Coorong. It's hoped that large numbers of the fish will now breed. Since this operation in August and September, increased inflows and rising water levels mean that water is now flowing through the barrages and the system is reconnecting. Good news not just for congolli but for all fish species in the region.



**Congolli helped to make the journey to spawning grounds in the Coorong.**

Photo: Brenton Zampatti

## Tagging and tracking the big ones

A tri-state team from I&I NSW, Arthur Rylah Institute and SARDI Aquatic Sciences were tagging fish downstream of Locks 1, 2, 3, 11 and 15 on the Murray River during recent flow events. The team have been tagging fish for the past nine years but this was the first year where fish numbers exhausted all of the tags held by the three research teams. Hundreds of fish were caught including large numbers of golden perch, silver perch and Murray cod, all in prime breeding condition and waiting downstream of the weirs. The team actually collected an unprecedented 60 Murray cod all over one meter in length and observed a further 38 fish during the six day tagging event. The observations are an excellent example of responses of fish movement to natural flow events. Upon completion of the Fishways project in 2011, the full extent of these migrations will be able to be tracked through an automated PIT reader system being installed along the entire length of the Murray River.

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## AUSTRALIAN NEWS

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### Bringing Back the Fish wins the 2010 Banksia Water Award

Bringing Back the Fish (BBTF) was the largest fish passage program of its kind in Australia. It led to the opening up of over 1,200 kilometres of habitat for migrating fish through rehabilitating nearly 100 sites. Through partnerships with local councils, Catchment Management Authorities and local community groups, BBTF has removed redundant weirs, fixed causeways and road crossings, upgraded floodgates, reduced damage to seagrass, replanted riverbank and wetland vegetation and built fishways. BBTF was a 3 year, Federally- funded collaborative project between I&I NSW and the Southern Rivers CMA. For information about the project, contact [Cam Lay](#) (I&I NSW, Manager Aquatic Habitat Rehabilitation). To access project publications, see:

[www.dpi.nsw.gov.au/fisheries/habitat/publications/passage/bringing-back-the-fish-project-reports](http://www.dpi.nsw.gov.au/fisheries/habitat/publications/passage/bringing-back-the-fish-project-reports)



**Cam Lay, I&I NSW, and Chris Preston, Southern Rivers CMA, with the 2010 Banksia Water Award.** Photo: Liz Baker.

## 2010 National Riverprize awarded to the Derwent Estuary Program

The Derwent Estuary Program has been awarded the 2010 National Riverprize for outstanding catchment management activities over 11 years. This long-term commitment to improving river health and supporting healthy waterways is based on a regional partnership between the community, the Tasmanian Government, six councils, five businesses and scientists. The program has dramatically reduced the levels of organics, heavy metals and sewage derived nutrients flowing into the Estuary. For more information about this program:

[www.derwentestuary.org.au/index.php?id=2](http://www.derwentestuary.org.au/index.php?id=2)

## River ecologist receives international award

Professor Richard Norris, director of the University of Canberra's Institute for Applied Ecology, recently received a prestigious Scientific and Technological Achievement Award from the US Environmental Protection Agency for his contribution to ecological assessment of rivers. Professor Norris and a group of US colleagues received the award for their development of scientific designs and approaches to assess the ecological condition of rivers.



**Professor Richard Norris.**

Photo: University of Canberra.

[http://www.canberra.edu.au/monitor/2010/sept/6\\_richard-norris-epa-award](http://www.canberra.edu.au/monitor/2010/sept/6_richard-norris-epa-award)

## Wonderful waterholes

In Australia's semi-arid and arid zones, rain is localised and highly variable and the connections between creeks, rivers and wetlands are at best intermittent. Waterholes are important refuges and crucial for the survival of aquatic plants and fish. A recently published study provides vital information about the processes acting upon in-channel waterholes and their ability to act as refuges. The Moonie, Weir, Flinders, Mary and Mitchell Rivers were studied in detail and the insights gained were used to develop methods for investigating persistence, quality and connectivity applicable to temporary river systems. The researchers also developed an approach for quantifying risk to waterhole refuges from flow regime change. For a copy of the report (PDF), email Penelope Rogers at the QLD Department of Environment and Resource Management:

[Penelope.Rogers@derm.qld.gov.au](mailto:Penelope.Rogers@derm.qld.gov.au).

Related research looked at environmental factors influencing fish losses from isolated waterholes in Cooper Creek during dry seasons. They found that the key drivers of fish mortality included the size, depth and structure of the waterholes, whether there were eroded banks or other features affecting quality, the size of surrounding floodplains and the relative isolation of waterholes. Read more about this work by Arthington and others in *Marine and Freshwater Research*:

[www.publish.csiro.au/nid/126/paper/MF09096.htm](http://www.publish.csiro.au/nid/126/paper/MF09096.htm)

## Knowledge gaps highlighted for northern tropical rivers and wetlands

Relatively little is known about the river and wetland systems that cover a vast and mostly remote area of Australia's tropical north. This study evaluated available knowledge relating to key ecological attributes including wetland type, species diversity, ecological processes and ecosystem services. It was found that the knowledge gaps limit the potential to understand the ecological significance of these rivers and wetlands. Read more of this study by Lukacs and Finlayson in *Wetlands Ecology and Management*:

[www.springerlink.com/content/6435r8776423720t/](http://www.springerlink.com/content/6435r8776423720t/)



**Copperfield Gorge, Einasleigh River.**

Photo: James Cook University.

## Native freshwater fish stocks are declining in the west

A survey of freshwater fish in lakes in the South West and Mid West of Western Australia during the past twelve months found that only 50 of the 114 lakes surveyed contained native freshwater fish species. 80% of freshwater lakes have been lost to land reclamation and urban infill since European settlement. The loss of habitat is still continuing, with half of the permanent water bodies listed on maps in the year 2000 no longer containing water throughout the year. The survey also identified a large number of alien fish in the lakes. Only nine per cent of the lakes were populated exclusively with native freshwater fish. More information:

[www.fish.wa.gov.au/docs/media/index.php?0000&mr=759](http://www.fish.wa.gov.au/docs/media/index.php?0000&mr=759)

## Unregulated rivers better at resisting aliens

It's thought that modified flow regimes help alien fish and that, in unregulated dryland rivers, large floods provide a recruitment advantage for native over alien species whereas droughts favour alien species. These hypotheses were tested using fish monitoring data from unmodified rivers of the Lake Eyre Basin. Results indicated that the naturally variability of these rivers and their native-dominant fish assemblages provided some resistance to the establishment and proliferation of alien fish through flood and drought conditions. Read more of this work by Costelloe and others in *Marine and Freshwater Research*

[www.publish.csiro.au/nid/126/paper/MF09090.htm](http://www.publish.csiro.au/nid/126/paper/MF09090.htm)

A satellite image of the floods in the Paroo River, one of the unregulated rivers of the MDB. Photo: MDBA.



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## INTERNATIONAL NEWS

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### International Thies river prize - and the winner is ...

In the 1950s the Thames River was declared biologically dead – what a difference 50 years of commitment and hard work has made. The river was awarded the prestigious 2010 International Thies River Prize for its dramatic recovery. In the last five years there have been nearly 400 habitat enhancement projects and more than 40 miles of river has been restored or enhanced. Over 125 fish species, including salmon, trout, sole and bass, have returned to the river and its tributaries, which flow through an area home to 13 million people. The Environment Agency, which manages the Thames, plans to spend the A\$350,000 prize money on further restoration work and a project to twin the river with another in the developing world which needs restoration.



The River Thames: showing the benefits of decades of river restoration work.

Photo: FreeDigitalPhotos.net

### Linking water security and biodiversity essential

Scientists are warning that the technology designed to safeguard water supplies has caused extensive environmental damage in rich countries — and the developing world must pursue a different path. Research is showing that human activities have endangered water security for 80 per cent of the world's population and threatened the biodiversity of 65 per cent of the world's rivers. The researchers found that the developed world's strategy of using quick technological fixes to avoid water shortages has, in the long term, damaged biodiversity and is endangering ecosystems that depend on freshwater, with knock-on effects for livelihoods. They argue that developing countries should be supported to experiment with new ways of securing drinking water while conserving the services that healthy ecosystems provide to society. Read the research by Vörösmarty and other in *Nature*:

<http://www.nature.com/nature/journal/v467/n7315/full/nature09440.html>

## Potomac River life responding to improved water quality

An 18 year field study of the Potomac River in Washington, D.C. has shown that reduced nutrients and improved water clarity have increased the abundance and diversity of submerged aquatic vegetation (SAV). The area covered by native SAV has increased ten-fold, from 288 to 3081 acres. In addition the diversity of plant species has increased and the proportion of exotic species to native species has declined. Read more in the article by Ruhla and Rybicki in the *Proceedings of the National Academy of Sciences* (open access):

[www.pnas.org/content/107/38/16566](http://www.pnas.org/content/107/38/16566)

## Mimicing natural flows might not restore degraded riparian vegetation

Researchers have looked at whether mimicing historic floods in timing, peak magnitude and recession rate are likely to help restore riparian vegetation. They looked at an area of the Green River below Flaming Gorge Dam, Colorado, USA. In this area the natural cottonwood riparian forests had died out and as little recruitment has occurred since dam completion in 1962, novel riparian vegetation communities have become established. The results showed that the novel plant communities are ecologically and geomorphically resistant to change. Managed flooding alone appears to be an ineffective riparian restoration tool in such situations. Read more of this work by Cooper and Anderson in *River Research and Applications*

<http://onlinelibrary.wiley.com/doi/10.1002/rra.1452/abstract>



**Water releases, such as this from Hume Dam, may not be sufficient to restore degraded riparian areas.** Photo: NSW State Water

## Funding friendly indicators for river restoration projects

Researchers from Europe have looked at how people are monitoring their river restoration project's progress toward 'good ecological condition' given that measuring this can be difficult in the short term required by funding bodies (generally 5 years). Using both a literature review and a survey of river managers, the study found that river managers are using good approaches to monitoring, however are struggling with the high level of variation that occurs during the initial phases of river restoration. Managers also realise the importance of knowledge sharing but are not assessing the achievement of stakeholder and other learning objectives. Read this article by Matthews and others in *Hydrobiologia* (open access):

<http://springerlink.com/content/e184534160461086/fulltext.pdf>

Another example is provided by a team looking at a stream restoration project completed in 2005 in central New York, USA. While this group concluded that the project was moderately successful, they also provide a series of 'lessons learnt' which could be useful to other freshwater restoration projects. Read more of this work by Buchanan and others in *River Research and Applications*

<http://onlinelibrary.wiley.com/doi/10.1002/rra.1453/abstract>

## Fish in Bolivia suffer from winter chills

Unusually low winter temperatures hit freshwater species in Bolivia's tropical region hard, killing an estimated 6 million fish and thousands of alligators, turtles and river dolphins. Scientists say the event is the biggest ecological disaster Bolivia has known: in the rivers near Santa Cruz there were about 1,000 dead fish for every 100 metres of river. It's thought that a mass of Antarctic air that settled over the south of South America for most of July caused the cold snap. Water temperatures in Bolivian rivers that would be expected to be about 15 °C during the day fell to as low as 4 °C. As the fish deaths occurred mainly in rivers, it's thought that the cold shock increased susceptibility to infection. For more on this story:

[www.nature.com/news/2010/100827/full/news.2010.437.html](http://www.nature.com/news/2010/100827/full/news.2010.437.html)



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## HABITAT RESOURCES

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### Sustaining River Life

A years K – 12 curriculum and activities guide for teachers and natural resource managers

[www.sustainingriverlife.org.au/](http://www.sustainingriverlife.org.au/)

### Detailed assessment of acid sulfate soils in the Murray Darling Basin

This report outlines the protocols for conducting detailed assessment of acid sulfate soils in wetlands throughout the MDB. The protocols comprise field sampling, field characterisation, laboratory analysis, data interpretation and reporting.

<http://www.mdba.gov.au/services/publications/download?publicationid=69&key=1622>

### The impact of eastern gambusia on the native fish of the Murray Darling Basin

This literature review examines all known and potential impacts of eastern gambusia on native fishes in the MDB and identifies those native fish species most at risk of detrimental impacts.

[www.mdba.gov.au/services/publications/more-information?publicationid=75](http://www.mdba.gov.au/services/publications/more-information?publicationid=75)

### *Hydrobiologia* Special issue on aquatic weeds

A range of papers relating to aquatic weed biology and control.

<http://springerlink.com/content/0018-8158/656/1/>

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## HABITAT IMAGE FOR OCTOBER

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The Acheron River, Victoria, in flood, 2010. Photo: Fern Hames

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## HABITAT ENGAGEMENT & FUNDING OPPORTUNITIES

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### MDB Basin Plan Guide – community information sessions

For information on the community information sessions for the MDB Basin Plan Guide:

<http://www.mdba.gov.au/communities/meetings-events>

### National Climate Change Adaptation Research Plan: Freshwater Biodiversity

Comments are being sought on the draft National Climate Change Adaptation Research Plan: Freshwater Biodiversity. The plan identifies critical gaps in the information that is required by governments, industry and the community to address responses to climate change and sets research priorities based on these gaps.

Comments should be received by **Monday 1 November, 2010**. More information and the feedback form is available from: [www.nccarf.edu.au/node/531](http://www.nccarf.edu.au/node/531)

### Paroo River Intergovernmental Agreement

The NSW Office of Water is seeking community input during the review of the Intergovernmental Agreement between New South Wales and Queensland for the Paroo River. The agreement had allowed both NSW and Queensland to jointly promote and support the management of water and related natural resources. Written submissions must be received by **22 October 2010**.

[www.water.nsw.gov.au/ArticleDocuments/42/media\\_release\\_100921\\_Paroo\\_Intergovernmental\\_Agreement\\_Review.pdf.aspx](http://www.water.nsw.gov.au/ArticleDocuments/42/media_release_100921_Paroo_Intergovernmental_Agreement_Review.pdf.aspx)

(choose 'Save' rather than 'Open', then open using your PDF reader)

### Draft Aboriginal Fishing Strategy (Victoria)

Fisheries Victoria has released a Draft Aboriginal Fishing Strategy addressing Native Title, customary fishing, economic development opportunities, and increasing Aboriginal participation in fisheries management. The closing date for submissions is 5pm Friday **10 December 2010**. An online feedback form is also available:

[new.dpi.vic.gov.au/fisheries/aboriginal-fishing/aboriginal-fishing-strategy2](http://new.dpi.vic.gov.au/fisheries/aboriginal-fishing/aboriginal-fishing-strategy2)

### Draft Goulburn-Broken Fishery Management Plan

The draft management plan includes proposals to improve recreational fishing activities in the waters of the Goulburn-Broken region. The priority actions include 'Advocating for the protection and enhancement of important fish habitats'. Comments are due by **8 November 2010**.

[www.dpi.vic.gov.au/DPI/nrenfaq.nsf/LinkView/B0C8DE10F97300A2CA25762500244BEDF5F3C3DA915AFBE4CA256C6F0016CA60](http://www.dpi.vic.gov.au/DPI/nrenfaq.nsf/LinkView/B0C8DE10F97300A2CA25762500244BEDF5F3C3DA915AFBE4CA256C6F0016CA60)

### PhD top-up scholarship

The North Central Catchment Management Authority (Victoria), in partnership with The Murray-Darling Freshwater Research Centre, is offering an annual top-up scholarship to a graduate undertaking PhD research in a topic relating to freshwater ecological management within the catchment. Candidates who plan to commence before 31 March, 2011 are eligible to apply. Applications are due **31 October, 2010**.

[www.mdfrc.org.au/news/images/NCCMA\\_MDFRC\\_scholarship.pdf](http://www.mdfrc.org.au/news/images/NCCMA_MDFRC_scholarship.pdf)

### Statutory Review of the Fisheries Management Act 1994

The NSW *Fisheries Management Act 1994* sets out the regulatory framework for managing NSW's fisheries resource. It sets out the legal requirements for commercial and recreational fishing and aquaculture activities and provides for the conservation of certain fish and fish habitat. The Discussion Paper on the review of the Act is available for download. Submissions by email to [hma.submissions@industry.nsw.gov.au](mailto:hma.submissions@industry.nsw.gov.au) by 5pm on Friday, **12 November 2010**.

[www.dpi.nsw.gov.au/aboutus/about/legislation-acts/review/statutory-review-fisheries](http://www.dpi.nsw.gov.au/aboutus/about/legislation-acts/review/statutory-review-fisheries)

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## HABITAT DATES

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- 17 – 23 October      **National Water Week**  
[www.nationalwaterweek.org.au/](http://www.nationalwaterweek.org.au/)
- 31 Oct – 4 Nov      **Groundwater 2010, Canberra**  
[www.groundwater2010.com/](http://www.groundwater2010.com/)
- 4 – 7 November      **Rotary Murray-Darling Health of the River Youth Forum, Lake Cullulleraine, 50km west of Mildura, Victoria. A joint project between The Rotary Clubs of Sunraysia and The Murray-Darling Freshwater Research Centre.**  
[www.mdfrc.org.au/students/river/index.htm](http://www.mdfrc.org.au/students/river/index.htm)
- 9 – 10 November      **Monitoring & Evaluating to Improve NRM Outcomes, Sydney, NSW**  
[www.nrmoutcomes.com/](http://www.nrmoutcomes.com/)
- 9 - 11 November      **7th Biennial Victorian Flood Conference, *Connecting Rivers, Floodplains, People*, Bendigo, Victoria**  
[www.nccma.vic.gov.au/News\\_and\\_Events/7thBiennialVictorianFlood/index.aspx](http://www.nccma.vic.gov.au/News_and_Events/7thBiennialVictorianFlood/index.aspx)
- 10 - 12 November      **19th NSW Coastal Conference, *Coastal Management – all aboard, making it work!*, Batemans Bay Soldiers Club, Batemans Bay, NSW**  
[www.coastalconference.com.au](http://www.coastalconference.com.au)
- 12 – 19 November      **Native Fish Awareness Week**  
Events throughout the Murray Darling Basin: contact your local Native Fish Strategy Coordinator for details.  
[QLD](#)   [NSW](#)   [ACT](#)   [VIC](#)   [SA](#)
- 15 – 16 November      **National Water Governance Workshop, Canberra.**  
Contact: [Phil.Wallis@monash.edu](mailto:Phil.Wallis@monash.edu)
- 2 February 2011      **World Wetlands Day**
- 16 - 21 April 2011      **Rotary Murray-Darling School of Freshwater Research, MDFRC Wodonga and Wonga Wetlands. Year 11 students only.**  
[www.mdfrc.org.au/students/rotary/index.htm](http://www.mdfrc.org.au/students/rotary/index.htm)

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## FISH HABITAT: GOVERNMENT CONTACTS

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### New South Wales

**Industry & Investment NSW (Fisheries)**  
[www.dpi.nsw.gov.au/fisheries/habitat](http://www.dpi.nsw.gov.au/fisheries/habitat)

**Catchment Management Authorities**  
[www.cma.nsw.gov.au/](http://www.cma.nsw.gov.au/)

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### Victoria

**Department of Sustainability and Environment**  
[www.dse.vic.gov.au](http://www.dse.vic.gov.au)

**Fisheries Victoria**  
[new.dpi.vic.gov.au/fisheries](http://new.dpi.vic.gov.au/fisheries)

**Catchment Management Authorities**  
[www.vcmc.vic.gov.au/Web/vcmc-links.html](http://www.vcmc.vic.gov.au/Web/vcmc-links.html)

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### ACT

**Department of the Environment, Climate Change, Energy and Water**  
[www.environment.act.gov.au/](http://www.environment.act.gov.au/)

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### Queensland

**Department of Employment, Economic Development and Innovation (Fisheries)**  
[www.dpi.qld.gov.au/28\\_142.htm](http://www.dpi.qld.gov.au/28_142.htm)

**Regional Natural Resource Management Boards**  
[www.regionalnrm.qld.gov.au/my\\_region/index.html](http://www.regionalnrm.qld.gov.au/my_region/index.html)

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### Northern Territory

**Department of Resources (Fisheries)**  
[www.nt.gov.au/d/Fisheries/](http://www.nt.gov.au/d/Fisheries/)

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### South Australia

**Primary Industries and Resources SA (Fisheries)**  
[www.pir.sa.gov.au/fisheries](http://www.pir.sa.gov.au/fisheries)

**Department of Environment and Natural Resources**  
[www.environment.sa.gov.au/](http://www.environment.sa.gov.au/)

**Regional Natural Resource Management Boards**  
<http://www.nrm.sa.gov.au/>

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### Western Australia

**Department of Fisheries**  
[www.fish.wa.gov.au/](http://www.fish.wa.gov.au/)

**Natural Resource Management**  
[www.nrm.wa.gov.au/](http://www.nrm.wa.gov.au/)

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### National

**Murray Darling Basin Authority**  
[www.mdba.gov.au](http://www.mdba.gov.au)

**Commonwealth Department of Sustainability, Environment, Water, Population and Communities**  
[www.environment.gov.au/index.html](http://www.environment.gov.au/index.html)

### About Newstreams

*Newstreams* is an email newsletter to keep people up to date about fish habitat activities and important aquatic habitat developments. It is published electronically every two months by Industry & Investment NSW.

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[newstreams@industry.nsw.gov.au](mailto:newstreams@industry.nsw.gov.au)

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