

# Newstreams

A NSW DPI email newsletter for recreational fishers and others interested in improving fish habitat to build native fish stocks

**No 19 April 2009**

## About Newstreams

Newstreams is an email newsletter to keep people up to date about NSW fish habitat activities and important aquatic habitat developments elsewhere. It is published electronically every two months by NSW Department of Primary Industries. In NSW many estuarine and freshwater habitats for juvenile and adult fish have been degraded or lost through urban, industrial and agricultural development. Communities around NSW work actively to restore fish habitat.

## NSW DPI NEWS

### **Recreational fishers make fish happen!**

*Recreational fishers make fish happen!* is the title of a new 16-page booklet published by NSW DPI to showcase the work of recreational fishers in improving fish habitat. It covers the habitat stories of eight fishers such as Rodney Tonkin from Orange who has spent the last seven years removing willows and returning native trees to his favourite fishing spot, and Kevin Clark from Kyogle who has been a key supporter in the removal of fish passage barriers in the Richmond River. The booklet has a foreword from fishing writer and presenter Steve 'Starlo' Starling, pictured right.

[http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0005/276224/Recreational-fishers-make-fish-happen.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0005/276224/Recreational-fishers-make-fish-happen.pdf)



Photo: Steve Starling

### **Fishers for fish habitat forum**

The Fishers for Fish Habitat forum now has a webpage with details on the Ballina venue (right), transport options for getting to Ballina, and accommodation. There are also details for the competition being run in NSW Fishing Monthly that will win one lucky fisher a free trip to the forum in June.

<http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-forum>

### **Fish passage in the Nepean River**

Aquatic ecosystems researchers at Narrandera have been awarded a three year contract to monitor fish passage in the Nepean River. The project will assess the success of 13 new fishways to be completed by the end of 2010. Scientists will microchip and electrofish migratory fish in the river before and after fishway construction. The project is the largest-scale rehabilitation work ever to be attempted in the river and researchers expect to measure large increases in migratory fish communities between Penrith and Maldon. Scientists will also take fin-clips from fish to determine if the new fishways are contributing to increased genetic diversity. For more information contact Lee Baumgartner or Meaghan Rourke. A smaller supplementary project will look specifically at the weir at Maldon with respect to the endangered Macquarie perch. Contact Jamie Knight.

[lee.baumgartner@dpi.nsw.gov.au](mailto:lee.baumgartner@dpi.nsw.gov.au) [meaghan.rourke@dpi.nsw.gov.au](mailto:meaghan.rourke@dpi.nsw.gov.au) [james.knight@dpi.nsw.gov.au](mailto:james.knight@dpi.nsw.gov.au)



<http://www.tropicalnsw.com.au/ccphoto>

## ***Condobolin carp cage installed***



NSW DPI is helping reduce carp numbers in the Lachlan River using a carp cage at Island Creek weir, 20km east of Condobolin. Carp tend to jump out of the water when faced with a barrier, so the cage is positioned so that they jump into it and can then be removed. The cage can hold up to 500kg of carp. Native fish are not affected because they tend to swim down to the riverbed and swim underneath the barrier. NSW DPI will trial the cage for 12 months with State Water, owner of the weir, before handing over management of the cage to the community or commercial fishing interests. The cage will complement other carp control works in the Lachlan catchment being done in conjunction with Lachlan CMA and the Invasive Animals CRC. These include targeting of carp breeding hotspots at Lake Brewster and Great Cumbung Swamp, commercial fishing feasibility studies and recreational fishing events. For more information contact Ian Wooden.

[ian.wooden@dpi.nsw.gov.au](mailto:ian.wooden@dpi.nsw.gov.au)

## ***Merran Creek fish saved***



In March, NSW DPI officers spent five days rescuing fish from drying waterholes along 15 kms of Merran Creek near Swan Hill in response to landholder concerns. They relocated 105 Murray cod ranging in size from 25cm to 120cm, 20 golden perch ranging in size from 15cm to 40 cm, and six silver perch ranging in size from 15cm to 30 cm, to Stony Crossing on the Wakool River. Narrandera fisheries centre manager Les Rava says he has nothing but praise for the officers who worked tirelessly to ensure the fishes' survival. Operating funds were provide by Murray Darling Basin Authority.

[leslie.rava@dpi.nsw.gov.au](mailto:leslie.rava@dpi.nsw.gov.au)

## ***Pygmy perch rescue***

Narrandera Fisheries Centre is looking after 1400 southern pygmy perch, a threatened species, after rescuing approximately 1600 of the fish from drying pools in Coppabella Creek near Jingellic. The other fish are being kept in a tank at Tumut before relocation to permanent habitat. Since the fish were rescued, the pools they were in have dried out, along with many others, even pools thought to be secure. A project has just been initiated with funding from Murray Darling Basin Authority and Murray CMA to map refuge pools and the southern pygmy perch population. The project will also look at joining tributaries to look for other populations and alternative release sites. For more information, contact Luke Pearce.

[Luke.pearce@dpi.nsw.gov.au](mailto:Luke.pearce@dpi.nsw.gov.au)

**Below left: Rescuing the perch from a pool in Coppabella Creek in February.  
Below right: The same pool dried out a month later. Photos: Luke Pearce**



**Above: Some of the southern pygmy perch found in the drying pools.**



## ***Casino weir to be removed***

NSW State Water Corporation is planning to remove Manyweathers Weir on the Richmond River at Casino. The weir is no longer used for town water, and repairs, including installation of a vertical slot fish ladder, are cost prohibitive. Removal of the weir, which is the highest priority barrier in the Richmond catchment, will improve fish access to over 1000 km of upstream habitat. Weir removal will potentially impact platypus distribution within the weir pool but is unlikely to seriously impact population levels in the wider Casino area,



particularly downstream of the weir. Surveys of the river bed show that multiple pools of up to four metres deep will still exist upstream after the weir has been removed. Removal of the weir is expected to occur in June 2009. Anyone interested in supporting this move to improve fish passage is invited to contact Stephen Moore, State Water Corporation by phone 6953 0732 or email.

[Stephen.Moore@statewater.com.au](mailto:Stephen.Moore@statewater.com.au)

<http://www.statewater.com.au/damwei/Information-Sheet.pdf>

**Left: Manyweathers Weir, Casino.  
Photo: NSW SWC**

## ***Acid sulfate soil hotspot improved***

Upgraded culverts are improving poor water quality at Anna Bay in the Port Stephens area where culverts connect landholder drains to Wallis Creek. The old culverts allowed tidal flows into the drains, but then drained so much water at low tide that acid sulfate soils were exposed, and produced sulfuric acid. This acid was then washed out into the creek after the next high tide. Water at this site regularly had a pH below 4 and toxic levels of aluminium and iron. With the help of Anna Bay Drainage Union and funding from the Hunter-Central Rivers CMA, NSW DPI upgraded the culverts and installed drop boards on the upstream side to retain water in the drain and raise the water table at low tide. The higher water level prevents the acid sulfate soils oxidising, so the culverts will greatly improve water quality over time. Further works are planned for other parts of the drainage system. For more information contact Kylie Russell.

[kylie.russell@dpi.nsw.gov.au](mailto:kylie.russell@dpi.nsw.gov.au)

**Below left: The original culvert. Below right: The new improved culvert is improving quality of water flowing out of the drainage system. Photos: Kylie Russell**



## ***Inland road crossings audit***

NSW DPI, Southern Rivers CMA and local councils are working together on an audit of road crossings in six inland CMA areas to identify barriers to fish passage and prioritise sites for rehabilitation. The audit will be carried out in Central West, Lachlan, Murrumbidgee, Border Rivers Gwydir, Western and Lower Murray Darling CMA areas. It is the final stage of a state wide road crossings project; current on-ground works are occurring at Bundella Creek (Namoi), Molong Creek (Central West), Castlereagh River (Central West) and Billabong Creek (Murray).

<http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/road-crossings>

## ***Native fish awareness week***

This year's Native Fish Awareness week (25-29 May) will focus on northern NSW and Queensland with events at Toowoomba, Dalby, Warwick, Texas, Goondiwindi, Moree and Narrabri. The week promotes the Murray Darling Basin Authority's native fish strategy to restore native fish populations to 60% of their estimated pre-European settlement levels within 50 years. This year NSW DPI and Qld DPI&F are partnering with MDBA to host the week's events. Last year's successful Native Fish Awareness week was held in Central West NSW. For more information contact the Native Fish Strategy coordinators Stephanie Challen (Qld) 07 3224 2164 or Anthony Townsend (NSW) 02 6763 1440.



**Above: A school workshop held during Native Fish Awareness Week 2008.  
Photo: Anthony Townsend**

## ***Numbers up and weights down at Narrabri carp muster***

The 330 anglers at the Namoi carp muster at Narrabri in March caught 560 carp, many more than last year's tally of 350. However, the carp weighed a total of 430kg, less than last year's 500kg total, because this



year's carp were smaller, with an average weight of 765gm. The muster featured Waterwatch demonstrations and the release of 1,000 yellowbelly into the Namoi River at Narrabri. Namoi Valley Aquafarm donated the yellowbelly in return for last year's carp which they recycled into fish meal. Displays on ways to improve river health with the use of groundcovers and native trees and shrubs attracted interest from landholders and town residents.

**Left: Carp fishers find a quiet spot on the Namoi River.**

**Photo: Anthony Townsend**

## ***Boggabri carp muster on Anzac weekend***

Continuing on from the success of the Narrabri carp musters, Boggabri will host its first event on 25-26 April 2009. The event is being proudly supported by Boggabri Coal, Narrabri Amateur Fishing Club and Namoi Valley Aquafarming. Registration for the muster will be at Jubilee Oval, 8am - 5pm on Saturday 25 April, and 8am - 12 noon on Sunday 26 April. Entry fees are \$2 for children and pensioners and \$5 for adults. NSW fishing rules and regulations apply. For more information about the competition call Tony Townsend on 02 6763 1440 or Milly Hobson on 02 6763 1206.

## ***River Rallies in the Namoi***



River Rallies is an exciting environmental education program that teaches primary school children about their surrounding environment by taking them out of the classroom and encouraging them to touch, feel and observe. Pilots of the new program were recently held in the Namoi region at Tamworth Public school and Nundle Public school. The program is a collaborative project between Namoi CMA, NSW Waterwatch and NSW DPI, and involves interactive workstations where students learn how to help animals, fish and waterbugs survive. For more information about the River Rallies program please contact Anthony Townsend (NSW DPI) 02 6763 1440 or Stephanie McCaffrey (NSW Waterwatch) 02 6764 5961.

**Photo: Anthony Townsend**

## ***Research resumes into fish response to floodgate and culvert removal***

Hunter-Central Rivers CMA and NSW DPI have recently resumed research projects studying the response of fish and crustacean communities to floodgate management and culvert removal at Hexham Swamp and Kooragang Island. Of particular note will be the findings coming from the most recent surveys at Kooragang Island, which coincide with the 15th year of the initiation of the Kooragang wetland rehabilitation project. This dataset has been collected intermittently over the past 15 years, providing a rare opportunity to evaluate ecological outcomes of wetland rehabilitation.

[craig.boys@dpi.nsw.gov.au](mailto:craig.boys@dpi.nsw.gov.au)

## ***Key fish habitat on Crown land***

The Aquatic Habitat Protection Unit has been contracted by the Department of Lands to pilot ways to improve the environmental management of key fish habitat areas on Crown land that is licensed for grazing. This work will occur in Clarence Valley Shire on the North Coast and Eurobodalla Shire on the South Coast. Initial site assessments of identified Crown Land sites adjacent to high priority key fish habitats have been conducted in the two regions and reports are being prepared for the regional steering committees.

## **NSW NEWS**

### ***Booligal red gum deaths due to changed Lachlan flows***

Around 85 per cent of the river red gums at Booligal, on the lower Lachlan River, have died in the past 12 years due to changes in the river's flow regime. The Booligal wetlands now flood much less frequently for shorter durations and at different times of the year compared with flows before the river was regulated and irrigation developed.

<http://www.science.unsw.edu.au/news/red-gums-dying-in-central-nsw-wetlands/>

### ***Darlington Point restoration***

Murrumbidgee Catchment Management Authority has launched a project to rehabilitate areas along the Murrumbidgee River at Darlington Point. The project will engage traditional owners and indigenous communities in natural resource management (NRM), with seven indigenous employees undertaking 12 months of on-ground works including weed control, revegetation, fencing and willow control to improve select areas of cultural significance.

<http://murrumbidgee.cma.nsw.gov.au/publications/media-releases.html>

### ***Snowy River condition is dire***

The Snowy River is in a dire environmental state according to a report by the Snowy River Scientific Committee. Water intended to restore the health of the Snowy River has been cut back by almost 70 per cent to meet rising demands for electricity and irrigation, and flows are now inadequate for habitat and channel maintenance and native stream fauna. Aquatic ecosystems research staff have been doing annual surveys of the fish assemblages in the upper Snowy river since 2000 and have not yet been able to show any improvement. NSW Minister for Water, Phillip Costa, has blamed severe drought conditions for delays in the release of flows into the Snowy River.

[http://www.dwe.nsw.gov.au/water/monitor\\_snowy.shtml](http://www.dwe.nsw.gov.au/water/monitor_snowy.shtml)



**Above: The dying redgums.  
Photo: UNSW**



**Above: The Snowy River at Jindabyne, 19th century.  
[http://www.flickr.com/photos/powerhouse\\_museum/2469700342/in/set-72157604376512011/](http://www.flickr.com/photos/powerhouse_museum/2469700342/in/set-72157604376512011/)**

## **Parramatta River photography competition**

Keen photographers in the Parramatta River catchment are invited to enter the 2009 urban nature photography competition to showcase the local environment and its native animals, fish and plants. The competition opens on Friday, April 3 2009 and closes on Monday, May 18 2009. Entry is free.

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

## **AUSTRALIAN NEWS**

### **Fish passage program wins ecological award**

The Ecological Management & Restoration Journal has selected the Murray-Darling Basin's visionary 'Sea to Hume' program as one of the top 25 ecological restoration projects in Australasia. The \$80 million project aims to provide 2300 km passage for native fish from the Southern Ocean to Hume Dam through the construction of innovative fish ladders. The project is succeeding in the face of the worst drought on record. So far, works have been completed at Locks and Weirs 1, 7, 8, 9 and 10. Three fishways have been completed at the barrages and a fourth is to be constructed. Construction is in progress at Lock and Weir 3. Construction of new fishways at Locks 2, 4, 5 and 6, together with the upgrade of their navigable passes are scheduled to be completed in three years. The design for fish passage through Lock and Weir 11 at Mildura is in progress and will be built in the next two years. A copy of the journal article is available online.

[www.mdba.gov.au/system/files/NFS2009\\_Sea\\_to\\_Hume\\_program.pdf](http://www.mdba.gov.au/system/files/NFS2009_Sea_to_Hume_program.pdf)

### **Murray fish kills and algal blooms threat**

Murray inflows between January and March were the lowest in 117 years and the outlook for the next three months is also looking bleak. The prolonged water shortage across the Murray system is continuing to cause severe environmental impacts to riverine and floodplain ecosystems. Low river levels have kept many wetlands and billabongs disconnected from the river for several years, impacting on waterbird communities, river red gum and black box trees. The lower lakes are in a critical state, with record low water levels, high salinity and the ongoing risk of acidification. Currently there is an algal bloom stretching along the Murray River from the Hume weir to west of Swan Hill.

[http://www.mdba.gov.au/system/files/MDBA\\_Drought\\_Update\\_April\\_2009.pdf](http://www.mdba.gov.au/system/files/MDBA_Drought_Update_April_2009.pdf)

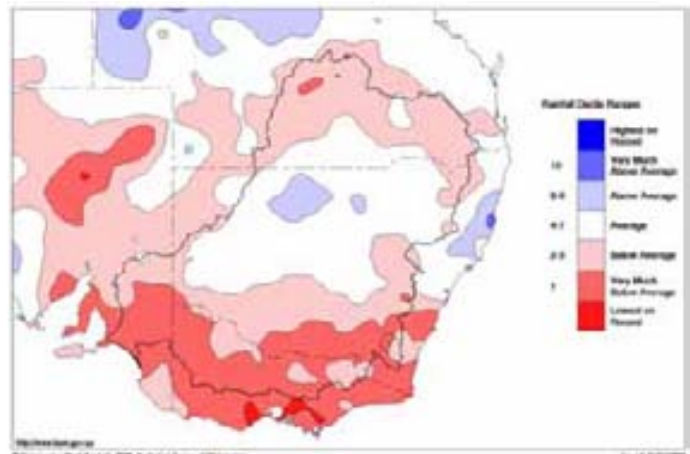


Figure 1. Murray-Darling Basin rainfall deciles for January to March 2009. (source: Bureau of Meteorology)

### **Environmental water to SA wetlands**

The first release of Commonwealth water for the environment has been released wetlands in South Australia. Chowilla Floodplain will receive 286 million litres to complement 350 million litres provided by the South Australian Government; Paiwalla Wetland, between Mannum and Murray Bridge, will receive 475 million litres; Carpark Lagoons on the Katarapko floodplain near Berri, will receive 200 million litres; Rocky Gully, also near Murray Bridge, one of the last remaining refuge sites across the Basin for the Murray hardyhead, has been allocated 80 million litres.

<http://www.environment.gov.au/water/environmental/cw/wh/watering/samurray.html#rocky-gully>



Chowilla floodplain, SA.  
Photo: [www.environment.gov.au/](http://www.environment.gov.au/)

## ***Disconnect wetlands and lakes to save river says expert***

Adelaide University's Professor Mike Young has called for the Murray-Darling river system to be disconnected from hundreds of lakes, wetlands and other environmental assets as part of a radical shrinking and reconfiguration of the waterway. He identified Victoria's Lake Mokoan and New South Wales' Menindee Lakes as subsidiaries that add to the river's size and evaporation problems. He says that every lock, weir and structure should be assessed to decide which ones are left open and which should no longer receive water, and river heights need to be changed. You can hear him talking about his ideas by video podcast at the site below.

<http://www.themonthly.com.au/tm/node/1516>

Download his paper "A future-proofed Basin" at the site below.

[http://www.myoung.net.au/water/publications/A\\_future-proofed\\_Basin.pdf](http://www.myoung.net.au/water/publications/A_future-proofed_Basin.pdf)

## ***Ramsar wetlands need help***

Australia's 65 Ramsar wetlands face serious ecological and management issues according to a new report. Around half of the wetlands are inland wetlands, and few managers know these wetlands' water requirements.

<http://www.environment.gov.au/water/publications/environmental/wetlands/ramsar-snapshot-study.html>

## ***Murray cod comeback***

*'The mighty Murray cod - one of the world's biggest freshwater fish and the legendary animal of Australia's inland rivers - is doing it tough. Unpassable dams and weirs, the massive extraction of water for irrigation that has reduced flooding and altered river flow patterns, "thermal pollution" caused by the release of cold water from deep within dams, commercial and uncontrolled recreational fishing, the removal of snags and the proliferation of alien carp have taken a terrible toll on the Murray-Darling Basin's native fish.....But if you venture out to the bush, fishermen will tell you the cod is making a comeback.'* Read this Sydney Morning Herald article about fishers' views on the cod.

<http://www.smh.com.au/environment/conservation/murray-cod-make-remarkable-comeback-20090302-8m6h.html?page=fullpage#contentSwap1>

## ***Effect of water flows on aquatic ecosystems***

Two new reports look at ways of understanding the effects of water flows on aquatic ecosystems. One report models how aquatic ecosystems recover after water flows are restored and identifies knowledge gaps and directions for future research. The other report looks at modelling for an adaptive management approach, where environmental flow allocations are refined as new information is gained.

<http://www.nwc.gov.au/www/html/1021-bayesian-modelling---report-no-14.asp?intSiteID=1>

<http://www.nwc.gov.au/www/html/1028-recovery-pathways---waterlines-15.asp?intSiteID=1>

## ***Ecosystem science: a new paradigm for aquatic ecosystems***

*'Freshwater ecosystems are a foundation of our social, cultural, spiritual and economic well being. The degraded condition of many of Australia's river ecosystems is testament to our failure to manage these resources wisely. Ecosystem science involves the holistic study of complex biophysical systems to understand the drivers that influence ecological pattern and process. Ecosystem science should underpin both water management and policy. Our understanding of aquatic ecosystems lags behind the increasing problems caused by past land and water management.'*

The above text is taken from a paper published in the latest issue of Marine & Freshwater Research. Read the complete abstract at the website below.

<http://www.publish.csiro.au/nid/126/paper/MF08188.htm>



## INTERNATIONAL NEWS

### ***NZ snapper depend on habitat in one harbour***

NZ scientists have found that nearly all snapper on the west coast of the North Island come from fish nurseries in just one harbour. In 2003 they collected juvenile snapper from seven estuaries along the west coast of the North Island and tested their ear bones to identify which estuary the fish came from. In 2007 they collected 140 adult snapper from commercial catches along the west coast and found that 98 percent of them were originally juveniles from Kaipara Harbour. The finding highlights the importance of protecting estuarine habitats, many of which are under threat from human activities that cause sedimentation, eutrophication, and changes in water quality. In follow up research, the scientists have now found a strong positive correlation between increasing seagrass blade densities and juvenile fish abundance.

<http://www.sciencealert.com.au/news/20090403-18871.html>

### ***UK pioneering fish pass***

The UK Environment Agency is building a 28-metre fish pass to enable fish to access a chalk stream habitat in the River Hamble that has been blocked off for 250 years by historic work at Botley Mill. The rock-ramp is the first of its kind in the United Kingdom and will help the spawning sea fish swim into the upper reaches of the river. Modelled on German fish passes, the Hamble pass contains upright stones to create the tossing white water that the fish like, interspersed with tranquil pools where they can rest on their climb upstream.

[http://chrishuhne.org.uk/news/000625/special\\_pass\\_set\\_to\\_restore\\_the\\_hamble\\_fishery.html](http://chrishuhne.org.uk/news/000625/special_pass_set_to_restore_the_hamble_fishery.html)

## HABITAT RESOURCES

### ***Central West CMA BMPs***

Central West CMA has produced a series of best management practice manuals, including one on rehabilitation of riparian lands. There are also illustrated fact sheets on aquatic habitat, livestock management in riparian areas, and wetlands.

[http://www.cw.cma.nsw.gov.au/cwcma\\_BMPs.htm](http://www.cw.cma.nsw.gov.au/cwcma_BMPs.htm)

### ***Drought refuge habitats***

The eWater CRC's drought science website brings together information and links to do with the ecology, climate science and hydrology of drought in south-eastern Australian water catchments. The pages on refuge habitats have links to many useful publications on managing water ecosystems in drought.

[http://www.ewatercrc.com.au/drought/refuge\\_habitats.shtml](http://www.ewatercrc.com.au/drought/refuge_habitats.shtml)

### ***Australia's wetlands by air***

Between October and December 2008, a national aerial survey flew across every major wetland in Australia to count the number and species of waterbirds living in the area. The data will be analysed to assess the comparative health of wetlands. You can view the routes and photos at the website below.

[http://www.wetrivers.unsw.edu.au/docs/rp\\_nws\\_home.html](http://www.wetrivers.unsw.edu.au/docs/rp_nws_home.html)

### ***MDBC aquatic habitat information***

The native fish strategy pages on the Murray Darling Basin Commission's archived website contain useful information on aquatic habitat, including brochures explaining how fish ladders and demonstration reaches work.

[http://www.mdbc.gov.au/NFS/nfs\\_publications](http://www.mdbc.gov.au/NFS/nfs_publications)

### ***Fish passage: Breaking down the barriers***

This Victorian website provides a great range of useful information about fish movement, barriers to movement, and solutions.

<http://www.vicfishways.com.au/>

## **Parramatta fishways project**

Find details of Parramatta Council's fishways project at this site.

[http://www.thewaterproject.com.au/content/fish\\_ladders](http://www.thewaterproject.com.au/content/fish_ladders)

## **Rehabilitating aquatic habitats presentation**

DPI staff Sharon Molloy and Craig Boys gave a presentation titled 'Rehabilitating aquatic habitats— getting the job done and measuring the outcomes' at the recent MDBA forum on the future directions and priorities for managing the ecological assets of the northern Murray-Darling Basin. Their presentation gives an overview of the status of aquatic rehabilitation projects being undertaken by NSW DPI in collaboration with regional CMA partners within the NSW portion of the northern basin. The paper will be published in forum proceedings, or you can contact Craig Boys.

[craig.boys@dpi.nsw.gov.au](mailto:craig.boys@dpi.nsw.gov.au)

## **HABITAT DATES**

12-15 May

Qld coastal conference, Gold Coast

<http://www.bmrg.org.au/information.php/2/110>

18-19 June

Fishers for fish habitat forum, Ballina

<http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers-for-fish-habitat/fishers-for-fish-habitat-forum>

13-14 May

Wetland management in a drying climate, Geelong

<http://www.govdex.gov.au/confluence/display/VCMAWN/Home>

23-27 August

SERI world conference on ecological restoration, Perth

<http://www.seri2009.com.au/>

21-24 September

12th international river symposium, Brisbane

<http://www.riversymposium.com/>

18-21 October

International river health conference, Canberra

<http://www.onelifeoneworldourfuture.com/index.php?pageid=218>

18-24 October

National water week

<http://www.nationalwaterweek.org.au/>

## **ABOUT NSW DPI AND FISH HABITAT**

NSW DPI is responsible for management of, and research into, fish habitat in NSW.

### **On-ground activities**

Map, priorities and modify structures that block fish passage

Map and rehabilitate aquatic habitat such as wetlands.

Reintroduce snags (large woody debris) into streams.

Revegetate streambanks to provide habitat and improve the quality of water running into streams.

### **Research activities**

Document the fish communities associated with different aquatic habitats

Understand the basic biology of key fish species— what they eat, when they breed, and their habitat requirements.

Evaluate management actions to see how effective they have been and what improvements may be possible.

### **Policy and planning activities**

Review developments that may impact on fish habitats and negotiate impact reduction and/or compensatory works

Incorporate aquatic habitat protection requirements into land use planning, water management, and estuary and floodplain management.

Help developers, local councils and other state agencies understand the importance of aquatic

habitats for fish and options for ensuring their protection and rehabilitation.

**Aquatic habitat staff**

Sydney (Cronulla) 02 9527 8411

Sydney (Wollstonecraft) 02 8347 4909

Batemans Bay 02 4478 9103

Huskisson 02 4441 8969

Port Stephens 02 4982 1232

Wollongbar 02 6626 1200

Tamworth 02 6763 1100

Dubbo 02 6881 1270

Tumut 02 6947 4188

Narrandera 02 6959 9021\

Albury 02 6042 4200

Research staff

Port Stephens 02 4982 1232

Narrandera 02 6959 9021

Cronulla 02 9527 8411

**Website**

<http://www.dpi.nsw.gov.au/fisheries/habitat>

***Send us your news***

If you have news about fish habitat activities in your area, we'd like to hear from you. Email Rebecca Lines-Kelly with your news and suggestions.

[rebecca.lines-kelly@dpi.nsw.gov.au](mailto:rebecca.lines-kelly@dpi.nsw.gov.au)

***Subscribe to Newstreams***

Newstreams is a free email newsletter available to anyone interested in fish habitat. To subscribe, email the editor, Rebecca Lines-Kelly.

[rebecca.lines-kelly@dpi.nsw.gov.au](mailto:rebecca.lines-kelly@dpi.nsw.gov.au)

If you no longer wish to receive Newstreams, email the editor with 'Unsubscribe Newstreams' in the subject line.

***Back issues***

<http://www.dpi.nsw.gov.au/aboutus/news/newsletters/newstreams>