

# Newstreams

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

No 12 February 2008

## About Newstreams

Newstreams is an email newsletter to keep people up to date about NSW fish habitat activities, and about important aquatic habitat developments in Australia and around the world. 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 are working actively to restore fish habitat.

## NSW DPI NEWS

### Richmond River fish kill



Dead fish washed up at Ballina.  
Photo: Simon Walsh NSW DPI

NSW DPI has announced a temporary fishing closure on the Richmond and Wilsons Rivers following a massive fish kill in the Richmond River in January. The fish died due to low oxygen levels in the water caused by rotting of floodplain vegetation covered by water. The closure is the best option to protect fish displaced by the floods and to enable fish populations to rejuvenate. A fish kill reference group involving local commercial and recreational fishers and NSW DPI staff will oversee a river monitoring program, recovery of fish stocks, and provide recommendations on the full or partial lifting of the fishing closure to the Minister. The NSW Government has committed \$100,000 to assist the commercial fishing industry until

fishing can resume, and funded \$30,000 to replace floodgates with new tidal drum gates that allow water flow and fish passage. A trial program has shown tidal drum gates help to reduce the build up of low oxygen 'black water'. Read the Sydney Morning Herald article about the fish kill at <http://www.smh.com.au/news/drought/floods-bitter-harvest/2008/01/25/1201157668512.html?page=fullpage#contentSwap1> and keep up to date about the fish kill response at <http://www.dpi.nsw.gov.au/fisheries>.

### Giant groper was 37 years old

A giant 2.2 metre long Queensland groper, found dead in the Clarence River in November last year, was 37 years old according to scientists from James Cook University who counted the growth rings on the fish's otoliths (inner ear bones) and were surprised by its small size relative to its age. The slower growth of the Clarence fish may have resulted from the fact that it was living in cooler waters near the southern end of the geographic range for this species. NSW DPI scientists are unsure whether this fish was a long-term resident of the Clarence River or whether it lived in marine waters and seasonally entered north coast estuaries such as the Clarence. Information on this species and how to report sightings of any threatened, protected or pest fish species can be obtained from the NSW DPI website [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au).

Right: Michael Sullivan with the groper he found in the Clarence River. Photo: Rebecca Cass NSW DPI



### ***Namoi carp muster 1-2 March***

Narrabri Fishing Club, Namoi CMA and NSW DPI have joined forces for a giant carp muster at Narrabri on the weekend of 1-2 March. Carp interrupt the lifecycle and habitat of native fish by competing directly for food and shelter, dislodging aquatic plants from river banks and increasing water turbidity. Registration for the muster is at the Narrabri Crossing Theatre from 9am, and thousands of dollars in prizes are on offer. Other activities at the muster include tree planting, schools colouring in competition and the official launch of the Namoi Aquatic Habitat Initiative. To register your interest in the muster call Milly Hobson or Anthony Townsend, NSW DPI, on 6765 4243 or [milly.hobson@dpi.nsw.gov.au](mailto:milly.hobson@dpi.nsw.gov.au) or [anthony.townsend@dpi.nsw.gov.au](mailto:anthony.townsend@dpi.nsw.gov.au).

### ***NSW recreational boat owner survey***

Sydney Metropolitan CMA and NSW DPI are conducting an online survey of recreational boat owners as part of a program to detect and manage marine pests in NSW. The survey will cover boat maintenance and cleaning practices, and boating movements into and within NSW. All NSW boat and yacht owners are invited to participate in the online survey from 13 February 2008 at [www.sydney.cma.nsw.gov.au](http://www.sydney.cma.nsw.gov.au). If you have any questions about this survey, please contact Tim Glasby, NSW DPI on 4916 3825 or [tim.glasby@dpi.nsw.gov.au](mailto:tim.glasby@dpi.nsw.gov.au).

### ***Weirs affect Nepean River fish***

A NSW DPI study of fish communities in the Nepean River has found that dams and weirs are probably impacting on fish in the river. Few migratory species were sampled upstream of Pheasant's Nest Weir and some potential migratory species had accumulated downstream. Downstream weirs also restricted upstream passage of species such as bullrout, bully mullet and freshwater mullet. A more comprehensive study is now required to develop management responses. Read more at <http://www.dpi.nsw.gov.au/research/areas/systems-research/aquatic-ecosystems/outputs/2007/913>.

## **NSW NEWS**

### ***Life saving water for southern pygmy perch***

Murray-Darling Basin Commission and Forests NSW have started releasing up to 0.5 GL into a Millewa State Forest creek to save a threatened population of southern pygmy perch. The MDBC partner governments agreed that the perch were a high priority for use of the very small volume of environmental water available in the River Murray system this season. Source: [http://www.mdbc.gov.au/\\_data/page/29/millewa-state-forest-watering.pdf](http://www.mdbc.gov.au/_data/page/29/millewa-state-forest-watering.pdf).

### ***Macquarie marshes receiving first water for 2 years***

The Department of Environment and Climate Change (DECC) has released 13,000 megalitres of water into the Macquarie Marshes following heavy rain in the Macquarie catchment before Christmas. Ducks and magpie geese are likely to breed successfully on the strength of the combined tributary flows and environmental release. Summer growing perennial wetland plants such as water couch and large areas of reed beds at risk of dying will also greatly benefit. Source: [http://www3.environment.nsw.gov.au/npws.nsf/Content/dec\\_media\\_080118\\_01](http://www3.environment.nsw.gov.au/npws.nsf/Content/dec_media_080118_01).

### ***Water for Wakool waterholes***

As part of The Living Murray program, 6 gegalitres (GL) of environmental water is being released into the Wakool River system to add water to the river's diminishing waterholes. The poor water quality in these diminishing waterholes is likely to have contributed to recent native fish deaths, an important indicator of a highly water-stressed system. Without the water, local extinctions of some fish and waterbirds become increasingly likely, as the river's pools evaporate and become increasingly saline. Read more at [http://www.mdbc.gov.au/\\_data/page/15/Wakool\\_watering\\_FACT\\_SHEET.pdf](http://www.mdbc.gov.au/_data/page/15/Wakool_watering_FACT_SHEET.pdf).

### ***Recent rain welcome but more needed***

Rain in the Murray Darling Basin has resulted in good flows moving down the Darling River and into Menindee Lakes, and inundated northern wetlands that have been dry from some years. However, rain in the southern part of the basin has not increased streamflows; the region needs sustained heavy rainfall to provide a significant increase in inflows and hence lift storage levels. For the latest information keep an eye on the MDBC's weekly report of river operations at [www.mdbc.gov.au/subs/river-info/weekly-report/current\\_wr.pdf](http://www.mdbc.gov.au/subs/river-info/weekly-report/current_wr.pdf).

## ***Ibis hatching at Narran Lakes***

As many as 20,000 pairs of ibis are nesting in the recently flooded Narran Lakes with more congregating in the area. The first straw-necked ibis chicks were observed in late January, but maintaining water levels will be critical over the next 2-3 months. A team lead by Dr Richard Kingsford of the University of NSW is counting birds on wetlands fed by the Macquarie, Narran, Birrie, Bokhara, Culgoa, Warrego and Paroo Rivers, as well as on discrete rain-fed swamps and lakes. The first of several aerial surveys has commenced with several more planned over the next few months to collect valuable data on regional water bird populations, movements and breeding success. This work has been funded by the Murray-Darling Basin Commission which is also funding University of Canberra research into the hydrology of the Narran Lakes ecosystem. Dept Environment and Climate



**With water flowing in the Narran Lakes in northern NSW, ibis are breeding prolifically. Photo: David Heap DECC**

Change staff are collaborating with these researchers and providing local observations and logistical support to ensure the first major waterbird breeding event in the past 8 years is thoroughly monitored. For more information contact Peter Terrill at DECC Dubbo on 6883 5351 or [peter.terrill@environment.nsw.gov.au](mailto:peter.terrill@environment.nsw.gov.au).

## ***Acid sulfate soils along the Murray***

Murray River wetlands are turning toxic as they dry out and release sulfuric acid. At NSW's Bottle Bend lagoon pH has fallen from a healthy seven down to 1.8, equivalent to the sulfuric acid found in car batteries, thousands of fish have died, toxic aluminium and manganese salts have appeared on the lagoon banks, and trees are dying. Senior CSIRO scientist Rob Fitzpatrick says acid sulfate soils are found in large stretches of the river, mainly in areas that have been inundated for decades but are now slowly drying out. The acid is produced when naturally occurring iron pyrite in the river bank reacts with oxygen. The problem can be prevented by raising the water level to reinundate banks. Source: <http://www.theaustralian.news.com.au/story/0,25197,23040504-2702,00.html>. The SA government has an information sheet on acid sulfate soils in the lower Murray. at [http://www.pir.sa.gov.au/data/assets/pdf\\_file/0019/61660/071220tm\\_acid\\_sulfate\\_dec07.pdf](http://www.pir.sa.gov.au/data/assets/pdf_file/0019/61660/071220tm_acid_sulfate_dec07.pdf).

## ***Developer fined for runoff into Nambucca River***

A developer has been fined after allowing runoff from development to enter the Nambucca River and damage nearby oyster farms. The developer was initially issued with more than \$9000 worth of fines and clean-up notices by the local council. When these were ignored he was taken to the Land and Environment Court which ordered him to pay all costs associated with outstanding fines and clean-up notices and also council's legal costs which will be in the order of approximately \$30,000. Source: <http://www.abc.net.au/news/stories/2007/12/10/2113967.htm?site=midnorthcoast>.

# **AUSTRALIAN NEWS**

## ***Environmental water for South Australia***

Murray-Darling Basin Commission started releasing up to 4.6 GL of environmental water during January to protect critical drought refuges on SA's Chowilla floodplain and prevent the risk of acidification at a number of environmentally significant wetlands below Lock 1 on the Murray River. The maintenance of these drought refuges is critical for the recovery of wildlife and vegetation at Chowilla, including nationally threatened species such as the Southern Bell Frog. Source: [http://mdbc.gov.au/communications/s-scribe/eLetter\\_menu/e-letter\\_february\\_2008](http://mdbc.gov.au/communications/s-scribe/eLetter_menu/e-letter_february_2008).



### ***Farmers needed for SA endangered fish***

Waterfind Environment Fund is recruiting farmers to house endangered 50 southern purple-spotted gudgeons whose last remaining refuge in the Lower Murray has dried out. The fish are being stored by fund scientists in fish tanks to prevent them dying. The southern purple-spotted gudgeon was believed to have become extinct in 1973 until the small population was found in 2002. Less than 100 fish are believed to be alive. Waterfind is also looking for donations of stock or domestic water to top up three wetland refuges for the Murray hardyhead, also at risk of being wiped out unless water levels can be restored. Find out more at <http://www.waterfind.org.au/viewProject.html?projectId=12411>.

### ***Snowy scientific committee established***

The Victorian and New South Wales governments have established a scientific committee, to monitor and advise on environmental releases from the Snowy Mountains hydroelectric scheme, and advise on environmental releases and programs for managing and restoring river catchments across the hydro scheme. Committee members are Sam Lake, Monash University, Arlene Buchan, Australian Conservation Foundation, Jane Roberts, ecology consultant, Wayne Erskine, University of Newcastle, Mike Curll, former NSW DPI executive, and Noel Kesby, Southern Rivers CMA. Source:

[http://www.dpc.vic.gov.au/domino/Web\\_Notes/newmedia.nsf/8fc6e140ef55837cca256c8c00183cdc/554d50c2ac7cdf36ca2573e100746422!OpenDocument](http://www.dpc.vic.gov.au/domino/Web_Notes/newmedia.nsf/8fc6e140ef55837cca256c8c00183cdc/554d50c2ac7cdf36ca2573e100746422!OpenDocument).

### ***Marine reserve study shows increase in large fish***

A 10 year comparison of Tasmanian marine reserve and non-reserve areas has found increases in the abundance of large fish and a doubling of per site species richness of large fish within the reserves relative to controls. Read the abstract of the paper by Barrett et al, 'Changes in fish assemblages following 10 years of protection in Tasmanian marine protected areas' in the Journal of Experimental Marine Biology and Ecology 345 at <http://www.aseanbiodiversity.info/Abstract/51008264.pdf>.

### ***Salinity study of microinvertebrates***

A Victorian study into the salinity tolerance of riverine microinvertebrates from the southern Murray–Darling Basin found that the most salinity-tolerant organisms tested were much more sensitive than the most tolerant macroinvertebrates and most freshwater fish. Read the Marine and Freshwater Research paper by Kefford et al at <http://publish.csiro.au/nid/126/paper/MF06046.htm>.

### ***Queensland: new fish habitat policies***

Queensland DPI&F has released new fish habitat policies for management and protection of tidal fish habitats, and management of declared fish habitat areas. Download the policies at <http://www2.dpi.qld.gov.au/fishweb/13404.html>.

### ***Australian coastal waters warmer than global average***

The waters of the east coast of Australia are warming at a rate greater than world average. East coast Australia has seen an increase of 2.28 degrees while the global average is less than one degree. Sea urchins and fish species now in Tasmanian waters were previously not found there. Read the Science show's interview with Alistair Hobday from CSIRO's Marine Research group, Tasmania at <http://www.abc.net.au/rn/scienceshow/stories/2007/2119476.htm>.

### ***Nominations for EPBC listing***

Rivers, wetlands and groundwater dependent species and ecosystems are the priority conservation targets for listing under the Environment Protection and Biodiversity Conservation Act in 2008. Nominations close on Monday 31 March 2008 for the assessment period commencing 1 October 2008. More details at <http://www.environment.gov.au/biodiversity/threatened/nominations-make.html>.

## **INTERNATIONAL HABITAT NEWS**

### ***Resnagging review shows impact of woody debris***

A recent review of 50 resnagging projects conducted in central Europe reveals the rapid improvements that can be achieved in stream hydraulics and morphology following placement of woody debris into rivers. The authors recommend the use of less costly soft engineering techniques (non-fixed wood structures), higher amounts of wood, larger wood structures that mimic natural structures and improved monitoring programmes for future restoration projects. It is also recommended that restoration practitioners aim at restoring the natural processes of large wood recruitment into rivers, but active placement of wood in rivers has proven to be an adequate interim measure. Details at: <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-2664.2007.01401.x>.

### ***Fish ladders killing fish in South America***

Throughout much of South America, fish ladders designed to help fish swim up-river beyond instream reservoirs are actually sending the animals to their death. The ladders provide river-like flow conditions that attract migrant fish but when fish reach the reservoirs the waters are too clear and still to provide enough cover or oxygen. The fish then bolt for tributaries up stream; if there are no tributaries they die. If they do manage to spawn, the larvae travel downstream into the reservoir, and die through lack of oxygen or predation. Read more about this new research at <http://www.nature.com/news/2008/080117/full/news.2008.445.html>.

### ***US streams more like swamps before white settlement***

Ecologists working to restore streams in the eastern United States have been using a misguided ideal, according to new research. The researchers conclude that streams in the Piedmont region east of the Appalachian mountains were more like swamps than streams when Europeans first arrived. The water didn't run in a single channel, but rather was in branching streams, pools and mud. In a project tentatively planned for summer 2008 in Pennsylvania, the researchers will try to remove all the modern sediment and strip valleys down to the Holocene wetlands beneath. They think this will allow old marshlands to return, decreasing sediment and nutrient load in the streams and preventing some of the problems seen today from excessive sediment dumped into the sea. Read more at . <http://www.sciencemag.org/cgi/content/full/319/5861/299?ck=nck>.

### ***Fish remove nitrogen from coastal waters***

A Canada-US research team has found that the collapse of fisheries from decades of over-fishing has disturbed the balance between nitrogen entering and leaving coastal water systems. Fish accumulate nitrogen as biomass, and 40 years ago, commercial fishing removed the equivalent of 60 percent of the nitrogen from coastal oceans that entered as fertilisers. Today, this figure has dropped to 20 percent. Read more about this research at <http://www.sciencedaily.com/releases/2008/01/080128171537.htm>.

### ***Marine worms soak up toxins in plastic trash***

UK scientists have found that marine worms are soaking up toxic phenanthrene derived from microscopic particles of plastic trash in seawater. The full environmental impact has yet to be researched, along with whether these microplastics and their toxic passengers could work their way up the food chain, right up to humans, as worms and other small creatures are eaten by predators. Details at <http://www.sciencedaily.com/releases/2007/10/071029092034.htm>.

### ***Drought pools vary from year to year***

University of Arkansas researchers have found that not all pools of water are equal from year to year when it comes to housing fish species during dry spells – the geology and hydrology of the stream plus the different types of species that live in it all affect the system. The researchers now plan to assemble models of the stream drying and population statistics to see if they can predict what will happen to the fish populations under different conditions – particularly changes in climate involving precipitation or temperature. Read more about the research at <http://www.sciencedaily.com/releases/2008/01/080116192512.htm>.

### ***Coastal pressures increasing***

The world has over 1.6 million kms of coastline, inhabited by more than 1 million aquatic, intertidal and terrestrial species, and 41% of the world's population. Twenty-one of the world's megacities (more than 8 million people), are located less than 38kms of the coast, which means increasing pressure on coastal ecosystems, through habitat conversion, increased pollution and demand for coastal resources. Overfishing, destructive fishing techniques and habitat loss are degrading the capacity of coastal and marine ecosystems to produce fish for human harvest. Read the paper by Martinez et al, The coasts of our world, in Ecological Economics August 2007, or <http://www.sciencedirect.com/science/article/B6VDY-4MWXTD7-1/2/b08dd2928bf77d390075d2c49586595a>.

## **FISH HABITAT RESOURCES**

### ***Murray wetlands database***

This database includes the impacts of river regulation on wetlands, extant vegetation communities and river level heights when the wetlands begin to receive water (commence-to-flow). Details at <http://www.mwmg.org.au/database.php>.

### ***Wetland information resources***

To celebrate World Wetlands Day on 2 February, Ramsar has developed a range of wetland information materials which you can download at <http://www.ramsar.org/wwd/8/cd/wwd2008.htm>.

### ***Civil engineering for passage of fish and fauna***

The Australian Journal of Water Resources November 2007 edition has published research on civil engineering for passage of fish and fauna. This research recommends civil engineering design parameters, choice of structural form and structure opening sizes, construction concepts and engineering design detailing of waterway bridges and culverts, road underpasses using bridges and culverts, and road overpasses using land bridges and canopy links – to best enable passage of various species. Also given are fishway design parameters, details of protective measures against predators, exclusion fencing and bat roost installation.

### ***Otiliths reveal migration secrets***

Otiliths (calcium carbonate crystals beneath the fish's brain) capture information about each body of water the fish visits. This information can help determine which streams are important for fish migration and which should not be dammed. Find out more about this interesting research at <http://www.abc.net.au/rn/scienceshow/stories/2007/2119488.htm>.

### ***20% mangrove loss since 1980***

The world has lost around 3.6 million hectares (ha) of mangroves since 1980, equivalent to an alarming 20 percent loss of total mangrove area according to FAO's recent mangrove assessment study. Download the report at <http://www.fao.org/newsroom/en/news/2008/1000776/index.html>.

### ***The unnatural history of the sea***

Author Callum Roberts was recently interviewed on the ABC's Science show about his new book 'The unnatural history of the sea' which charts the history of fishing and the resulting changes in fish populations. Many of today's eating fish are those once considered the fish for the poor. Read the transcript at <http://www.abc.net.au/rn/scienceshow/stories/2007/2119482.htm>.

### ***No more catfish***

A linocut by artist Badger Bates titled 'No more catfish' describes the environmental concerns of the Barkindji people who are from the Wilcannia area of NSW. In the artist's words: 'The catfish is out of the water in this print because today we can't get catfish; very seldom do you get a catfish. Well, you get none really. If you look to the bottom of this print that's how the river used to be when I was a kid. I moved the catfish out of the water and then the black at the top represents the end. It's the end if we don't look after everything.' To see an image of this work from the Australian Museum, go to: <http://www.amonline.net.au/display.cfm?id=2765>.

### ***The marine life of Bootless Bay PNG***

NSW DPI aquatic habitat manager Dave Harasti is a keen marine photographer and with Mark Baine has just published 'The marine life of Bootless Bay - Papua New Guinea', an identification guide to the marine biodiversity of the bay, located just outside Port Moresby. The book aims to improve local knowledge of the importance of marine biodiversity and to instil in local communities and villages a sense of wonder at the diversity of life present in their waters. For more information go to <http://www.mirc.ac.pg/education.html>.

## **HABITAT DATES**

### ***International Year of the Reef***

<http://www.iyor.org/>.

### ***Seaweek 2008***

March 2-8 2008 <http://www.mesa.edu.au/seaweek.asp>

### ***Managing carp in floodplain wetlands, Banrock Station***

March 12-13 2008 <http://www.wetlandsedu.org.au/Banrockcourse.htm>

### ***Integrating wetlands into individual property management plans, Dubbo***

April 2-4 2008 <http://www.wetlandsedu.org.au/IPMPCourse.htm>

### ***Effects of climate change on the world's oceans, Spain***

May 19-23 2008 <http://www.pices.int/>

# ABOUT NSW DPI AND FISH HABITAT

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

## **NSW DPI's on-ground work:**

- map, prioritise 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.

## **NSW DPI's research work:**

- document the fish communities associated with different aquatic habitats
- understand the basic biology of key fish species – what they eat, when they breed, what their habitat requirements are
- evaluate management actions to see how effective they have been and what improvements may be possible.

## **NSW DPI's legislative, policy and planning work:**

- 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 8437 4909

Batemans Bay 02 4478 9103

Huskisson 02 4441 8969

[Port Stephens](#) 02 4982 1232

Wollongbar 02 6626 1200

Tamworth 02 6765 4243

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.fisheries.nsw.gov.au/aquatic\\_habitats](http://www.fisheries.nsw.gov.au/aquatic_habitats)

## ***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 at [rebecca.lines-kelly@dpi.nsw.gov.au](mailto:rebecca.lines-kelly@dpi.nsw.gov.au) with your news items and suggestions.

## ***Subscribe to Newstreams***

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

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