

### 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 Industry & Investment NSW. 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.

## DEPARTMENT NEWS

### Answering your questions about ICOLLs

ICOLLs are 'intermittently closed and open lakes and lagoons' and are located along the NSW coast. They are separated from the ocean by a sand beach barrier which forms and breaks down depending on the movement and redistribution of sand and sediments by waves, tides, flood flows and winds. Many ICOLLs are artificially opened to the ocean by various authorities, usually to mitigate the impacts of flooding. I&I NSW has put together answers to frequently asked questions about ICOLLs, including policies and guidelines for their management. Available from:

<http://www.dpi.nsw.gov.au/fisheries/habitat/aquatic-habitats/wetland/coastal-wetlands/management-of-coastal-lakes-and-lagoons-in-nsw>



**The use of heavy machinery to artificially open ICOLLs is subject to guidelines. Image: R Massie**

### Threatened species on the record

A records viewer is now available to the public with information regarding records and distribution of threatened and protected species of fish and marine vegetation in NSW. The information displayed includes common name, scientific name, water body and year of the record. A link to some information about the species is provided. Only information owned by I&I NSW is displayed and data might be available from other sources, such as the Australian Museum.

<http://www.dpi.nsw.gov.au/fisheries/species-protection/records>



**Trout cod fingerlings: one of the species whose records are available on the new search tool. Image: Stephan Thurston**

### Fish and chips on the move

I&I NSW researchers at Narrandera Fisheries Centre are helping unlock the mystery of native fish migration by tuning into tiny microchips implanted in fish, like Australian bass, bully mullet and freshwater herring, then monitoring their every move 24 hours a day. Antennas strategically placed throughout river systems continuously scan for microchips and report on the location of tagged fish. There are also antennas on fishways where fish are known to migrate, so information on the time of migration, the date, how long it takes fish to migrate and the number of migrations a fish makes throughout its lifetime can be collected. The research uses a world-first system known as KLK 5000, which automatically tunes itself and can read both large and small tags, a significant improvement on previous tagging and data retrieval systems. For more information contact [Lee Baumgartner](#), Research Scientist, 02 6958 8215 or visit:

<http://www.dpi.nsw.gov.au/research/centres/narrandera-fisheries-centre>

## Murrumbidgee River fish habitat improved

Works along the estuarine reaches of the Murrumbidgee River on the NSW Far South Coast are already leading to improved fish habitat. Mangroves have now re-established and pools have reformed with the installation of log groynes, brush bundles (using locally sourced wattles) and the first use of 'fish hotel' log structures on the south coast. Following three overbank floods in early 2010, scour pools up to 2 metres deep formed around the end of the groynes creating diversity in what was once a uniform sand bed channel. Backwater areas and sediment deposition between the groynes has also created better conditions for seagrass. This project was a partnership between Southern Rivers CMA and the property owner. For further information contact Shannon Brennan, Southern Rivers CMA, Bega on 02 6491 8223.



**Construction of timber groynes along the Murrumbidgee River have contributed to improvements in fish habitat. Image: Southern Rivers CMA**

## One less causeway – another 21km of habitat available

Native fish will be able to move more freely along the Meroo River south west of Mudgee after the redundant causeway on the Maitland Bar Rd was removed and replaced with a bridge. An additional 21km of upstream habitat is now available to native fish. The project involved the Mid Western Regional Council and Hunter Land Management with Central West CMA funding from Catchment Action NSW.

For more information, contact Peta Holcombe at Central West CMA on 02 6881 3400.

## New environmental flows for the Hawkesbury-Nepean River

A \$39 million upgrade to dam and weir structures on the Hawkesbury-Nepean system is now complete and as a result a ten fold increase in the amount of water flowing through the systems is expected. The major improvements to the weirs along the river help the new flows make it downstream. Previously, 24 million litres a day was released from the dams regardless of inflows and rainfall: now more water is released downstream when it rains and less during dry times, therefore mimicking the natural flows of the river. Fishways have also been modified or replaced to allow fish to move more freely up and down the river and breed. More information:

[http://www.sca.nsw.gov.au/news/ministerial-media-releases/\\$39-million-environmental-flow-scheme-to-improve-hawkesbury-nepean-river](http://www.sca.nsw.gov.au/news/ministerial-media-releases/$39-million-environmental-flow-scheme-to-improve-hawkesbury-nepean-river)



**The Hawkesbury River is an iconic and widely used river close to major urban areas. Photo: S. Machar**

## A Plan for the Macquarie Marshes

The Macquarie Marshes wetlands are in decline and the level of decline has been so significant in some areas that a notification of likely change in the ecological character of the site was submitted to the Ramsar Convention in July 2009. While this concern is focussed on the area as bird habitat, it means that there are also serious issues in terms of fish habitat. The Macquarie Marshes Adaptive Environmental Management Plan has been developed after consultation with community, government organisations, environmental and water based groups and experts. It recommends actions required to restore resilience to the wetland system.

<http://www.environment.nsw.gov.au/resources/MinMedia/MinMedia10072601.pdf>

## AUSTRALIAN NEWS

### One million seedlings and counting

Australia's largest wetland restoration project, the Lower Lakes Bioremediation and Vegetation program, reached a significant milestone with the planting of the one millionth seedling. So far almost 6,000 hectares of exposed lake bed has been seeded by air and more than 1 million seedlings planted by commercial on-ground planting teams. This massive planting project is aimed at tackling the serious risk posed by acid sulfate soils in the Coorong, Lower Lakes and Murray Mouth region. The seedlings being planted include native grasses and sedges (reed-like plants). No trees are being planted on exposed lake beds. More information:

<http://www.environment.sa.gov.au/clmm/llbrproject-news.html>

### Coorong congolli get a chance to breed

The Goolwa Barrage boat lock was partially opened as an emergency response to help save the congolli, a native fish that has not been able to breed for at least three years. Record low water levels have left the Lower Lakes and the Coorong disconnected and the male and female of the species separated. Adult male and female congolli remain separated for much of the year, with the females normally migrating downstream from the Lakes and Goolwa Channel to the Coorong in July to breed. However, this breeding migration has been blocked for the past three years because of the disconnection between the habitats and there is now a serious risk that if the congolli don't meet and breed during 2010/11, the species will become extinct. A recent successful trial saw almost 800 congolli swim into the lock chamber after the upstream gate was opened. Other fish species also used the open lock gate to swim up or downstream. More information:

<http://www.ministers.sa.gov.au/images/stories/mediareleasesJUL10/congolli.pdf>



**Congolli are one of the many species of native fish that need to migrate to breed. Image: Gunther Schmida**

### Best available science vs best possible science

"Successful management of aquatic ecosystems will rely on scientists, managers and decision makers who have the skills and courage to apply the best science available and not wait for the best science possible." This quote from an article that is part of a special issue of Marine and Freshwater Research exploring Peter Cullen's legacy: the recognition of the need for greater integration among aquatic scientists, policy makers and managers. To see this and other articles:

<http://www.publish.csiro.au/nid/127/issue/5362.htm>

### Restoring fish habitat at Marysville

One of Australia's most endangered, and Victoria's only endemic, freshwater fish, the barred galaxias (*Galaxias fuscus*), will be able to return home soon due to the planting day at Leary's Creek, Marysville. The 2009 bushfires removed a lot of the vegetation around the creek, reducing water quality by allowing more silt and ash into the creek and removing important habitat and food sources for this rare fish. Around 90 per cent of its known habitat was affected by either the 2006 or the 2009 bushfires. After the 2009 fires, barred galaxias were removed from 8 sites and taken to DSE's Arthur Rylah Institute research aquarium for safekeeping. The recent revegetation work will help the creek recover sufficiently to support the return of these fish. More information:

<http://www.dse.vic.gov.au/DSE/dsencor.nsf/LinkView/7453518E16BA6837CA2577460016C100250370F0D4508518CA256F040021E0EB>



**The barred galaxias also suffered the loss of their homes as a result of the 2009 Victorian bushfires. Photo: Gunther Schmida**

## Acid oceans not good for young fish

Rising acidity levels in oceans due to carbon dioxide is affecting the behaviour of fish in the larval stage, according to researchers ARC Centre of Excellence for Coral Reef Studies in Townsville, Queensland. The team found that as carbon levels rise and ocean water acidifies, the behaviour of baby fish changes dramatically – in ways that decrease their chances of survival by 500 to 800 per cent. For example, instead of avoiding predators, the very young fish appear to lose their natural caution and start taking big risks, such as swimming out in the open. Read more of the article by Munday and others:

<http://www.pnas.org/content/early/2010/06/24/1004519107.abstract>

or visit the CRC at

[http://www.coralcoe.org.au/news\\_stories/carbonsea.html](http://www.coralcoe.org.au/news_stories/carbonsea.html)



Young clown fish are becoming attracted to the smell of predators and leaving safe areas as their environment becomes more acid. Photo: Simon Foale, Centre of Excellence for Coral Reef Studies

## INTERNATIONAL NEWS

### CitizenScience gets wet

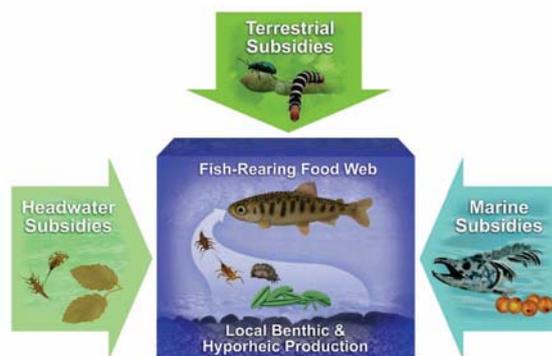
Florida LAKEWATCH is a recent addition to the suite of volunteer 'citizen science' programs in the USA. It's a hands-on water-monitoring program that facilitates participation in the management of lakes, rivers, and coastal sites through monthly sampling activities. Participants work with researchers at the University of Florida to collect samples that, when analysed, will contribute to the understanding of Florida's water bodies. To review this and other water-oriented citizen science projects, go to:

<http://scienceforcitizens.net/project/339/>

### Food subsidies for freshwater fish

Scientists in the USA have been looking at what supports productive freshwater fisheries and found that habitat is not enough. Just as many freshwater fish need a mosaic of habitat types to complete their life cycle, they also need a diverse array of food sources, not all of which will be supplied 'in-house' regardless of how good the habitat is. Other areas, including potentially distant sources such as estuaries and the ocean, 'subsidize' these freshwater fish populations. A waterway with ample food resources, but with little suitable fish habitat, is not likely to support above average fish populations. Similarly, ideal fish habitat lacking ample food will also not support high fish production. Freshwater ecosystems with reliable, suitable habitat and food supplies are more likely to support higher fish densities and in turn produce more fish biomass. The abstract for this feature article by Mark S. Wipfli and Colden V. Baxter, published in *Fisheries* 35(8), is available at:

<http://afsjournals.org/doi/abs/10.1577/1548-8446-35.8.373>



The concept of food subsidies explored in the article by Wipfli and Baxter. Image: extracted from the article.

### River flow and fish food

Increased frequency of drought is likely to lower the connectivity of the estuarine food webs that support fish nurseries. This is the conclusion of research investigating the variation in food web connectivity and interactions that occurs both seasonally and between years of above average and average rainfall. Read more of the article by Vinagre and others in *Estuaries and Coasts*:

<http://www.springerlink.com/content/64391171616320x3/>

## Bugs on boots

People use inland aquatic areas for many different activities, including fishing, bushwalking, research and rehabilitation work. Some of these areas might be considered quite isolated however researchers in France have found that people can carry aquatic invertebrates into these areas via boots and vehicles. They collected mud from footwear, tyres and wheel casings and hatched out a large number of invertebrates from these samples. This work demonstrates that it's not just ballast water and boats that can potentially transport invasive species. Read more of this work by Waterkeyn and others in *Aquatic Conservation: Marine and Freshwater Ecosystems*,

<http://onlinelibrary.wiley.com/doi/10.1002/aqc.1122/abstract>

Waterkeyn and others have also looked at how aquatic mammals can transport invertebrates between systems. They found that 800 invertebrates of 14 different taxa were carried and survived in the fur on one mammal. Read more of their work in *Hydrobiologia*

<http://www.springerlink.com/content/e11862251g61426m/>



**Muddy boots are an occupational hazard for field researchers. How often do we think of them as carrying potentially invasive species?**

## Fish feeling the heat

Mountain streams provide important habitats for many species, but aquatic fauna is vulnerable to changes in water temperature because the temperature of the fish changes with water temperature and fish are generally not able to migrate out of their catchments. Researchers in Idaho have compiled a stream temperature database for a 2500km river network to assess trends in summer temperatures and thermal habitat for two native fish species over a 13 year period. They found water temperature increases due to long-term trends and wildfires. One fish, the bull trout (*Salvelinus confluentus*), were estimated to have lost 11–20% of the headwater stream areas that were cold enough for spawning and early juvenile rearing, with the largest losses occurring in the coldest habitats. Read more of this article by Isaak and others in *Ecological Applications*:

<http://www.esajournals.org/doi/abs/10.1890/09-0822.1>



**The warming of mountain creeks, such as the upper reaches Australia's Snowy River, is reducing the amount of habitat available to the native fish that inhabit them. Photo: Allan Lugg**

## Compost, socks and flocculants

Currently people use 'filter socks' containing compost tucked into mesh tubes to capture some of the pollutants washed from hard surfaces, such as roads, into waterways. Scientists wanted to improve the performance of these socks so they experimented with adding the sorts of flocculation agents used in wastewater treatment plants. Flocculants help sediments and pollutants form into clumps large enough to be filtered out of the water, even when the substances are in a dissolved state. The scientists found that socks with flocculation agents removed more of the pollutants from runoff than normal filter socks, including 99% of *E. coli* bacteria, 99% of the motor oil and between 47% and 74% of the heavy metals. More information:

<http://www.sciencedaily.com/releases/2010/07/100723112801.htm>

## The UK environment and climate change

Nature conservation agencies in the UK have produced a booklet that provides an overview of the evidence of climate change impacts on the marine, terrestrial and freshwater environments. It brings together information from a range of published sources. To download, go to:

<http://www.jncc.gov.uk/page-5145>

## Habitat resources

*Freshwater Fishes of the Burdekin Dry Tropics* is a new book released by NQ Dry Tropics. It aims to help stop the decline of freshwater fish by providing a resource that identifies native fish and helps people understand how to look after them. The book is available from NQ Dry Tropics or online at [www.nqdrytropics.com.au](http://www.nqdrytropics.com.au).



Thuringowa High School students help launch *Freshwater Fishes of the Burdekin Dry Tropics*. Photo: Kathy Cogo

## Habitat engagement & funding opportunities

### Talking fish in the Murray-Darling Basin

How long have you been fishing in the Murray-Darling Basin? Do you have recollections about the 'big ones' that 'used to be caught around here'? A new oral history project is looking for people who have a current or past connection with the rivers and waterways of the Murray-Darling Basin to tell their stories and share their memories and photos.

Many different groups of people including fishers, Aboriginal communities, tourists and landholders have developed unique relationships with rivers and their environments as they have lived by, grown up with, visited and played in them. Accessing and recording the wealth of information from River users will make a significant contribution to knowledge of the Murray Darling Basin and help shape future management.

This project, funded by the Murray Darling Basin Authority's Native Fish Strategy, aims to document people's recollections and link these to information scientists have gathered from the Murray-Darling system.

The project covers all 4 Basin states and is focussing on 12 reaches within the Basin, but the team are very keen to hear from anyone who lives or has lived in the Basin.

If you have a story or photos you would like to share with the "Talking Fish" project, please contact I&I NSW's Scott Nichols on 02 8437 4909, [scott.nichols@industry.nsw.gov.au](mailto:scott.nichols@industry.nsw.gov.au) or Jodi Frawley from UTS on 02 9514 2284, [jodi.frawley@uts.edu.au](mailto:jodi.frawley@uts.edu.au). More information about the project:

[www.dpi.nsw.gov.au/fisheries/habitat/help/work-with-your-community/talking-fish-in-the-murray-darling-basin](http://www.dpi.nsw.gov.au/fisheries/habitat/help/work-with-your-community/talking-fish-in-the-murray-darling-basin)



Rodney Price has been fishing rivers in the Basin for many years. He'll tell anyone who'll listen about how resnagging rivers has improved his chances of catching Murray cod, like this beauty. Photo: Grant Gunthorpe

### Habitat Action Grants open

Industry & Investment NSW is now calling on individuals, groups, local Councils and organisations interested in undertaking a fish friendly project to improve their local waterways to apply for a Habitat Action Grant. The grants program, funded by the NSW Recreational Fishing Trust from monies raised from the sale of the recreational fishing licences, aims to restore fish habitat and increase native fish populations. The Habitat Action Grants close on **15 October** 2010 at 5.00pm. More information, an application kit and case studies of previously funded projects are available from

<http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/ahr-grants-program>

For technical advice, contact a Conservation Manager on 02 4916 3926 or 02 6626 1107.

## Community Action Grants open

Community Action Grants are the small grants component of the Federal Government's Caring for our Country initiative that aims to help community groups take action to conserve and protect the natural environment. The grants are targeted towards established community-based organisations which have sustainable farming and/or protecting and enhancing the natural environment as their principal objective. Community Action Grants close at 5pm (AEST) on **31 August 2010**. For more information and application kits, visit:

<http://www.nrm.gov.au/cag/index.html>

## HABITAT DATES

- |                          |   |
|--------------------------|---|
| <b>6 – 13 September</b>  | <b>Landcare Week</b><br><a href="http://svc009.wic050p.server-web.com/?page_id=269">http://svc009.wic050p.server-web.com/?page_id=269</a>   |
| <b>15 – 16 September</b> | <b>Native Fish Forum, National Museum, Canberra</b><br>Email <a href="mailto:nfs@mdba.gov.au">nfs@mdba.gov.au</a> for more information  |
| <b>17 – 23 October</b>   | <b>National Water Week</b><br><a href="http://www.nationalwaterweek.org.au/">http://www.nationalwaterweek.org.au/</a>   |
| <b>9 – 10 November</b>   | <b>Monitoring &amp; Evaluating to Improve NRM Outcomes, Sydney, NSW</b><br><a href="http://www.nrmoutcomes.com/">www.nrmoutcomes.com/</a>   |
| <b>10 - 12 November</b>  | <b>19th NSW Coastal Conference, Coastal Management – all aboard, making it work!, Batemans Bay Soldiers Club, Batemans Bay, NSW</b><br><a href="http://www.coastalconference.com.au">www.coastalconference.com.au</a> |

## Habitat image for August



Crookhaven River, Shoalhaven Estuary. Photo: Scott Nichols

# ABOUT I&I NSW AND FISH HABITAT

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

## On-ground activities

- 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.

## 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 8437 4909  
Batemans Bay - 02 4478 9103  
Huskisson - 02 4428 3401  
Port Stephens - 02 4982 1232  
Wollongbar - 02 6626 1200  
Tamworth - 02 6763 1100  
Dubbo - 02 6881 1270  
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>

## Subscribe to Newstreams

Newstreams is a free email newsletter available to anyone interested in fish habitat. To subscribe or send in your habitat news, email the editor, Liz Baker.

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

## Back issues

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