Newstreams No. 25 April 2010

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

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

Fish hotels and more in the Hunter

Fish habitat and bank stability has been improved along 3km of the Upper Hunter River with the installation of seven new fish habitat structures (Fish Hotels) and four engineered log jams (EJLs) in the river between Muswellbrook and Aberdeen. These instream structures help stabilise eroding river banks and enhance fish habitat. Instream structures help native fish by creating and maintaining deep holes in the river bed, while also providing a substrate for the growth of algae and insects at the bottom of the food chain. The structures weigh around five tonnes each and are made from logs sourced from major developments, such as coal mine extensions, highway upgrades and industrial sites.

This is the second stage of the project, run by I&I NSW, the Hunter Central Rivers CMA and Land and Property Management Service. Stage 1 (2009) included the installation of two fish hotels and eleven EJLs.

For more information contact Jenny Fredrickson at Port Stephens Fisheries Institute on 02 4916 3834.

Once built, the fish hotels were lifted into place through the use of a crane, and are held in place by driven piles and large rocks. Photo: M. Elsley

Bell frog celebration

I&I NSW researcher, Luke Pearce, was looking for southern pygmy perch when he found frogs instead. The once abundant Yellow-spotted Bell Frog (*Litoria castanea*) had not been seen in the wild for almost 30 years and was thought likely to be extinct. Luke spotted what he thought might be a bell frog in a small stream on the Southern Tablelands of NSW and reported his sighting to Threatened Species Officer with the Department of Environment, Climate Change and Water, Dr David Hunter. The pair returned to the stream and to their delight found the species along a four kilometre stretch. Like many native frogs affected Amphibian Chytrid Fungus, this frog is endangered and the exact location of this find is being kept a secret. Now confirmed as a viable population, some individuals were removed to form the basis of a captive breeding program. To see some photos, go to:

http://www.flickr.com/photos/nswnationalparks/sets/72157623252404182/

The recent discovery of a healthy population of bell frogs (Litoria castanea) was some consolation for fisheries officer, Luke Pearce, who was looking for southern pygmy perch. Photo: David Hunter

On the lookout for the Pearl Eartheater

A popular aquarium fish, known as the Pearl Cichlid or Pearl Eartheater (*Geophagus braziliensis*), is on the loose in northern NSW and is putting native fish populations at risk. The fish, which was probably released into local waterways from a personal aquarium, was first reported in areas around Murwillumbah and Uki in late 2008. In recent months it's been spotted in various reaches of the Tweed River. Repeated floods over the last year have raised fears the cichlid may have become more widespread. They are difficult to find and even harder to catch, so control will be opportunistic and rely on information from locals. To report sightings of the pest fish, call the I&I NSW aquatic pest hotline on 02 4916 3877, email aquatic.pests@industry.nsw.gov.au or visit the Reporting aquatic pests and diseases page.

The Pearl Eartheater is hard to control and an extremely hardy fish, being able to survive in water temperatures down to around 10°C and in full strength seawater. Photo I&I NSW

New laws strengthen protection for freshwater fish habitat

Protection for freshwater fish habitats in NSW is now stronger thanks to new laws that came into effect on 1 April 2010. The laws for the first time recognise snags, freshwater aquatic vegetation, gravel beds, cobbles, boulders and rock bars as important habitats for native freshwater fish. Under the *Fisheries Management Act 1994* adredging permit is now required by any person or local Council who wants to remove any of these habitats from a waterway or undertake work that involves removal of any other material that disturbs, harms or moves these freshwater habitats. The changes to the legislation were made possible by the continuing support of the NSW Council of Freshwater Anglers and the Department would like to thank the Council for helping to make these changes possible. The maximum penalties for breaches of the new laws are $110,000 for an individual or $220,000 for a Corporation or local Council. For further information about the new laws, please contact Sarah Fairfull, Manager (Fisheries Ecosystems), on (02) 6626 1369 or email Sarah.Fairfull@industry.nsw.gov.au

International input at the Fishers for Fish Habitat Forum

At least one international guest speaker is confirmed for this year's Fishers for Fish Habitat Forum. Tom Sadler, from the US based Middle River Group, is a keen recreational fisher and is looking forward to meeting other passionate recreational fishers and getting out in the field to see some of the rehabilitation work underway in NSW. Tom leads the Middle River Group, a strategic and tactical marketing, communications and advocacy firm focusing on conservation issues, especially when those issues affect fish, wildlife and natural resources (http://www.midrivgroup.com/The_Middle_River_Group/Home.html). More information: http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forum

NSW NEWS

Paroo and Darling reunited

The Paroo River is about to be reunited with the Darling River, and hence to the great waterways that make up the Murray-Darling. The Paroo flows through outback Queensland and New South Wales but rarely connects up with the Darling River. The last time was 20 years ago. The wet start to 2010 means that the trickle that's reached the Darling at Wilcannia is expected to increase. It could reach an estimated flow of 500 to 600 billion litres, according the NSW Office of Water. It's expected that flows from the Paroo catchment are likely to sustain flows in the Barwon-Darling River above Wilcannia at relatively low rates for an extended period of time. NSW Office of Water satellite imagery showed that by early April most of the floodwater had reached the lower reaches of the Paroo River where it replenished the extensive systems of channels, flood-runners and billabongs. This is slowing down the water, spreading it out across the floodplain and providing significant storage for the floodwaters. Whilst this reduces flows to downstream areas it also provides tremendous benefits for the environment and graziers in the region. More information:

http://www.water.nsw.gov.au/

Illegal water harvesting near Wilcannia

NSW Office of Water's compliance officers have been investigating many reports across western NSW of suspected illegal structures built before the imminent arrival of flood flows. One property owner has been ordered to remove the structure he built on Talyawalka Creek, near Wilcannia. The removal of the structure is necessary so that the flood flows are not captured, impeded or diverted as they make their way through the river system. Unapproved works, such as this example, are particularly important in the current flow event, where many areas have not seen water for up to 10 years.

http://www.water.nsw.gov.au/About-us/Media-Releases/default.aspx

Fish moving sideways

Many species of native fish utilise off-channel habitats, such as wetlands and backwaters. A recent study looked at why and when fish moved to and from off-channel habitats in the highly regulated Lake Hume to Lake Mulwala reach of the Murray River. The researchers found that as water levels rose, fish left the main river channel and moved into newly flooded off-channel habitats. As water levels peaked, fish moved both into and out of the channels. On falling water levels fish moved back to the river. The high degree of lateral movement indicates the importance of habitat connectivity for small-bodied fish. Given the increasing use of small weirs to regulate wetlands adjacent to the Murray, ensuring connectivity will be important in maintaining fish populations. Read the article by Jarod Lyon and others in *Marine and Freshwater Research*:

http://www.publish.csiro.au/?act=view_file&file_id=MF08246.pdf (open access)

Fish previously classified as 'wetland specialists', such as carp gudgeons (*Hypseleotris* spp.), have a flexible movement and life-history strategy and use off-channel habitat where available. Photo: Gunther Schmida

Extensions beautiful for fish

Floods can be good for breeding, feeding and recruitment for both birds and fish. So researchers were interested to know if artificially extending flooding for the benefit of birds also provided benefits for fish. Following moderate flooding in early 2008 in the Narran River, an additional 10,423 ML of water was delivered to the river to prolong inundation of its terminal lake system. For over eight months following the flooding, fish were found through the river, lake and floodplain. The results suggest environmental water promoted recruitment of fish populations by providing greater access to floodplain nursery habitats, thereby improving the ability to persist during years of little or no flow. However, the presence of weirs in the River reduced the benefits of this flooding to the broader system. Read the article by Robert Rolls and Glenn Wilson in *Environmental Management*:

http://www.springerlink.com/content/3418634616425w30/?p=84cfd3691a13458784d1453780f52c0b&pi=13

Young-of-the-year (4–12 months age) golden perch (*Macquaria ambigua*) and bony bream (*Nematalosa erebi*) (pictured) were consistently sampled in floodplain sites when inundated, suggesting that the floodplain provides rearing habitat for these species. Photo: Gunther Schmida

Floodplain Harvesting Policy available for comment

Floodplain harvesting is the capture and use of water flowing across a floodplain that is not covered by another extraction category. The NSW Office of Water is developing a NSW Floodplain Harvesting Policy to be applied state wide to bring floodplain harvesting activities into a statutory licencing and approvals framework under the Water Management Act 2000. After initial period of consultation in 2008, the revised policy is now available for a second round of public consultation from 7 April to 14 May 2010. Stakeholders, such as recreational fishers and environmental bodies, are invited to make submissions. The closing date for submissions is 14 May 2010. For a copy of the draft policy and information about how to make a submission:

http://www.water.nsw.gov.au/Water-Management/Law-and-Policy/Key-policies/Floodplain-harvesting/default.aspx

Gwydir Wetlands Plan available for comment

The Draft Gwydir Wetlands Adaptive Environmental Management Plan is available for comment. The Plan aims to halt the decline of the wetlands and restore resilience to the Gwydir Wetlands system. It includes proposed actions to guide the future management and restoration of the wetlands. The closing date for submissions is 24 May 2010, after which the final Plan will be prepared. Copies of the Draft Plan are available from the Department of Environment, Climate Change and Water (DECCW) and catchment management authority offices within the Gwydir catchment. For more information contact 131 555, email info@environment.nsw.gov.au, or visit the website at www.wetlandrecovery.nsw.gov.au

http://www.environment.nsw.gov.au/resources/MinMedia/MinMedia10042301.pdf

AUSTRALIAN NEWS

St Lawrence coming to life

The finishing touches have now been added to the St Lawrence wetlands' restoration project in central Queensland that has helped locals discover the beauty in their own backyard. With funding from the Queensland Wetlands Program, the Fitzroy Basin Association (FBA) has removed weeds, installed fish ladders, built walkways and a viewing platform, and erected interpretive signage. The St Lawrence wetlands form part of the East Asian – Australasian Flyway, an essential migratory pathway for birds. The fish ladders installed at the site, designed and built by Queensland Primary Industries and Fisheries (QPIF), had improved the upstream movement of migratory fish that breed in the wetland. QPIF has identified 39 fish species that could use the St Lawrence wetlands via the new fish ladders. More information:

http://www.regionalnrm.qld.gov.au/about_new/news_events_publications/news/vor/2010_march/fba.html

Take a peek at the outcomes of environmental water

The Department of the Environment, Water, Heritage and the Arts has provided images and videos showing areas which have received water under the recent environmental watering programs. For those of us unable to get out to these areas and see for ourselves, the videos in particular provide some perspective on the effects of the inflow of water. Go to:

http://www.environment.gov.au/water/gallery/cewh/index.html

Lake Little Hattah, one of the Hattah Lakes in Victoria, before (April 2009, left) and after (November 2009, right) receiving environmental water flows. Photos: DEWHA

Helicopter survey monitors seagrass health in Torres Strait

Fisheries scientists, the Torres Strait Regional Authority (TSRA) and Indigenous rangers are using helicopters and boats to map and assess seagrass habitat vital to local fisheries. The Torres Strait seagrasses support a number of major fisheries and a greater understanding of them would help address the threats they face, including shipping accidents and oil spills. More information:

http://www.dpi.qld.gov.au/30_16725.htm

Indicator sites to watch

The Murray-Darling Basin Authority (MDBA) announced that 18 indicator sites within the Murray-Darling system will be made environmental priorities under the imminent Murray-Darling Basin Plan. The 18 'indicator' assets are: Lower Balonne River Floodplain System; Narran Lakes; Lower Goulburn River Floodplain; Gwydir Wetlands; Booligal Wetlands; Great Cumbung Swamp; Lachlan Swamp; Lower Darling River System; Macquarie Marshes; Barmah-Millewa Forest; The Coorong, Lower Lakes and Murray Mouth; Riverland – Chowilla Floodplain (including Lindsay, Mulcra and Wallpolla Islands); Edward-Wakool River System; Gunbower-Koondrook-Pericoota Forest; Hattah Lakes; Lower Murrumbidgee River Floodplain; Mid Murrumbidgee River Wetlands; and Wimmera River Terminal Wetlands.

The MDBA has also identified 14 ''ecosystem functions' the basin plan will need to protect, including the health of river banks and beds and the movement of fish species through the river system. More information:

http://www.mdba.gov.au/basin_plan

Tassie still struggling with carp

After 15 years, a Tasmanian Government program to eradicate carp has suffered a setback due to a major spawning in December 2009. Since December, 14,000 carp have been found and caught in Lake Sorell and the Inland Fisheries Service thinks thousands are still to be caught. Carp were first found in Lake Sorell and the neighbouring Lake Crescent in 1995. The service has been using trapping and tagging techniques and believed they had almost rid the lakes, and the State, of the pest. The estimated eradication date has been put back from 2012 to at least 2017 as a result of the spawning event.

INTERNATIONAL NEWS

Getting the community committed

Cultivating community-based support for wetland ecosystem restoration is challenging. While there's been extensive research aimed at understanding the conservation of wetland plants, animals, soils and so on, there's less guidance on how people interact with and value wetlands and how to take this into account. This US study, based in the Cache River Wetlands in Southern Illinois, found that the wetlands hold diverse and significant meanings to community members and that community members' criteria for project success may vary from those identified by project managers. This research suggests that successful long-term wetland conservation needs to include ways of preserving or restoring the various relationships people have with wetlands. The inclusion of social, as well as ecological factors, could help the community develop and maintain a commitment to wetland restoration. Read the paper by Davenport and others in *Environmental Management*:

http://www.springerlink.com/content/r088523j8u6k0608/?p=908880d4db9b4ced8a11e650f7f6b499&pi=5

Agriculture up, fish down

Researchers in Finland used fish surveys to evaluate the health of rivers in areas associated with intensive agriculture. They found that with higher levels of intensive agricultural water quality was significantly worse, the composition of the fish community changed and their measure of overall health of the river scored significantly lower. Agriculturally intensive areas saw increases in species generally considered tolerant of human disturbance (pike, roach, ruffe and perch) and a decrease in fish typically considered intolerant of human activities (bullhead, alpine bullhead, minnow, and grayling). The researchers explain that increased sedimentation from agriculture reduces both the condition of spawning gravels and survival of fish eggs and embryos. Sedimentation can also reduce availability of benthic food sources for fish. This research is consistent with other research in the US. Read the paper by Tappio Sutela and Teppo Vehanen in *Fisheries Management and Ecology*:

http://www3.interscience.wiley.com/journal/123212310/abstract

Understanding freshwater shores

Shores of freshwater lakes are a less well understood aspect of aquatic habitat. Shores, like this one on Lake Neuchâtel in Switzerland, need to be managed as part of a freshwater system, rather than applying marine models.

Freshwater shore zones are among the most ecologically valuable parts of the planet. They are characterised by high physical complexity and connectivity and support high biodiversity, but have been heavily damaged by human activities. Two researchers have reviewed what is known and identified three prominent knowledge gaps about how these areas function, with implications for effective management. First, much of the knowledge is too general to be applied to the management of specific sites. Second, there are both significant similarities and significant differences between marine and freshwater shore zones. Models developed for marine shore zones may not apply to freshwater shore zones. Third, almost all studies of shore zones have focused on individual bits of the shore zone, rather than on a larger system. Yet it is the larger system that is most often the target of management efforts. Read the article by David Strayer and Stuart Findlay in *Aquatic Science*:

http://www.springerlink.com/content/147526m7134jnt48/fulltext.pdf (open access)

Temperatures rising in major U.S. streams and rivers

A research team has analysed historical water records for 40 major streams and rivers in the US. They found that 20 of the waterways showed statistically significant long term warming. Only 2 waterways showed significant temperature decreases. These findings are problematic for fish and other aquatic organisms, many of which require narrow temperature ranges. Rising stream temperatures may be due to a number of factors, including the increase in urbanisation. The study found that the biggest rates of warming were largely in urban areas. However, it was noted that at many sites, long-term increases in water temperatures typically coincided with historical increases in annual mean air temperatures. Given the projected temperature increases from climate change, the researchers consider that problem is likely to get worse. Read the article by Kaushal and others in *Frontiers in Ecology and the Environment*:

http://www.esajournals.org/doi/abs/10.1890/090037

All wetlands are not equal when it comes to carbon capture

Natural wetlands, such as this one in Moira State Forest, near Deniliquin, are better when it comes to carbon capture than constructed wetlands.

Created wetlands are not the equal of natural wetlands in terms of sequestering carbon. This is an issue when constructed wetlands are being heralded as part of the carbon capture and storage solution. Researchers from the Ohio State University found that created wetlands contained significantly less soil organic carbon and plant biomass than natural wetlands. Models indicate that it would take the created wetlands 300 years to accumulate the soil organic carbon of natural wetlands and 500 years to accumulate the biomass. These findings are consistent with past studies also showing a slow development of created wetland characteristics and function and have implications for development offsets using created wetlands. Read the article by Katie Hossler and Virginie Bouchard in *Ecological Applications*:

http://www.esajournals.org/doi/abs/10.1890/08-1330.1

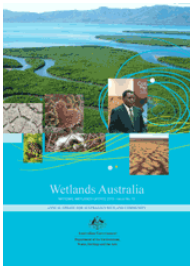
Functional vs scenic restoration

A study in the US has found that effective rehabilitation relies on fixing functional problems rather than improving the aesthetic or scenic value, particularly for urban waterways. Habitat bottlenecks have major effects on the types and numbers of species found and need to be the focus of restoration efforts. In urban waterways affected by many human activities, the major habitat bottleneck is the availability of shallow wave-protected nursery areas for juvenile fish. In rivers without urbanisation and navigation pressures, limited spawning habitat is probably the most important bottleneck. Read the article by C. Wolter in *Fisheries Management and Ecology*:

http://www3.interscience.wiley.com/journal/123275159/abstract

HABITAT RESOURCES

Wetlands Australia 2010



The 2010 edition of *Wetlands Australia*, by the Department of the Environment, Water, Heritage and the Arts, is now available. *Wetlands Australia* brings together information and resources from across Australia relating to wetlands conservation, management and education. Available from:

http://www.environment.gov.au/water/publications/environmental/wetlands/wa18.html

New line to reduce fishers' footprint

A new biodegradable fishing line has the potential to minimise recreational fishers' environmental footprint and help to meet the environmental guidelines laid out in the National Code of Practice for Recreational and Sport Fishing. Fishers using the line say it's as good as conventional types of line. The line is reported to degrade in 5 years, a small fraction of the time taken for conventional fishing lines to do the same. If disposed of in compost it biodegrades within six months.

For more information: http://www.frdc.com.au/documentlibrary/FISH%2017-4.pdf (see page 30)

HABITAT DATES

21 May	**Fish Friendly Farms field day, Deniliquin** **Contact Charlotte Jenkins for more information or telephone 02 6626 1107**
4 - 5 June,	**Fishers for Fish Habitat Forum, Lake Macquarie** http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forum-2010
15-17 June	**Inaugural Roundtable of Ocean Industry Association Leaders, Sustainable Ocean Summit, Belfast, Ireland** http://www.oceancouncil.org/site/pdfs/SOS_Info-Registration-Sponsor_22-01-10.pdf
12-14 July	**Australian Fish Biology conference, Melbourne** http://www.asfb.org.au/
13 - 16 July	**IIFET 2010: Economics of fish resources and aquatic ecosystems: balancing uses, balancing costs, Montpellier, France** http://www.colloque.ird.fr/iifet-2010
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

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

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newstreams@industry.nsw.gov.au

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