

Newstreams

News, research, on-ground works, innovation and events with a focus on improving fish habitat

AUSTRALIAN NEWS

No more fish passage woes for Mullumbimby Creek

The last of the weirs that restrict fish passage in Mullumbimby Creek has been removed and fish now have access to nearly 70 per cent of the Brunswick catchment's waterways. The nearly 100 year old weir was built to enhance the supply of fresh water, initially for the dairy industry and latterly for other uses, such as the watering the golf course. The project involved a partnership between Byron Shire Council, Mullumbimby Golf Club, the NSW Office of Water and the NSW Department of Industry and Investment. For more information contact [Matthew Gordos](#) on 6626 1200 or visit:

www.byron.nsw.gov.au/media-releases/2010/12/02/mullumbimby-creek-weir-removed



What fish like to see in their local river: the demise of the structure preventing their movement up and downstream.

Image: M. Gordos

Got the hatchlings, now for the habitat

The endangered Macquarie perch have been bred for the first time in captivity in NSW. Using a novel approach involving the construction of an 'artificial stream' scientists at the Narrandera Fisheries Centre led captive perch into thinking they were in a natural environment and the fish reached breeding condition. Dr Dean Gilligan from I&I NSW said the fish used for the successful breeding program were from a remnant population rescued from the upper Lachlan catchment after their habitat was threatened by the recent introduction of redfin perch. Macquarie perch populations began to crash in the mid 1900s, most likely due to habitat degradation associated with river regulation, fish passage barriers, land clearing and associated sedimentation and other forms of water pollution. By the 1970s, Macquarie perch were considered to be seriously threatened with extinction and the species has continued to decline. With this breakthrough, I&I NSW will look at using a conservation stocking program in those parts of the Murray-Darling Basin where Macquarie perch populations are diminished or have become locally extinct provided suitable habitat can be found or rehabilitated. This research has been supported with funds from the Recreational Freshwater Fishing Trust. For more information see:

www.dpi.nsw.gov.au/aboutus/news/recent-news/fishing-and-aquaculture/world-first-breeding-breakthrough



Worth getting excited about: one day old Macquarie perch bred in captivity.

Image: I&I NSW

Planning for healthy urban waterways

The Queensland Government has released its State Planning Policy for Healthy Waters. This policy is designed to better protect waterways from urban pollution and will take effect in March 2011. It sets out state-wide planning and development provisions to reduce contaminants, such as nutrients, sediments and rubbish, entering waterways with stormwater runoff. The policy can be found at:

www.derm.qld.gov.au/environmental_management/water/environmental_values_environmental_protection_water_policy/urban_water_quality_and_flow_management.html

NSW Habitat Action Grants announced

Over \$500,000 of funding has been awarded for a range of projects that will restore fish habitat and increase native fish populations across NSW. Fishing clubs, individuals, community groups, local councils and other organisations were awarded funds to improve fish habitats in their local areas. The Habitat Action Grant program is funded by the NSW Recreational Fishing Trust. A full list of the Habitat Action Grant projects for 2010/11 can be found at:

www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/ahr-grants-program.

Mapping NSW south coast wetlands

Southern Rivers CMA is the latest catchment to have its wetlands mapped by WetlandCare Australia. The over 150,000 hectares of wetlands included iconic sites such as Coomonderry Swamp and the Minnamurra River wetlands. The project culminated in wetland health assessments and site action plans for 15 wetland complexes. These site action plans will be used to guide on-ground works. This partnership between WetlandCare Australia and Southern Rivers CMA was funded through the Federal Government's Caring for our Country initiative. For more information, contact Cassie Price on 02 66816169, email cassieprice@wetlandcare.com.au or visit:

www.wetlandcare.com.au/Content/templates/news_detail.asp?articleid=831&zoneid=1



This wetland, which connects to Mogendoura Creek during spring tides, is an example of south coast wetlands mapped in the project. Image: C. Carruthers

Exporting wetlands expertise to China

Twelve of China's leading wetlands policy specialists met with Queensland Government wetlands experts as part of a visit to Australia to examine best practice approaches for wetland policy and national guidelines. The Queensland Wetlands Program's forum was the second high level meeting held this year and was part of a schedule that also included Canberra, the Coorong (South Australia), Newcastle and Sydney. Of particular interest for the Chinese delegates was using stakeholder partnerships, systems planning in wetland management and policy implementation, cooperation between agencies to implement guidelines, managing water resources during climate change and applying best practice standards. For more information, contact the Queensland Wetlands Program on 07 3330 5926 or visit:

www.epa.qld.gov.au/wetlandinfo/site/index.html



Chinese delegates seeing policy put into practice at Bulimba Creek Oxbow wetland. Image: Queensland Wetland Program

MDBA Basin Guide – what's in it for fish?

I&I NSW Fisheries Ecosystems Unit facilitated a 2-day workshop in early November to look at if and how the Guide to the Basin Plan was likely to help protect native fish stocks and add to other recovery efforts, especially in relation to threatened species. Workshop participants, who were all fisheries researchers or managers, developed a summary of both positive and negative aspects of the Guide. This will be used to negotiate improved outcomes for native fish with the Basin Plan itself and the areas-specific implementation strategies. For more information, contact Sarah Fairfull at sarah.fairfull@industry.nsw.gov.au or 6626 1200.

Precautionary approach leaves the Williams River without a dam

The investigation into the planned Tillegra Dam on the Williams River has identified that the river may not be big enough to support the plants and animals that already depend on it for survival and also supply drinking water. The application of the 'precautionary principle' by the NSW Department of Planning means the dam is no longer under consideration. For more summary information:

<http://premier.nsw.gov.au/sites/default/files/101128-Tillegra-Dam.pdf>

Willows and water

Willows are a recognised problem for waterways and fish in Australia. As well as affecting water quality, they also transpire a lot of water. Recent research has shown that willows growing in-stream in permanent water have the potential to extract more water than that lost through open water evaporation from rivers, streams and creeks in Australia. Removing willows in these circumstances could lead to net water savings of 5.5 ML per year per hectare (area covered by the trees' crowns). Therefore the replacement of instream willows with native riparian vegetation will improve habitat for native fish and also save water. To read more of this work by Doody and Benyon go to:

<http://dx.doi.org> and type in: doi:10.1016/j.jenvman.2010.10.061

Fishers provide Tuross fish habitat

Recreational fishers – and their kids - did their bit for their local fish habitat by planting native shrubs and trees on the banks of the Tuross River. Volunteers from Tuross Recreational Fishing Club, South Coast Barracuda Spearfishing Club and Fishcare worked along with their families and Eurobodalla Shire Council's Environment Team to plant the 300 plants which will grow to protect the riverbank and provide valuable fish habitat. For more information, contact Heidi Thomson at Eurobodalla Shire Council on 4474 1083 or Trevor Daly, I&I NSW at

Trevor.daly@industry.nsw.gov.au.



Jack Newton and Ruby and Brooke Scales planting native shrubs on the Tuross River. Image: Heidi Thomson

Sampling finds pygmy perch in Pudman Creek

Despite torrential rain, community members recently spent the day surveying fish in the Pudman Creek, one of the only creeks in south eastern Australia with no feral fish. Using bait traps (under special permit from I&I NSW) and backpack electrofishing, 46 fish were caught, including 10 endangered southern pygmy perch. The rest of the catch was made up of flathead gudgeons and freshwater yabbies. The fish surveys were carried out as part of the 'Pygmy Perch in the Pudman' project funded through the NSW Environmental Trust and managed by Greening Australia in partnership with Boorowa Landcare, Lachlan CMA, TransGrid and local landholders. For further information contact Lori Gould on 0439 030 058.



Happiness is finding endangered fish where you'd hoped they would be. Community members enjoyed their successful fish sampling at Pudman Creek. Image: Luke Pearce

Lowland fish passage barriers affect entire catchment

Recent research has confirmed that the number and diversity of freshwater fish in a river system are affected by in-stream barriers in the lowland reaches. Robert Rolls, from the Australian Rivers Institute, sampled two tributary catchments of the Hunter River, one with barriers and one without. He found that fish fauna in the system with barriers was dominated by non-migratory species. Differences in the numbers of migratory species immediately downstream of upland barriers between the two tributary systems indicate that migration barriers in lowland reaches have significant effects throughout the entire catchment. It appears that the location of each barrier to migration within river networks has varying consequences for catchment-scale connectivity and for assessing the impacts of multiple barriers. Read about this work in *Biological Conservation*:

<http://dx.doi.org> and type in: doi:10.1016/j.biocon.2010.09.011



Greater numbers of Cox's gudgeon (*Gobiomorphus coxii*) were found in the unrestricted tributary following their upstream juvenile migration when compared to the restricted tributary. Image: Gunther Schmid

Waiting at the end of the weir

Thousands of fish are lined up and waiting for the imminent removal of the lock gates on Mildura weir. Getting their Christmas present of free passage early this year are hundreds of 20 to 40cm golden and silver perch, many 1m long Murray cod, and thousands of smelt and young of the year golden perch. Fish passage will be permanently improved at this site with the construction of a fishway as part of the Sea to Lake Hume project

These large cod were queuing up to get past the Mildura weir once the lock gates were removed. Image: I. Stuart



Good news and bad news for new Galaxias

Australia has 210 freshwater fish species, which is less than could be expected given the diversity of habitats found across the country. However, by applying modern methods and understanding what constitutes a species, Tarmo Raadik, from the Arthur Rylah Institute, has identified another 16 species of *Galaxias*, 11 of which are found in Victoria's cool mountain streams. Differences in behaviour and breeding cycles and genetic testing of tissue samples led to these similarly looking fish being separated into distinct species. That's the good news. The bad news is that a lot of the species have been found in single populations, pushed upstream by trout, which have fragmented and isolated the populations and made them vulnerable to extinction. For more information, contact Tarmo Raadik at tarmo.raadik@dse.vic.gov.au or go to:

www.dse.vic.gov.au/DSE/dsencor.nsf/LinkView/92EAD818AEC150CCA2577CB00048727250370F0D4508518CA256F040021E0EB



There's more to the mountain galaxias than meets the eye. Sixteen new species have now been identified on the basis of differences in genetics, behaviour and breeding. Image: I&I NSW

Southeast Australia fish species responding to warmer water

There appear to be climate-related changes in the distribution of 43 coastal fish species, representing about 30 per cent of the inshore fish families occurring in south-east Australia. Some, like silver drummer and rock blackfish have become more abundant. Snapper and rock flathead have increased their ranges. However, up to 19 species of Tasmanian coastal fish fauna have undergone serious declines. The data used by the researchers, including information from scientific surveys, angling competitions and commercial catches, dates from the late 1800s to the present. Read more about this research by Last and others in *Global Ecology and Biogeography*:

<http://onlinelibrary.wiley.com/doi/10.1111/j.1466-8238.2010.00575.x/abstract;jsessionid=DFFF2EA2FF598BD632B35E8B2F33419A.d03t02>



Occasional visits from Queensland groper (pictured) and tiger sharks to south east coastal waters are due to the East Australian Current moving south by about 350 kilometres and a temperature rise of almost 2°C. Image: I&I NSW

Roll out of fish kill response kits

I&I NSW Fisheries Ecosystems Unit has produced 30 portable fish kill response kits for all Fisheries and Marine Parks Officers to respond to and investigate initial causes of fish kills. Training in the use of the kit is being provided, including water and fish sampling and lodgement of samples with relevant laboratories. Members of the community are encouraged to report fish kills by contacting their local Fisheries Office or ringing 1800 043 536. More information on fish kills can be found at www.dpi.nsw.gov.au/fisheries/habitat/threats/fish-kills.

Native Fish Awareness Week puts native fish front and centre

Over 40 events were organised across the Murray-Darling Basin for Native Fish Awareness week this November. Over 1,000 people attended events in NSW alone. As well as learning more about fish and the Native Fish Strategy, some even got their hands dirty planting trees for fish or hauling carp from their local river. Highlights for the week included:

In Deniliquin ...

Over 130 people enjoyed presentations, fish tagging and electrofishing demonstrations as part of the Deniliquin Native Fish Habitat Expo. Local students joined in during the interactive fish habitat workshops.

In the upper 'Bidgee ...

The first ever Native Fish Awareness week event in the Nation's capital saw the launch of the Upper Murrumbidgee Demonstration Reach Implementation Plan and tree planting on the banks of the river near Tharwa.

In the outback ...

Trying conditions in Quirindi, Brewarrina and Bourke didn't stop over 250 people enjoying carp musters. Over 200 kg of carp were removed from the Basin's waterways during these events.

In the schools ...

River rallies were held in schools across NSW. These environmental education workshops culminated in the Tamworth event which had over 13 local environmental experts teaching over 350 primary school kids about the plight of our native fish and how we can help bring them back.

The Basin-wide Native Fish Awareness week highlighted the importance of a coordinated approach in engaging local communities and improving the health of our waterways and native fish populations. Organisers offer their sincere thanks to all their local communities who got involved. For further information on the NFS please contact Tony Townsend, Northern NSW NFS Coordinator, on (02) 6763 1440 or email anthony.townsend@industry.nsw.gov.au or Charlie Carruthers, Southern NSW NFS Coordinator, on (02) 6298 0802 or email charlie.carruthers@industry.nsw.gov.au. Contact details for other NFS coordinators can be found at:

www.mdba.gov.au/programs/nativefishstrategy/contacts



Presenters at the Brewarrina Carp Muster. Image: R. Price



Students enjoyed getting a feel for Murray cod during the River Rallies. Image: T. Townsend



Ready to do their bit catching carp at the Quirindi Carp muster. Image I&I NSW



Demonstrating the basics of tree planting at Inverell. Image I&I NSW

INTERNATIONAL NEWS

Worldwide mangrove forests on the decline

New research using satellite imagery has revealed that worldwide mangrove forests cover approximately 137,760 km², which is 12 per cent smaller than earlier estimates. Of the remaining forest, 75 per cent is found in just 15 countries and only about 7 per cent is protected. Much of these forests are in a degraded condition. Human activity and frequent severe storms have led mangrove forests being lost at a rate far higher than that for inland tropical forests and coral reefs. Read more of this work by Giri and others in *Global Ecology and Biogeography*:

<http://onlinelibrary.wiley.com/doi/10.1111/j.1466-8238.2010.00584.x/abstract>

It's seagrass or nothing

Researchers in Japan had a unique opportunity to study what happens when seagrass beds disappear overnight. After a typhoon, an extensive seagrass bed on a fringing coral reef in southern Japan disappeared completely. The researchers found that losing the seagrass had a significant negative effect not only on seagrass bed residents but also on commercially important coral reef fishes that use these areas as nurseries or feeding grounds. Species richness and fish density decreased by more than 75 per cent and 85 per cent, respectively, and 13 of the 21 dominant species disappeared completely. This study demonstrated that most seagrass bed fishes do not adapt to the loss of seagrass habitat. Read more of this study by Nakamura in *Marine Biology*:

www.springerlink.com/content/5g6783650w053175/

Water extraction and aliens driving the decline of mediterranean fish

Mediterranean freshwater fish are amongst the most threatened groups of animals, so understanding the specific and spatial nature of the threats affecting them is important. Recent research has found that these fish are usually affected more by either pollution and agriculture or by alien fish species, but in areas where both are an issue fish are seriously in peril. As all the species under concern are endemic to the mediterranean, the researchers argue that control of alien species and reducing overexploitation of freshwater resources should be conservation priorities for mediterranean freshwater systems. Read more of this work by Clavero and others in *Diversity and Distributions*:

<http://onlinelibrary.wiley.com/doi/10.1111/j.1472-4642.2010.00680.x/abstract>

B vitamins linked to algal blooms

Harmful algal blooms, including those known as 'red tides', are becoming more widespread, frequent and intense and scientists have been struggling to understand why. Researchers have now identified that it's not just nutrients such as nitrogen and phosphorus that are important: coenzymes and vitamins, especially B1 and B12, are also needed by these harmful algae to bloom. This study demonstrates that B vitamins, at concentrations that are reported in coastal waters, promote algal blooms. While the sources of nitrogen to coastal waters are well known, the sources of vitamins are not and these need to be identified. Read more of this work by Tang, Kock and Gobler in the *Proceedings of the National Academy of Science*:

www.pnas.org/content/107/48/20756.abstract

Salmon, habitat and big business

The wild salmon run in Alaska involves over 40 million fish. These fish are Alaska's support commercial, recreational and subsistence fishing. However, huge deposits of gold and copper have been found near the salmon spawning grounds. It's not only conservationists who are concerned: commercial fishers and many Indigenous people fear that the open-pit mine will disrupt the salmon rivers and lead inevitably to contamination. Others see potential development opportunities and wealth generation and vow to protect the environment. The BBC commissioned a 2-part documentary to explore these issues and the possible future of the Alaskan salmon. These can be accessed at:

www.bbc.co.uk/worldservice/documentaries/2010/11/101104_doc_salmon_battle_part2.shtml

HABITAT RESOURCES

More habitat, more fish: a strategy for educating recreational fishers about habitat
I&I NSW and Southern Cross University have worked with recreational fishers to develop an evidence-based strategy for working with the recreational fishing community to improve their understanding of fish habitat. This work was funded by the NSW Environment Trust. Sample resources, including fish habitat fact sheets, are included and freely available. Go to:

www.dpi.nsw.gov.au/fisheries/habitat/publications/education-resources-about-fish-habitat/recreational-fisher-educatin-project

Hydrobiologia Special issue on global change and river ecosystems

A range of papers relating to the implications of climate change for river structure, function and ecosystem services.

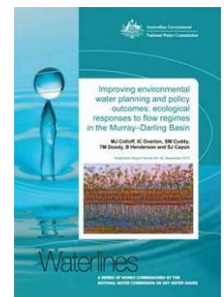
www.springerlink.com/content/0018-8158/657/1/

Improving environmental water planning and policy outcomes: ecological responses to flow regimes in the Murray-Darling Basin

Waterlines Report #34

This report outlines research that is assisting water managers to improve and justify the delivery of environmental water to protect ecological assets across the Murray-Darling Basin. A chapter is dedicated to fish.

www.nwc.gov.au/www/html/2949-waterlines-no-34.asp?intSiteID=1



HABITAT ENGAGEMENT & FUNDING OPPORTUNITIES

New date for comment on the MDB Basin Plan Guide

The date for input to the preparation of the proposed Basin Plan has been extended to 17 December 2010:

www.mdba.gov.au/media_centre/media_releases/new-date-for-comment-on-the-guide

NSW boaters and fishers needed

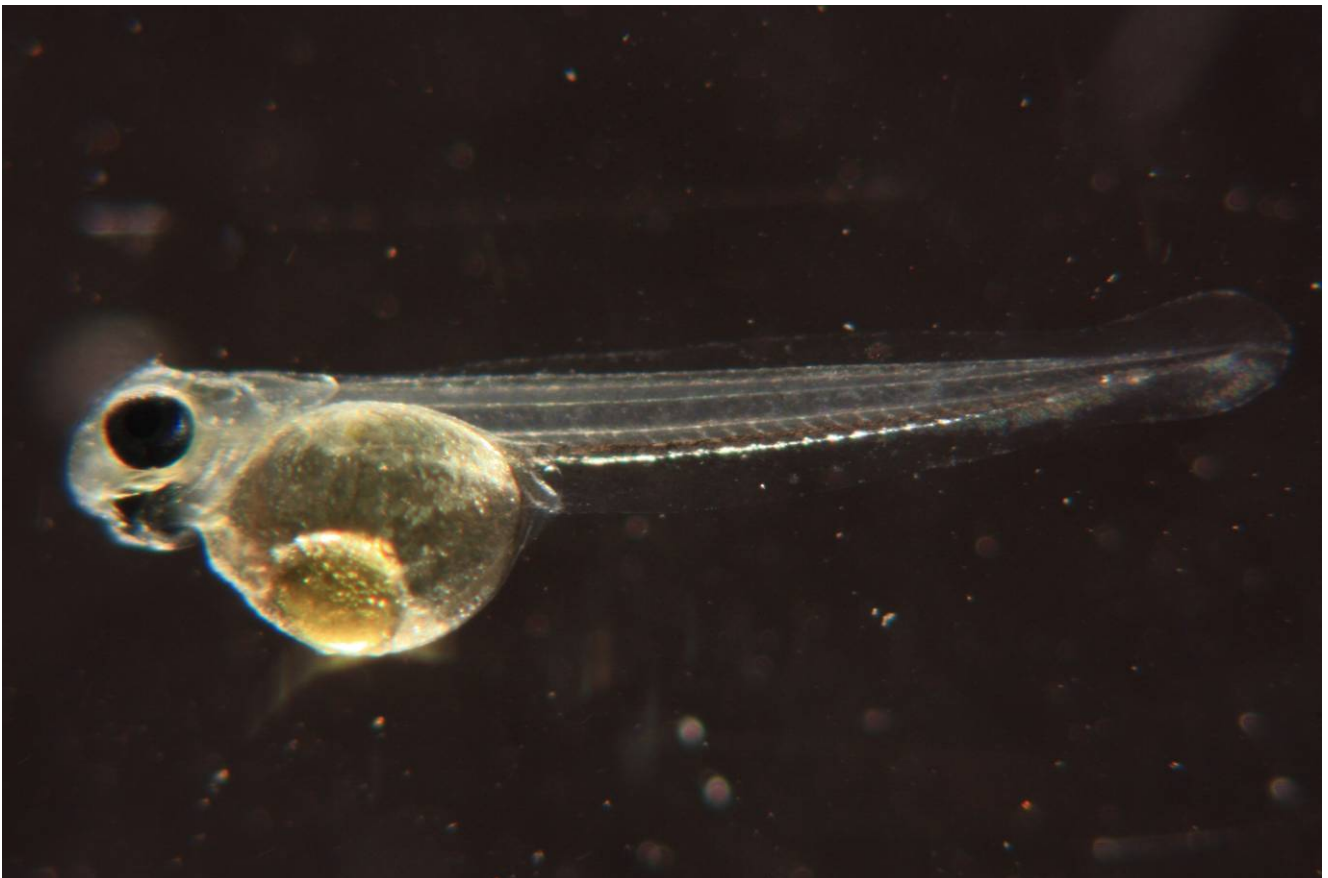
Whatever your involvement with boating and fishing in freshwater or saltwater, your opinions and ideas are needed to develop an environmental education strategy to help maintain the quality of your favourite recreational sport for you, your children and your grandchildren. This project is being conducted jointly by all the NSW Coastal Catchment Management Authorities, with project partners Boat Owners Association of NSW Recreational Fishing Alliance of NSW, Boating Industry Association of NSW, NSW Maritime, Industry and Investment NSW (Fisheries) and Department of Environment Climate Change and Water. This project is funded by the Australian Government's Caring For Our Country and the NSW State Government.

The survey should take about 7 minutes to complete: www.surveymonkey.com/s/MTTKMDC

HABITAT DATES

- 17 – 19 January 2011 **Expert Meeting on Impacts of Ocean Acidification on Marine Biology and Ecosystems**
Intergovernmental Panel on Climate Change (IPCC) Expert Meeting, Okinawa, Japan
www.ipcc-wg2.gov/meetings/EMs/index.html#5
- 2 February **World Wetlands Day**
www.environment.gov.au/water/environmental/wetlands/
- 25 February **6th Annual Water Symposium, Darling Harbour, Sydney**
www.legalwiseseminars.com.au/userfiles/file/LWS_ENVIROInfo.pdf
- 1 – 7 March **National Seaweed**
www.mesa.edu.au/seaweed2009/default.asp
- 22 March **World Water Day**
www.worldwaterday.org
- 16 - 21 April 2011 **Rotary Murray-Darling School of Freshwater Research, MDFRC Wodonga and Wonga Wetlands.**
Year 11 students only.
www.mdfrc.org.au/students/rotary/index.htm

IMAGE FOR DECEMBER



One day old Macquarie perch larva. Image: M McIellen

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

www.dpi.nsw.gov.au/fisheries/habitat

About Newstreams

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

Subscribe to Newstreams

Newstreams is free by email subscription. To subscribe or send in your habitat news, email the editor, Liz Baker.

newstreams@industry.nsw.gov.au

Back issues

www.dpi.nsw.gov.au/aboutus/resources/periodicals/newsletters/newstreams