

Newstreams

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

AUSTRALIAN NEWS

Stage 3 of Upper Hunter River fish habitat works

Ten new engineered log jams (ELJs) have been constructed in the Hunter River at Anglo Coal's Dartbrook site near Muswellbrook. The structures were made from logs provided by Mt Arthur Coal and Mt Thorley Coal. Over 500 logs were used, some of which were estimated to weigh over 2 tonnes. The ELJs are keyed into the bank and held in place by piles driven into the river bed. They have been shown to be able to withstand large floods.

Strategically placed hard instream habitat, such as log jams, helps direct flows away from eroding banks, create and maintain deep holes in the river bed and provides a substrate for the growth of algae and insects. This is the third stage of the Upper Hunter River project which has seen nine fish hotels and 15 ELJs installed over the past two years in neighbouring river reaches. The project, funded by the Hunter Central Rivers CMA and the Recreational Fishing Trust, was managed by NSW DPI, with construction by the Land and Property Management Authority. For more information contact [Kylie Russell](#) (NSW DPI) on (02) 4916 3817.



One of the log jams prior to being covered with gravel. Photo: Kylie Russell

Working together on the Hawkesbury

The health of the Hawkesbury-Nepean river catchment and its water quality is the focus for many thousands of volunteer hours. A kayak trip from 'Source to Sea' provided an opportunity for ABC Landline journalist, Sean Murphy, to witness this work and talk to some of those involved. He spoke with some of the Willow Warriors, a group of adventure conservationists dedicated to ridding NSW of invasive weeds like willows, members of Colo Valley Landcare and representatives from the Hawkesbury-Nepean CMA. To read a transcript or view the segment of Landline:

www.abc.net.au/landline/content/2010/s3174898.htm

Snags for fish in the Goulburn

The Goulburn Broken Catchment Management Authority (GB CMA) is re-snagging the Goulburn River between Murchison and Shepparton. In stream habitat mapping by scientists from the Arthur Rylah Institute in 2010 identified areas that had a low density of snags. The snags include river red gum, grey box and yellow box, and are trees that had fallen in local government managed parks, reserves and road sides due to storms and flooding. The GB CMA has also got permission from VicRoads to use the larger portions, mainly the roots and trunks, of some large trees that were removed as part of the construction of the Nagambie Bypass. This project is part of the GB CMA's Goulburn River Large Scale River Restoration Project and funding was provided by the Victorian State Government. NSW DPI staff are assisting with the implementation of the project. For more information, contact [Jim Castles](#) (GB CMA) on 03 5820 1141.



Snags ready for the river. Photo: Jim Castles

Monster musters

Narrabri's 4th 'Carp Muster' saw 534 people flock to the banks of the Namoi River to try their hand at catching a carp. These fishers caught 2850 individual carp, weighing in at a total of nearly 1 tonne, or if laid head to tail, over 447m of carp. The Narrabri carp muster, part of the Namoi Aquatic Habitat Initiative, is an annual event organised and run by NSW DPI and the Narrabri Amateur Fishing Club. This year Boggabri Coal was a major sponsor and many local businesses in Narrabri also contributed generously. The community's involvement in the Namoi Aquatic Habitat Initiative is not limited to catching carp – they are also planting trees, removing weeds, fixing erosion, fencing off the river and providing offstream watering points for stock. For more information, contact [Milly Hobson](#), NSW DPI, on 02 6763 1206.



One of Narrabri Muster's many young fishers. Photo: Peter Verwey

Three other inland NSW towns have also held successful carp musters. Warren celebrated its second carp muster by removing 822kg of carp, that largest of which weighed over 8kgs. This event was funded by the Central West CMA through the Spot the Gambusia project. Collarenebri and Walgett had their first carp musters, both funded by Western and Namoi CMAs through the Walgett Aboriginal Medical Service. The enthusiasm of the kids to catch a carp was unwavering and there was a large level of interest in both communities to run similar events in the future. For more information, contact [Rodney Price](#), NSW DPI, on 02 6882 1216.

Inland rivers flooded with carp

Widespread flooding has sent carp into a breeding frenzy. Across the Murray Darling Basin there are reports of massive numbers of carp congregating in recently flooded rivers and creeks in preparation for spawning. While this may seem an ideal opportunity to haul large numbers of these pests from the water, the distances involved and low price paid for carp means it's not viable for commercial fishers to do so.

16 March 2011 **Brewarrina News** FIRST PUBLISHED 1878
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Reaching over 2,500 people every issue, for the citizens of Brewarrina, Gongolgon, Goodooga, New Angledool & Weilmoringale.

Carp converge
Residents have noticed masses of European carp in the Barwon River near the Brewarrina weir.

To discover why, Brewarrina News showed photos, kindly provided by Max and Julia Jeffrey, to Cameron Lay, Manager - Aquatic Habitat Rehabilitation of Industry & Investment NSW (I&I).

"That's an amazing image. Unfortunately, we are seeing quite a few photos like this from around the Basin and it certainly is to do with the floods. The fish are likely to be looking for a suitable area to breed. Flooding sets off a whole range of activity in rivers and carp are no different."

Mr Lay is investigating whether any commercial carp fishermen may want to take advantage of the accumulation, however, he said the big distances involved and the relatively low price they receive for carp may make it difficult.

Regarding the Brewarrina fishway developments, Mr Lay said that, hopefully, I&I NSW will be able to commence construction shortly, now that river levels have dropped.

Masses of carp were photographed last weekend at Brewarrina weir. They are looking for a good place to breed. Photo: Max and Julia Jeffrey

Two side-by-side black and white photographs showing large masses of carp in a river. The fish are densely packed, filling the water and creating a textured surface. The left photo shows a wider view of the river, while the right photo is a closer shot of the fish.

Carp making the news at Brewarrina

(www.breshire.com/news/pages/10890/NewsDoc/BN_2011_03_16.pdf). Photo credit in the article: Max and Julia Jeffrey

Coastal fish habitat flooded with debris

Floods in central Queensland have left a trail of debris in, on and around local coastal fish habitat. OceanWatch Project Manager Michelle Haase found mangroves strewn with plastic bottles, aluminium cans, plastic bags, timber from houses and boats, parts of sails, kettles, boxes, cigarette lighters, styrofoam, items of clothing, tables, chairs, refrigerators, rope, and corrugated iron. Local commercial fishers, in conjunction with Oceanwatch Australia worked to clean it up before the summer king tide spread the debris further. For more information contact [Michelle Haase](#) on 07 4181 2999 or visit:

www.oceanwatch.org.au/wp-content/uploads/2011/02/MR_cleanup_Feb-2011.pdf

Making room for Macquarie perch

Macquarie perch, once widespread across the Murray Darling Basin, are now in danger of becoming extinct, due largely to riverbank erosion, the introduction of alien fish species and barriers to migration such as weirs and dams. In order to reintroduce a breeding population a site was needed with good habitat free from redfin and having only low numbers of trout. A small reach of the Retreat River near Bathurst was identified as suitable by staff from the Lachlan CMA and NSW DPI. After successfully breeding fingerlings in captivity, researchers teamed up with the Central Acclimatisation Society (CAS) to release the fingerlings. The site has only a low resident population of trout and the CAS have agreed not to include this site in their trout stocking program for the duration of the project. The fingerlings have been chemically marked, and will be monitored over coming years to check on their progress. For more information, contact [Luke Pearce](#) (NSW DPI) or [Karl Schaerf](#) (CAS).



Lachlan CMA and DPI staff found a site with good habitat, giving these fingerlings a chance at establishing a breeding population. Photo: Luke Pearce

Farmers and fish benefit from new floodgates

Two new floodgates on drains entering Dickenson's Creek near Taree, NSW, will reduce acid water discharge into the estuary and stop salt water backing up onto paddocks. The old floodgates were set too low and operated inefficiently. The new prefabricated concrete and fibreglass structures are designed to keep groundwater levels higher to reduce the oxidation of acid sulfate soils in the drainage channels and adjacent floodplains, greatly improving the quality of discharged water over time. While this is good news for fish, the farmers also benefit directly as the raised groundwater table improves pasture growth. The project was coordinated by DPI and Greater Taree City Council, with significant input from the landholder. Funding provided by the Hunter-Central Rivers Catchment Management Authority and the NSW Government's Environmental Trust. For more information contact [Kylie Russell](#) (NSW DPI) on (02) 4916 3817.

Gambusia in the spotlight

School students in areas around the lower Macquarie River in Central West NSW have been learning about gambusia, more commonly known as guppies or mosquito fish. Eastern gambusia (*Gambusia holbrooki*) are prolific breeders and commonly seen within inland waterbodies. While many people have seen these fish most do not know they are an introduced species and implicated in the decline of nine fish and ten frog species. The Central West CMA provided funding to increase the profile of gambusia, aiming to make it as recognisable as carp. A live fish display was taken to several schools in the region. The students had all seen gambusia before but not realised they were an introduced pest. In addition, a flyer to help people distinguish gambusia from similar sized native fish is available. For more information, contact [Rodney Price](#) (NSW DPI) on 02 6881 1216. The flyer is available at:

www.dpi.nsw.gov.au/_data/assets/pdf_file/0009/384174/What-is-eastern-gambusia.pdf

As part of the Native Fish Strategy, the Murray Darling Basin Authority is holding a gambusia science and management forum – details in 'Habitat Dates', below.



A female gambusia, showing the black blotch that indicates she is pregnant. Photo: NSW DPI

Protection of marine vegetation extends to Highest Astronomical Tide

The *Fisheries Management Act 1994* protects marine vegetation, including saltmarsh, mangroves, seagrass and marine macroalgae, from harm on public water land, protected areas or land subject to an aquaculture lease. Recent changes to the definition of 'Protected Area', gazetted on 23 February 2011, means all marine vegetation is now protected on public water land. The change to the definition of 'Protected Area' extends the boundary of protection to the highest astronomical tide level. This will ensure that mangrove and particularly saltmarsh communities on public water land are protected under the FM Act, and that these important fish habitats and key nursery areas cannot be damaged or destroyed without approval. For more information:

www.nsw.gov.au/sites/default/files/Government_Gazette_4_March.pdf and scroll to page 14.

Repair it and they will come

In 2009 rock fillets were installed on the foreshore of the Hawkesbury River under the F3 freeway bridge at Mooney Mooney. Two years on and the natural reestablishment of mangroves are becoming more visible. The work was part of the Hawkesbury Tide to Table project. For more information about this project:

www.oceanwatch.org.au/our-work/tide-to-table/tide-to-table-past-projects/tide-to-table%E2%80%93hawkesbury/



Proof: natural revegetation of mangroves after the construction of a rock fillet. Photo: Scott Machar

Managing ‘demonstration reaches’

Under the MDBA’s Native Fish Strategy for the Murray-Darling Basin (NFS) demonstration reaches have been established in 7 rivers across the Basin. Demonstration reaches show, by example, how river and floodplain rehabilitation can be achieved through the integration of multiple management actions, community involvement, monitoring and evaluation. The complexity of demonstration reach projects, which involve multiple agencies, perspectives and approaches and long-term commitments, means that their delivery is particularly challenging. To assist demonstration reach practitioners meet these challenges, a recent workshop provided opportunities to learn from each other’s experiences, successes and hurdles. The workshop was funded by the MDBA and coordinated by NSW DPI. For more information, contact [Terry Korodaj](#) (MDBA) or your state’s NFS coordinator:

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

The river blackfish is back

The river blackfish are breeding in the Bremer River, near Lake Alexandrina, for the first time in more than four years. Surveys in the area in 2007 and 2009 found very few adult fish and no juveniles, however a recent survey found healthy juveniles. Collaborative efforts over the past four years have aimed to prevent the species from becoming extinct. It’s thought that these conservation efforts, along with the return of freshwater inflows due to last year’s winter rains and good water inflows in recent months will enable this river blackfish population to survive and thrive. More information:

www.premier.sa.gov.au/images/stories/mediareleasesMAR11/river%20blackfish.pdf



River blackfish, also known as ‘slipperies’ or ‘muddies’. Photo: Gunther Schmida

Dam a river and reduce productivity in its estuary

The rivers throughout much of tropical northern Australia have highly intermittent flows. High flows in the wet combined with high nutrient loads. In the dry season rivers are often reduced to a series of pools with a low nutrient flow into estuaries. The Ord River has experienced fundamental changes in its flow regime since it was dammed. Researchers looked at the implications of these changes on productivity downstream from the dam. They found that the reduction in large, wet season flows caused siltation in the transition zone between fresh and salt water and reduced transport of nutrients downstream, with a corresponding decrease in primary production in the estuary. There was also an increase in the availability of nutrients in the freshwater zone during the dry-season which is thought likely to benefit productivity. This is due to several factors, including discharge of dissolved nutrients from the irrigation scheme into drains that flow into river. Read more of this research by Burford and others in *Marine and Freshwater Research*:

www.publish.csiro.au/nid/126/paper/MF10224.htm

Repair a tidal wetland and get more fish

In the 1970s the development of a seawall and the installation of tidal gates isolated about 720 hectares of predominantly mangrove and salt pan wetlands at East Trinity in North Queensland. As these wetlands drained, the underlying acid sulfate soils oxidised and the resultant acid leachate caused considerable environmental problems, including regular fish kills. Rehabilitation commenced in 2000 and changes to the populations of fish and crustaceans were monitored. The monitoring, recently reported in *Wetlands Ecology & Management*, found a progressive increase in fish species richness, diversity and abundance, and a decrease in fish kill events. Read more about the results of the monitoring by Russell and others:

<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&MODE=ovid&PAGE=titles&NEWS=n&D=cclap&AUTOALERT=64106934>

Environmental watering protocols to benefit native fish

Researchers from the National Water Commission are looking at how fish in floodplain wetlands respond to different amounts and timing of environmental water. They recently provided wetland managers with an update on their findings. The project studied 27 watering events in 22 wetlands in the Murray River from Albury to the South Australian border, 2 native fish species - the unspotted hardyhead and carp gudgeon, and 2 introduced fish species - common carp and eastern gambusia. The research found that the method of delivery, the source of the water and the timing of when it was delivered to the wetland had the greatest impact on fish populations. Unregulated delivery methods were the most beneficial, and the best source for the water was from a river. The best timing for water delivery was during the spawning season. Read more:

www.nwc.gov.au/www/html/3018-march-22-2011.asp?intSiteID=1

Darling fishkill as floodplain drains

It is estimated that millions of fish died in the Darling River around Brewarrina as deoxygenated water drained from upstream floodplains during March. The main species affected included common carp and bony bream, with spangled perch, golden perch, the common yabby and fresh water shrimp also present. NSW DPI staff, using the NSW [Fish Kill Protocol](#), inspected the Darling, Bogan and Macquarie Rivers. As well as the significant numbers of dead and dying fish, millions of fish were also observed schooling below the Brewarrina Weir trying to move upstream and possibly being attracted to the better water quality conditions due to mixing of water below the weir. Laboratory testing confirmed what the on-site tests suggested: the fish died of asphyxiation resulting from extremely low dissolved oxygen (DO) levels in the water. Low DO events are a natural part of the ecology of lowland river systems following the rapid breakdown of organic matter on the floodplain. The unprecedented weather conditions of prolonged drought followed by rain and heavy flooding have contributed to the severity of the current event. For more information contact [Sarah Fairfull](#) (NSW DPI) on 02 6626 1369



A white 'tide' line of dead fish along the bank of the Barwon River.
Photo: David Ward

Erratum

Bird's eye view of mid-Lachlan barriers to fish passage (*Newstreams* February 2011): This project was funded by the Lachlan Catchment Management Authority.

INTERNATIONAL NEWS

The 2011 US National Fish Habitat Awards

The US National Fish Habitat Awards honour exceptional individuals or organisations who have demonstrated extraordinary dedication, innovation or excellence in aquatic resource conservation. Nominations were submitted by the hundreds of organizations that comprise the National Fish Habitat Partners Coalition and Fish Habitat Partnerships. The 2011 winners are:

Jim Range Conservation Vision Award	Maureen Gallagher Coordinator, Midwest Fish Habitat Partnerships, U.S. Fish and Wildlife Service
Extraordinary Action Award	Coos Bay District Office, Bureau of Land Management http://www.blm.gov/or/districts/coosbay/index.php
Scientific Achievement Award	NFHAP Assessment Team Michigan State University and NOAA
Outreach and Educational Achievement Award	Glen Lake Association http://glenlake.wordpress.com/

For more information:

www.fishhabitat.org/index.php?option=com_content&view=article&id=390:national-fish-habitat-award-winners-announced&catid=36:news&Itemid=50

Fish affected by noisy habitats

A noisy environment has been found to have a negative impact on the foraging efficiency of fish. Researchers found that even 10 seconds exposure to white noise increased fishes' food handling errors, reduced discrimination between food and non-food and led to the need for more attacks to consume the same number of prey items. Reduced food discrimination may be important if non-food items are harmful in some way and increased time spent foraging might increase the risk of predation. If fish have to keep increasing their effort to obtain the same food intake, they are getting less energy overall, which has consequences for reproductive success and survival. The results suggest that noise could influence a whole host of everyday activities by affecting attention and that even very brief noise exposure can cause a significant impact. Read more about this research by Julia Purser and Andrew Radford:

www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0017478 (OPEN ACCESS)

Other research has found that noise can also affect juvenile fish. After developing for weeks at sea, young tropical fish rely on natural noises to find the coral reefs which provide food and shelter. However, researchers found that short exposure to artificial noise makes fish become attracted to inappropriate sounds, like construction sites or cargo ships. Read more about this work by Simpson and Meekan:

<http://beheco.oxfordjournals.org/content/21/5/1098>

Midge mouthparts tell the history of fish habitat

Researchers in Sweden have discovered a way of understanding the relationship between the increasing acidification of lakes, fish deaths and reduced biodiversity: by looking at the mouthparts of midges. The presence of Chaoborus larvae was clearly correlated with the loss of fish, and as the mandibles (the hard part of the mouthparts, made of chitin) survive in the lake sediments for many decades, researchers can now use these to tell how the fish community in a lake has changed over the last few centuries. The new method makes it possible to study the effects of acidification in lakes where no samples have previously been collected and where there are no historical data on fish community alterations. As the age of sediment samples can be determined, this method also reveals when the changes to fish species and communities occurred. Read more of this work by Palm and others in the *Journal of Paleolimnology*:

<http://dx.doi.org/10.1007/s10933-010-9483-8>

Using incentives to rewater waterways

Montana has over 4000 miles of dewatered rivers and streams. It's a problem, according to Rob Harmon, across the mainland United States. He describes these dry waterways as the empty 'veins of the ecosystem'. To bring water back to these waterways, he developed a system of market-based incentives that is enabling farmers and industry to overcome both 150 years of conflict and laws that restrict their capacity to choose to help rewater streams and rivers. Listen to his story at:

www.ted.com/talks/rob_harmon_how_the_market_can_keep_streams_flowng.html

In-stream restoration: an assumption challenged

Engineered instream structures such as lateral bays, current deflectors and islands are added to river reaches to increase stream-bed complexity and therefore can improve fish habitat. It might be assumed that the intervention will benefit most or all species to some extent. Researchers used data about habitat use by difference life stages of two critically endangered fish species to compare an existing area of habitat with that expected if instream structures were added. They found that different types of structures benefitted the fish differently depending on life stage and species' preferences. For example, mid-channel islands and lateral bays benefitted juveniles of both species by providing extra cover for spawning and still, shallow areas for growth. Current deflectors reduced habitat for both adults and juveniles of one species and provided only minor benefits for the other. Read more of this research by Boavida and others in *Aquatic Ecology*:

www.springerlink.com/content/j23u887g454h8146/

HABITAT RESOURCES

Special Issue: Conservation Management of Rivers and Wetlands under Climate Change

Marine and Freshwater Research has issued a special volume looking at the impacts of climate change on efforts to conserve rivers and wetlands. Several articles are specifically about Australian systems.

www.publish.csiro.au/nid/127/issue/5629.htm

Through a Fish's Eye: The Status of Fish Habitats in the United States 2010

This first-of-its-kind report on the status of fish habitats in the United States is designed to support ongoing efforts to protect, restore and enhance aquatic habitats. The report summarizes the results of an unprecedented, nationwide assessment of the human effects on fish habitat in the rivers and estuaries of the United States. For more information and a link to the report:

www.fishhabitat.org/index.php?option=com_content&view=article&id=401:first-of-its-kind-status-of-fish-habitats-report-gives-fish-eye-view-of-national-waters&catid=36:news&Itemid=50

Freshwater Pest Fish Primefact

The factsheet covers a range of topics, including aquarium and ornamental fish, noxious fish, species of potential concern to NSW and actions help prevent the spread of freshwater pests.

www.dpi.nsw.gov.au/_data/assets/pdf_file/0007/369106/Freshwater-pest-fish-in-NSW.pdf

Upgraded WetlandsMaps online (Queensland)

WetlandMaps is an interactive map service that gives users access to information about Queensland's wetlands. The latest version has been upgraded to use the more familiar Google Maps™ as a base layer and has improved searching functions.

www.epa.qld.gov.au/wetlandinfo/site/MappingFandD/WetlandMapsAndData/WetlandMaps.html

HABITAT FUNDING AND ENGAGEMENT OPPORTUNITIES

Fish Friendly Farms in the Tweed

Farmers in Cobaki and Terranora Broadwater catchments (north east New South Wales) are invited to submit an expression of interest for funding to implement fish friendly farming practices on their property. Industry and Investment NSW in partnership with Tweed Shire Council are coordinating the Fish Friendly Farms in the Tweed project, which is funded by the NSW Environmental Trust. Fish Friendly works which could be funded include river bank fencing, off-stream water systems, riverbank revegetation and bank erosion control. For more information, contact [Charlotte Jenkins](#) on 02 6626 1107.

HABITAT DATES

- 20 - 21 May** **Fishers for Fish Habitat Forum, Tamworth, NSW**
See www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/2011-forum for details or register online at www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/habitat-form
- 1 – 2 June** **Gambusia: Small Fish, Big Problem, MDBA gambusia science and management forum**
Crowne Plaza Melbourne, limited places. Contact Peter Jackson 07-5429 2276 or email peter.jackson@westnet.com.au by **13 May**.
- 19 -23 July** **6th World Environmental Education Congress, Brisbane, QLD**
www.weec2011.org/
- 20 - 21 July** **Water Australia Summit, Sydney, NSW**
www.halledit.com.au/water2011
- 20 – 22 July** **Australian Society for Fish Biology Conference, Townsville, QLD**
www.jcu.edu.au/asfb/index.htm
- 20 – 22 July** **5th Australian Technical Workshop on Fishways, Townsville, QLD**
www.jcu.edu.au/asfb/workshops/index.htm
- 23 - 25 October** **2011 International Kids Teaching Kids River Conference, Adelaide, SA**
www.kidsteachingkids.com.au/conferences/2011-int-kids-teaching-kids-river/

HABITAT IMAGE FOR APRIL



The new home for Macquarie perch in the Retreat River – may they survive and thrive.

Photo: Luke Pearce.

ABOUT NSW DPI AND FISH HABITAT

NSW DPI 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

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Batemans Bay - 02 4478 9103
Huskisson - 02 4428 3401
Port Stephens - 02 4982 1232
Wollongbar - 02 6626 1200
Armidale - 02 6738 8520
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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 NSW Department of Primary Industries.

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