

# Newstreams

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

*This issue of Newstreams is brought to you in partnership by the [Fish Habitat Network](#), with funds from the NSW Recreational Fishing Trust.*

**Thank you** for providing feedback on *Newstreams* via the subscriber survey. It seems there's little we need to change, just some things to try and include more of. A summary report of the survey results is available [here](#). A little bit more about the background to *Newstreams* is available at the end of this issue.

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## AUSTRALIAN NEWS

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### Fish screened in an Australian first

Australia's first conical fish exclusion screen has been installed on a regulator, in the Cohuna Weir pool, Gunbower Creek, north central Victoria. Conical fish screens were used because they work well in shallow water and have been proven to protect fish from entrainment and impingement in diversion pools, rivers and channels. The screens have minimal impact on water intake and are self-cleaning to prevent debris build-up. Each year hundreds of thousands of native fish and larvae are lost from the Gunbower Creek and the Murray River system as fish move into irrigation channels. Once in irrigation channels, the fish are lost to the natural system forever, having a negative impact on breeding and population numbers of native fish. More information: [Cohuna Irrigation Diversion Screen Project - AWMA](#) or watch the installation process:

<https://www.youtube.com/watch?v=umOyQKP2KVU&feature=youtu.be>.



The fish exclusion screen before installation.  
Photo: AWMA Water Control



An example of the same style of exclusion screen once in place. Photo: NCCMA

### Hotels for a different sort of fish

After 6 months in the water, new 'Seahorse hotels', resembling cages made of chicken wire, are being colonised by seahorses. Researchers have observed 20 or so adult and juvenile seahorses living on the hotels in areas where had recently been none of these fish. The seahorse population in Port Stephens, on the NSW central coast, was once prolific, but several large East Coast Low storms shifted large volumes of sand in the port, smothering the seahorse habitat of soft corals and sponges and resulting in a 90 per cent decline in population in just a three-year period. Seahorses rely on their habitat to camouflage themselves from predators and as a holdfast to prevent being washed away. More:

<http://www.abc.net.au/news/2018-07-08/seahorse-hotels-bringing-endangered-species-back/9924454>.



A Seahorse hotel, providing much needed habitat for these fish. Photo: David Harasti.

## Top ranking south-east Queensland fish barriers

A redundant tidal barrage on the Caboolture River is the top of the list of fish passage barriers in south-east Queensland. An assessment of the 13,629 potential barriers to fish passage within the 3,582km<sup>2</sup> region identified 55 high priority sites, based on the cumulative impacts they have on the environment, fish, the economy, and the local community. The priority ranked sites represent those with the greatest return in terms of ecological restoration with the least financial expenditure. By remediating fish passage at these sites, extensive areas of fish habitat will become accessible to many socio-economically important migratory fish species. Access the report:

<http://catchmentsolutions.com.au/greater-brisbane-fish-barrier-prioritisation/>.



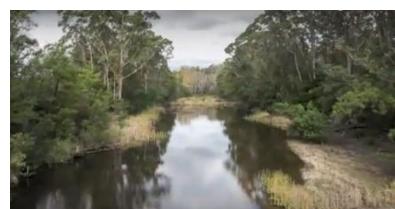
Caboolture Weir is the top-ranked barrier to fish passage in SE QLD. It is estimated that a bypass rock-ramp fishway could remediate this barrier for under \$250k. Source: Catchment Solutions.

## New habitat possibilities for Exmouth Gulf

Exmouth Gulf, on Western Australia's north coast, is now home to 27,000m<sup>3</sup> of potential fish habitat. The Exmouth integrated artificial reef consists of 6 large steel reef units and 49 concrete reef modules, creating additional habitat on the sandy barren seafloor and forming a structure on which corals can establish themselves. Reef materials were selected that were tested and shown to support the establishment of a diverse ecosystem. The reef was located in the Gulf for a number of reasons, including that the Gulf is very habitat limited and the addition of a reef offers hard colonising structures. Also, it will alleviate pressure on the Ningaloo Reef, and on the very limited existing natural reef inside the Gulf and mangroves on the side of the Gulf. For more information: <https://recfishwest.org.au/wp-content/uploads/2018/08/Exmouth-King-Reef-Frequently-Asked-Questions-2018-1.pdf>.

## Returning the Cann River to health

The Cann River, in Victoria's East Gippsland region, is remembered by locals as being filled with fallen branches, lots of trees on the banks and plenty of little islands in the middle of the river. This all changed with river 'improvement' works in the 1950s and 1960s, followed by a significant flood in 1971 which effectively stripped the river valley clean. Local landholders have been working ever since to return the river to health and to a state where the impact of floods is minimised. An important part of this has been fencing to keep stock off the river and giving native vegetation the chance to regenerate along the river's banks. This has helped reed beds to form and over time longer and deeper pools of water have begun to re-establish. The river is becoming 'choked up' again, slowing it down and stabilising the riverbed. Read more: <http://www.egcma.com.au/news/> or watch: <https://www.youtube.com/watch?v=LmMkeKFs-r0&feature=youtu.be>.



The Cann River after the 1971 flood (top) and now (bottom). "The river is back to where it was when I was a child. I can't remember it looking as healthy as it is [now] ..." says one local farmer. Source: East Gippsland CMA.

## **Mixed results for Carp**

Researchers revisiting Carp hot spots in Victoria's Wimmera region that were the target of carp removal work have found mixed results. Carp are retaining a stronghold in Lake Marma but less so in Warracknabeal and Brim weir pools. Lake Marma has a very large carp population compared to the weir pools and other locations around the region, however it was also found to have good numbers of Freshwater Catfish. Large Freshwater Catfish were also found in Brim Weir Pool, along with Golden Perch. It appears Carp numbers here are reducing over time. More: <http://wcma.vic.gov.au/news/news-detail/2018/06/12/researchers-revisit-carp-hot-spots>.

In other Carp-related research, preliminary results from several projects is now available. In one of these, researchers looking at the Carp virus have found that mortality rates appear to be strongly influenced by multiple factors, including water temperature, virus concentration and carp schooling behaviour. An overview is available here: <http://www.fishingworld.com.au/news/national-carp-control-plan-research-delivering-interesting-results>.

An update on work informing the National Carp Control Plan, including the Lachlan regional case study is also available: <http://www.carp.gov.au/en/FAQ/Updates>.

## **Tilapia vigilance appears to be paying off**

Monitoring using eDNA across Queensland's Fitzroy Basin has not found any indications of infestations of the highly invasive Tilapia. eDNA techniques analyse water samples for traces of fish DNA which can be used to identify the presence of individual species within a catchment. The broader community has been on alert since fears were raised that the pest had spread into the region's waterways from the one known infestation in Yeppen Lagoon. Infestations are usually caused by people moving the fish between waterways or using them as bait. However, widespread floods across the Basin in 2017 raised the possibility that this pest had spread. More: <https://www.fba.org.au/edna-tests-return-encouraging-results-in-tilapia-numbers-across-the-fitzroy-basin/>.

In the Burdekin, in Queensland Dry Tropics, there are waterholes and cane irrigation recycle pits full of nothing but Tilapia. An ongoing trial is exploring the use of Traditional Knowledge to remove the fish. The technique involves adding a native plant product to the water, which briefly lowers oxygen levels, without having any other impact on water quality and enables the Tilapia to be removed when they come to the surface. This should give native species such as Rainbow Fish, Spangled Perch, Sleepy Cod and Barramundi a chance to re-establish. More: <http://www.nqdrytropics.com.au/going-back-to-the-future-to-tackle-tilapia-threat/>.

## **Taking out willows leaves more water for fish**

Research has confirmed the long-held suspicion that water can potentially be returned to creeks and streams if riverine infestations of the Salix willow species are removed. The researchers found that in-stream willows account for more lost water than would be lost with the equivalent density of native species or if there were no vegetation but only open water. In cool temperate and semi-arid climates, each hectare of willow canopy removed provides an average net water saving of between 3.9 – 5.5 ML a year. In one 25km<sup>2</sup> study area, the removal of 10.4 ha of Willow canopy from within river channels will potentially return 41ML per year to the environment. More: <https://research.csiro.au/mwe/our-research/calculating-water-savings-from-willow-removal/>.

## Mulloway baseline

A review using archaeological (using fish otoliths), historical (anecdotes 1871 – 1999) and contemporary data (1984 – 2014), checking each against the other, has confirmed that these different data sets agree about fish size and seasonality for this highly popular fish. No significant changes in fish length were observed over time, however the researchers note that the data does not give a picture of the relative number of big fish in the Mulloway population over time. Read more of this work by Disspain and others in *Fisheries Research*: <https://doi.org/10.1016/j.fishres.2018.03.009>.

For more information about how fish otoliths provide information about fish size, water quality and river health:

<https://theconversation.com/how-were-using-fish-ear-bones-as-time-capsules-of-past-river-health-95369>.



Archaeological otoliths, such as this one from a Mulloway, provide valuable information about fish and river health. Photo: Morgan Disspain.

## Tasmanian saltmarshes the best in the country for fish

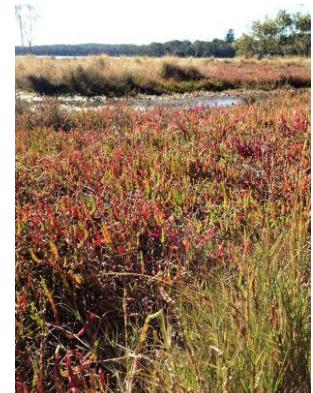
Coastal saltmarshes of north-west Tasmania have been found to support the highest density of fish of any studied in Australia. Three species, Yellow-eye Mullet, Western Australian Salmon, and Greenback Flounder, made up 20 percent of the fish caught, and the mean density across the sites studied was greater than 72 fish per 100m<sup>2</sup>. The higher habitat value of these Tasmanian saltmarshes for fish is thought to be due to more frequent and prolonged flooding together with the lack of adjacent mangroves. Read more of this research by Prahalad and others in *Marine and Freshwater Research*:

<http://www.publish.csiro.au/MF/justaccepted/MF17154>.

## Recovering wetland supports School Prawn

Researchers have found high numbers of School Prawn within Hexham wetland in the Hunter River, New South Wales. Hexham wetland is a recovering wetland system, and several large rehabilitation projects have included reinstatement of tidal flows. The highest abundance of School Prawn in Hexham recorded was 1017 prawns per 100m<sup>2</sup>, with an average density of 244 prawns per 100m<sup>2</sup>. All areas of the wetland, except for the area closest to the wetland mouth, supported the full range of size classes. Prawns either directly use saltmarsh habitat or use saltmarsh-derived food. These results show that the recovering wetland is supporting a high abundance of School Prawn. Read more of this study by Hart and others in *Wetlands Ecology and Management*:

<https://link.springer.com/article/10.1007/s11273-018-9599-6>.



The restoration of Hexham Wetland is good news for School Prawn. Photo: NSW DPI.

## Thermal control returns to Burrendong

The Thermal Control Curtain on the Burrendong Dam, Macquarie River, central NSW, has been reinstalled, after failing in 2016 with significant consequences for native fish breeding success. With the breeding season for native fish about to get underway the reinstallation will enable native fish to breed in the 160 kilometre stretch of the Macquarie below the dam. The reinstallation is the culmination of extensive repairs, a revised design for the curtain and the replacement of manufactured components deep below the water surface. More:

<http://www.fishingworld.com.au/news/thermal-pollution-solution-macquarie-river-nsw>.

## **Mapping the water use of Traditional owners**

The strong, ongoing connection that Aboriginal people have with Country and its water has been documented in the first maps that record Aboriginal cultural activities based on land and water values in the northern rivers of the Murray–Darling Basin. The maps, which have been given to the Euahlayi Nation and other Traditional owners, record more than 26,000 locations for fishing, hunting, ceremonies, harvesting plants, as well as burial mounds and sacred areas of deep spiritual significance. The mapped area includes the Barwon, Narran, Culgoa and Balonne rivers, from Brewarrina in northern New South Wales to St George in Queensland. For more information: <https://www.mdba.gov.au/media/mr/traditional-owners-map-land-water-use-northern-murray-darling>.

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## **INTERNATIONAL NEWS**

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### **Fewer, smaller fish in shrinking habitat**

When a river ‘shrinks’ due to having less water, there are less fish and large predatory species tend to get smaller. This, researchers have found, is a key factor in understanding the impact of flow reduction on fish populations. Smaller predators are not as efficient in their energy use so the food, such as stream insects, available in the habitat will support fewer and smaller fish. Smaller rivers support fewer fish per unit of prey resource compared to larger rivers. In other words, the physical size of the habitat affects how efficient fish are at making use of the available food. The researchers argue that shows that when water is taken from rivers those changes in habitat size affect how food webs work, and that could have a detrimental effect on the capacity of those habitats to support fish. More on this work by McIntosh and others in *Science Advances*: <https://doi.org/10.1126/sciadv.aap7523> or a summary: <http://www.voxy.co.nz/national/5/315325>.

### **The strong link between rats and fish**

On the Indian Ocean's Chagos Archipelago near the Maldives, there are islands with introduced rats and islands without rats. Researchers have found that makes a significant difference to the fish in the surrounding reefs. Nitrogen from bird poo (“guano”) enters reef lagoons and in the reefs around islands without rats, and therefore with more birds, fish, macroalgae, sponges all benefited. The biomass of the fish population was almost 50 per cent higher in these reefs. Some fish, such as Damselfish were found to grow significantly faster. In the reefs around islands with rats there were fewer Parrotfish, for example, which feed on algae. This in turn affects the structure of the reef itself and influences what other fish species will live there. Read more of this research by Graham and others in *Nature*: <https://www.nature.com/articles/s41586-018-0202-3> or a summary: <http://www.abc.net.au/news/science/2018-07-12/pests-rats-damaging-coral-reefs-great-barrier-reef/9957628>.

### **Cocaine-laced habitat leaves Eels damaged**

Researchers had found previously that even at very low concentrations, cocaine in freshwater accumulates in Eels' flesh and affects their skin and hormones. Now, it has been found that cocaine in low concentrations also cause Eels to become hyperactive and suffer muscle damage. The muscle damage, which included swelling and broken muscle fibres, remained even after some time in unpolluted water. The researchers argue that Eels may struggle to complete their long spawning migrations as a result. Read more of this study by Capaldo and others in *Science of the Total Environment*: <http://dx.doi.org/10.1016/j.scitotenv.2018.05.357> or a summary: <https://www.newscientist.com/article/2172143-cocaine-in-the-water-makes-eels-hyperactive-and-damages-muscles/>.

## When a dam helps fish return

In 1957, the Aral Sea, straddling Kazakhstan and Uzbekistan, produced more than 48,000 tons of fish. Thirty years later, the sea was very saline, the 20 native species of fish largely gone and the fishing catch was 0 tons. The 26,000 square mile Aral Sea was once the world's fourth-largest freshwater lake. In the 1950s water from its two river sources was diverted for cotton cultivation. By the 1980s, it was a tenth of its original size, and the shore today is about 20 kms from where it had been. What is left has broken into two: the North and South Aral Seas. The entire eastern basin of the South Aral Sea is completely desiccated. A dam has been the salvation of the North Aral Sea and its fish and fishers. Since its completion in 2005, the Kokaral Dam has raised water levels and led to an average salinity reduction from 30 grams to 8 grams per litre, prompting the return of almost two dozen freshwater species. More: <https://news.nationalgeographic.com/2018/03/north-aral-sea-restoration-fish-kazakhstan/>.



Fishing, North Aral Sea style. Fishers are now catching Bream, Roach and Pike-perch regularly. Photo: Taylor Weidman.

## Fish feeling the heat

The heat wave affecting most of Europe is taking a high toll on rivers and their fish. In the German city of Freiberg, the Dreisam River is now only a rocky desert. Fortunately for the fish that had lived here, the local fishing club regularly measures water temperatures and had pre-emptively caught fish and released them in other bodies of water when the signs were bad for fish, and before the first dead fish appears. In the Rhine River, the situation is more dire and tons of fish have died. The mass die-off is reminiscent of the summer of 2003, when 50,000 fish died in the Rhine alone and 90 percent of the Grayling population in that region was lost. Grayling need clear, cool water. In Germany many riverbanks have been deforested, so there is no shade along the water's edge. At low water levels, the fish are exposed to full sunlight and can find no protective shelter. More: <http://deutschnews.de/index.php/2018/08/11/dying-fish-and-drying-rivers-consequences-of-europes-summer-heat-wave/>.



The lack of riparian vegetation, providing shade and underwater structure, is contributing to problems fish are facing throughout heat-affected Europe. Photo: P. Seager.

## Excavators helping fish again

In Washington State's Snohomish River delta, USA, several excavators cut through earthen berms and saltwater flowed to flood former farmland on Smith Island for the first time in 85 years. The dikes built in the 1930s were supposed to keep Smith Island and other low-lying areas dry for farming but they also deprived young salmon of a place to grow and get stronger. Salmon have been flushed out to the saltwater when smaller, less well-fed and more exposed to predators. The re-flooding is part of the restoration of rearing habitat for juvenile salmon before they migrate out to Puget Sound. The reconstituted tidal marsh on Smith Island is expected to host an average 250,000 Chinook Salmon, juveniles and adults, throughout the year. Other fish species are expected to move in too, including forage fish such as anchovies. More:

<https://www.heraldnet.com/news/to-expand-salmon-habitat-county-floods-farmland/>.



Reconnecting to the estuary and allowing tidal marshlands to re-form is providing crucial growing out habitat for juvenile Salmon. Photo: Olivia Vanni.

## Another Dove weir done

There were 177 weirs on the River Dove in Dovedale, Derbyshire, England. Now another has been removed. As well as weirs, this section of the river large sections of rock armoured banks, most of which date from the 1920s. As a result, the river lost and cannot re-create a sinuous channel with variations in depth and eroding and depositing gravel, instead offering a “wet desert”, with no food and no variety for fish. As weirs are removed, the difference will be very gradual as the Dove slowly starts to flow faster and look more natural, returning to the rugged landscape admired by pre-Victorian painters and writers such as Izaak Walton. More: <https://www.wildtrout.org/sites/default/files/news/NT%20Press%20release%20Letting%20the%20Dove%20Flow%20summer%202018.pdf>.



The River Dove, with one of its weirs intact (left), and removed (above). Local fishing clubs are heavily involved in the restoration works. Photos: Tim Jacklin.

## And speaking of dam removal ...

Only 40 percent of Europe's waterways are in good condition, and a review suggests that there are about 30,000 redundant dams and other barriers that could be removed. The review also found that Salmon, Eel, Sturgeon and other migratory fish encounter an obstacle on average every kilometre. Previously, only dams higher than 10m were counted, but these represent less than 3 percent of all river barriers. Many thousands of small dams and barriers are no longer in use but they are still in place, blocking fish migrations, stopping the flow of sediment and nutrients, and undermining the value of rivers to people and nature. One of the case studies in the report is the removal of two weirs on a stream in the Netherlands. Two years after the weirs were removed in 2015, the number of fish species in the newly connected stretches increased by an average of 30 percent and the number of individual animals increased by 148 percent. Read more about the report:

<https://ifm.org.uk/news/dam-removal-a-viable-solution-for-the-future-of-our-european-rivers-report-now-available/> or access it directly: <http://www.damremoval.eu/policy-report>.



The Boven Slinge, in The Netherlands, before (left), and after (above) the removal of two weirs. Fish numbers have increased by nearly 150 percent. More: <https://damremoval.eu/portfolio/removal-of-dams-in-boven-slinge-the-netherlands/>. Photos: damremoval.eu.

## Habitat size less important than complexity

Researchers have found that river complexity is more important for the resilience of fish populations than the overall size of the river. Complex, branching rivers create diverse habitats and diversity is thought to be important for regional population stability. Fish-monitoring data on 31 river systems in Hokkaido, Japan, confirmed that regional populations of four ecologically distinct riverine fish species were more stable in more complex river networks, while the size of the watershed had only a vague effect. Read more of this research by Akira Terui and others in *Proceedings of the National Academy of Sciences*: <https://doi.org/10.1073/pnas.1800060115> or a summary: <https://phys.org/news/2018-08-river-complexity-regional-population-stability.html#jCp>.

## Gravel restoration supports successful spawning

Surveys in the River Elan, Wales, confirmed that for the first time since monitoring started in 1972, Salmon and Trout have spawned successfully in the upper section of the river. Work has been ongoing over the past two years to replenish the lost gravels in this part of the river, re-creating Salmon and Trout spawning and juvenile habitat. Late last year, a Salmon redd (spawning nest) was seen in the new gravel and monitoring in the summer confirmed the spawning was successful, with both Salmon and Trout fry were found at several sites. More:

<https://www.wyeuskfoundation.org/Blogs/e-news/good-news-from-the-river-elan>.



Re-introduced gravel is enabling fish to use the River Elan as spawning and juvenile habitat. Photo: Wye and Usk Foundation.

In a similar project, gravel has been reintroduced into the River Loddon, Berkshire, England. This river has suffered from poor fish recruitment after extensive dredging created an unnaturally wide, deep channel producing very slow summer flows and choking the river bed gravel with silty deposits. The restoration of an area that was once known as a productive spawning area has involved felling a number of bankside trees, to allow more light to promote healthy weed growth, and using branches to create large woody debris, to work as flow deflectors to help re-establish natural meanders and increase the flow velocity. Then 80 tonnes of gravel were introduced to create fast-flowing shallow riffles which are ideal spawning beds for fish species, such as Dace, Chub and Barbel. The final work saw a side-stream dug out to provide shelter for young fish from high flows in flood conditions. More:

<https://www.anglingtrust.net/news.asp?itemid=4528&itemTitle=Partnership+delivers+new+spawning+habitat+for+River+Loddon+at+Sandford+Mill&section=29&sectionTitle=Angling+Trust+News>.

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## RESOURCES

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### Oyster reef alternative substrate literature review

A review of published research on various substrates being used for Oyster reef restoration and a look at new engineered options. <https://chesapeakebay.noaa.gov/habitats-hot-topics/oyster-reef-alternative-substrate-literature-review>.

### An introduction to eDNA as a tool for fish monitoring

Northcentral CMA, Victoria, has used eDNA to identify the presence and distribution of fish species in the Campaspe catchment. This video explains the tool and how it can be used to inform fish population recovery projects: <https://www.youtube.com/watch?v=DYfEYrGsZ8c&feature=youtu.be>.

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## BEHIND THE SCENES

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In our recent survey subscribers suggested a range of things they'd like to see more of within *Newstreams*, some we can accommodate and others not so much. One suggestion was to include occasional stories on the background to government initiatives and partnership projects. We would like to do this so will be encouraging the Fish Habitat Network partners to put material together on this topic. One initiative that we can provide some backstory on is this newsletter. I hope you find this of interest and that this information explains why there are some of your suggestions that are outside the editorial guidelines as they currently stand.

*Newstreams* #1 was issued in March 2006 and was an initiative of the NSW Department of Primary Industries. All past issues are available [here](#). The aim was to keep people up to date about NSW fish habitat activities, and about important aquatic habitat developments in Australia and around the world. It was felt that there were people involved in improving fish habitat and doing fish habitat research but they were not necessarily aware of each other or of the range of activities that were happening. It was also hoped that the newsletter would appeal to a broader audience, specifically recreational fishers.

2008 saw the first Fishers for Fish Habitat Forum and the realisation that there were recreational fishers 'out there' who cared about fish and fish habitat – this was quite a revelation for some of these fishers who had felt isolated within the recreational fishing community. *Newstreams* had to support these fishers and provide something of a link between them and researchers and managers. It was clear there was a lot of research that the fishers had no way of being aware of; and it was also clear there were issues that fishers knew a lot about that could inform research and management.

With the extension of the Fish Habitat Network nationally, we had to think carefully about how *Newstreams* could continue to inform people about fish habitat in diverse jurisdictions with different needs. There were also, as always, funding constraints. We decided that *Newstreams* would report news about published activities and outcomes and research results relating to fish habitat. Funding and project 'will be doing' announcements would not be included, nor would the often long list of the people, organisations or funding bodies involved. Information about funding opportunities and events is too diverse and impossible to keep current in a quarterly newsletter, and with the rise of social media this has become even less of a concern.

*Newstreams* now has a subscriber base of about 2800 and a readership nearly double that. We aim to include a range of stories, from the big research projects through to the local river repair tree planting day. The focus remains on habitat, inclusive of the many factors that affect fish capacity to survive and thrive and fishers' capacity to contribute to the health of our fisheries. We know there's more happening than we can find – so make sure you share your stories online so that we can too.

Since 2006, we have shared many inspirational stories, as well as tales of fish habitat woe. Fish habitat rehabilitation continues, the result of people doing outstanding work and, perhaps more importantly, many, many people doing small but wonderful things that go a long way to bringing back the fish. We look forward to bringing you their stories.

**Liz Baker (editor)**

## ABOUT NEWSTREAMS

Newstreams is an email newsletter to keep people up to date about fish habitat activities and important developments in fish ecology and habitat. It is free by email subscription.

To **subscribe** use the [form](#).

You can send in your habitat news by emailing the [editor](#), Liz Baker.

Back issues can be accessed from <http://www.fishhabitatnetwork.com.au/archive>.

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**Website** [www.fishhabitatnetwork.com.au](http://www.fishhabitatnetwork.com.au)

**Facebook** [www.facebook.com/fishhabitatnetwork](https://www.facebook.com/fishhabitatnetwork)

### Partners

Amateur Fishing Association of the Northern Territory (AFANT)  
<http://afant.com.au/>

Australian Fishing Trades Association <http://afta.net.au>

Australian National Sportfishing Association - NSW  
[www.ansansw.com.au](http://www.ansansw.com.au)

Capital Region Fishing Alliance [http://crfa.org.au/](http://crfa.org.au)

Ecofishers [www.ecofishers.com](http://www.ecofishers.com)

Fisheries NSW [www.dpi.nsw.gov.au/fisheries/habitat](http://www.dpi.nsw.gov.au/fisheries/habitat)

Freshwater Fishing & Stocking Association of Queensland (FFSAQ)  
[www.ffsaq.com.au](http://www.ffsaq.com.au)

NSW Council of Freshwater Anglers  
[www.freshwateranglers.com.au](http://www.freshwateranglers.com.au)

NSW Fishing Clubs Association [www.nswfca.com.au](http://www.nswfca.com.au)

Ozfish Unlimited [www.ozfish.org.au](http://www.ozfish.org.au)

PIRSA Fisheries and Aquaculture [www.pir.sa.gov.au/fisheries](http://www.pir.sa.gov.au/fisheries)

Recfish Australia [http://recfishaustralia.org.au/](http://recfishaustralia.org.au)

RecfishSA [www.recfishsa.com.au](http://www.recfishsa.com.au)

RecfishWest [www.recfishwest.org.au](http://www.recfishwest.org.au)

Recreational Fishing Alliance of NSW [www.rfansw.com.au](http://www.rfansw.com.au)

SUNFISH [www.sunfishqld.com.au](http://www.sunfishqld.com.au)

Sweetwaterfishing <http://www.sweetwaterfishing.com.au>

Victorian Dept of Environment, Land, Water and Planning (DELWP)  
[www.delwp.vic.gov.au](http://www.delwp.vic.gov.au)

Victorian Fisheries Authority: <https://vfa.vic.gov.au>

VRFish [www.vrfish.com.au](http://www.vrfish.com.au)

Western Australia Department of Fisheries:  
[www.fish.wa.gov.au/Pages/Home.aspx](http://www.fish.wa.gov.au/Pages/Home.aspx)