

Newstreams

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

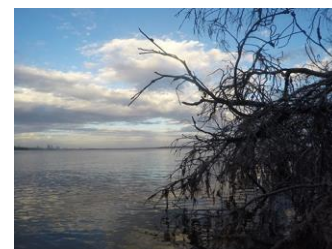
This issue of Newstreams is proudly brought to you by OzFish Unlimited as part of a project to build the capacity of recreational fishers in Australia to address fish habitat issues. The project is funded by the Fisheries Research and Development Corporation. Over the next couple of years the project will develop the framework for an action plan to guide fish habitat action in Australia. To find out more: www.ozfish.org.au.



AUSTRALIAN NEWS

The not-so-secret lives of Swan River Bream

Fish Number 54537 is 30cm long and has explored over 130km of Perth's Swan River during the last few months. In contrast, Fish Number 42650 has barely moved 2km in 4 months. These are among the Bream stories emerging from the Swan Fish Track, an ongoing tracking study following 55 Perth city black bream as they explore the Swan-Canning River. Areas of shallows and fallen timber have been shown to provide favoured food, such as Glass Shrimp, Hardyheads and Blue Mussels. To follow this story: <http://ilovefishing.com.au/2017/03/01/secret-life-perth-city-bream/>.



Fallen and overhanging trees provides premier dining options for Perth city Bream. Photo: ilovefishing.com.au

Maccas making a comeback!

Macquarie Perch often affectionately referred to as 'Maccas' have made a major step forward towards recovery, with the first ever breeding in the wild from a newly established population. A refuge population of Maccas has been established from captive-bred fish. 19,000 Maccas were stocked into a safe haven where Redfin, one of their main predators are excluded. Now, this population has spread along the entire length of the river and are now recruiting, signalling a major advancement in the recovery of this once abundant and highly regarded fish. For more on this story: <http://www.abc.net.au/news/2017-05-22/macquarie-perch-conservation-project-a-success/8547470> or a video: <https://www.youtube.com/watch?v=S6Tp0wJgb8I>.



A happy scientist with a juvenile Macquarie perch - tangible proof that the stocked Maccas have bred in the wild in this system. The discovery is the culmination of nearly a decade of work by scientists and local fishers. Photo: Peter Bryrom.

Mangroves dying of thirst

Researchers have identified the cause of the dieback of 7400 hectares of mangroves in the Gulf of Carpentaria in early 2016 – the plants died of thirst. The problem for the mangroves lay in the combination of three factors. First, the coastline had experienced below-average rainfalls from 2011 and the 2015/16 drought was particularly severe. Second, temperatures in the area were at record levels leading up to the dieback. Third, some mangroves were left high and dry as the sea level dropped about 20cm during a particularly strong El Nino. The mangroves were literally left without water. Read more: <https://www.jcu.edu.au/news/releases/2017/march/thirsty-mangroves-cause-unprecedented-dieback> or read the research article by Duke and others in Marine and Freshwater Research: <https://doi.org/10.1071/MF16322>.



Thousands of hectares of mangroves died of thirst. Photo: James Cook University.

Housing available in the Abercrombie River

Twenty new habitat snags for native fish have just been rolled into the Abercrombie River, in the NSW Central Tablelands. The site is a critical drought refuge for fish in the headwaters of the Lachlan River system. Surveys of in-stream habitat showed that there was a low density of large woody debris or snags in this area. The new snags were recycled from large trees removed from nearby road works and could have ended up as waste. Instead, they are now providing habitat for Macquarie Perch, Silver Perch, Catfish and Murray Cod. Read more: <http://centraltablelands.ils.nsw.gov.au/resource-hub/media-releases/2017/new-housing-for-fish-on-the-abercrombie-river>.

Rivers of Carbon for fish in the Murrumbidgee

At Scottsdale Reserve more than 4,000 trees and shrubs have been planted along 6km of the Murrumbidgee River, central NSW. This is about one quarter of the total plantings of ribbon gums, snow gums, bottlebrushes and wattles planted across this and neighbouring properties. The ongoing project is connecting high-quality river habitat between the Bredbo and Colinton Gorges in order to establish a 40km long corridor of native bushland that will help provide habitat and protect fish such as Macquarie Perch, Trout Cod and Murray Cod. More: https://www.facebook.com/bushheritageaustralia/?hc_ref=PAGES_TIMELINE&fref=nf.

Bass say bye-bye to barrier

Australian Bass in northern NSW now have access to over 300km of Richmond River habitat thanks to the completion of the Kyogle Weir full-width rock-ramp fishway on Fawcetts Creek. 10 years in the making, the fishway uses an innovative V-shape cross section to help floating debris to pass over the fishway rather than being captured on the rock ridges. In addition, the fishway uses pre-fabricated concrete 'dragon-teeth' ridges that helped to achieve a consistent drop over the 50m long fishway, while reducing instream construction time. Access past this barrier builds on previous actions that removed Richmond River mainstem structures - Norco Weir (2007) and Manyweathers Weir (2009) near Casino.

<https://www.northernstar.com.au/news/super-highway-for-native-fish/3178516/>



Just the thing for bringing the Bass back into the Richmond River system. Photo: NSW DPI.

Good times for fish in Victorian rivers

Surveys have found good numbers of Silver Perch in Victoria's Campaspe and Goulburn rivers for the first time in 10 years. While mainly juveniles, this species has rarely been detected in the Campaspe River in past surveys. Other good news included Murray Cod numbers at a 10-year high in the Broken River system. The surveys were part of the long-term monitoring of environmental flows in these rivers. Environmental flows are being used to encourage Silver Perch to take up residence in the Victorian tributaries of the Murray River. The presence of fishways on the major River Murray weirs is likely to be a major contributing factor allowing Silver Perch movement. Read more: <https://www2.delwp.vic.gov.au/media-centre/media-releases/murray-cod-is-gold-and-perch-is-silver-in-the-numbers-game>.

It's a similar story in the Glenelg River. Since environmental flows started in 2009 the number of native fish have increased dramatically. The latest monitoring has found Estuary Perch and Tupong moving back to their old range, more than 270km upstream from where they were seven years ago. Blackfish numbers have more than doubled and numbers of critically endangered variegated Pygmy Perches have increased ten-fold. More: <http://www.ghcma.vic.gov.au/news/article/glenelg-river-bouncing-back-with-more-flows>.

Prawn larvae with a 400km trip to the sea

Researchers studying the life history of the Giant Freshwater Prawn in northern Australia have found many females in reproductive condition over 400km from the sea. This species is amphidromous, migrating from fresh to salt water or from salt to fresh water at some stage of their life cycle other than the breeding period, and had been thought to migrate downstream to hatch larvae close to the estuary or sea. However, Giant Freshwater Prawn larvae were found in abundance throughout the 400km stretch of river. The larvae did have to drift to saltwater within 7 days to continue their development successfully. In addition, the researchers found that the habitat used by juveniles changed as the dry season progressed. Early in the dry season, the river bank with a large amount of cover, such as sticks, undercuts, and roots, was essential habitat, but as the dry season progressed the juveniles used large sand banks within the river that had been colonised by algae and plants. Read more of this work by Novak and others in *Marine and Freshwater Research*: <https://doi.org/10.1071/MF16034> or read a summary here: <https://www.cdu.edu.au/newsroom/grad-cherabin>.



The Giant Freshwater Prawn needs wet season flows to ensure larvae can make the hundreds of kilometres long journey to the sea. Photo: Amy Kimber, sourced from <https://cosmosmagazine.com/>.

Spangled Perch travelling by road

Western Australia's Goldfields region received over half its yearly average rainfall in a week, flooding the desert. Spangled Perch are able to take advantage of such flooding and move about on the floodplain, including using roadside rivulets and puddles. These fish live in small pools, billabongs or little springs and when it rains they spread out across the landscape trying to find new habitat where they mate and breed. Read more:

<http://www.abc.net.au/news/2017-03-29/inland-fish-make-the-most-of-heavy-rain-in-the-desert/8394780>.



Spangled Perch collected – and then released – from a puddle on the roadside. Photo: Melanie Stokes.

Habitat helping Southern Pygmy Perch

Southern Pygmy Perch have been found 4km further upstream than ever before in Coppabella Creek, in southern NSW, suggesting that rehabilitation of the site has provided suitable habitat conditions for the fish. Juvenile fish were also found, so researchers are confident that they are now breeding successfully. In addition, the population is the highest recorded since these fish were almost wiped out during the devastating floods in 2010. The habitat work has included creek fencing, revegetation and controlling blackberries and willows. Read more: <http://murray.lls.nsw.gov.au/resource-hub/media-releases/2017/endangered-southern-pygmy-perch-are-on-the-move>.

Albany fishers for fish habitat

Fishers at the Fishers for Fish Habitat Forum in Albany, Western Australia, heard tales of 2kg Bream and catches of hundreds of fish in times gone by. They also heard fishing elders describe how the fish populations had declined, even as they also noted changes in seagrass, sand flats and water quality. The changes seen by fishers matched closely with what had been seen by scientists. The Oyster Reef Restoration Project, one of the fish habitat rehabilitation projects discussed, is already having an impact on the harbour with Black Bream, Silver Trevally and Yellowtail seen investigating the developing reefs. Read more: <http://recfishwest.org.au/fishers-want-better-habitat-better-fishing/>.

Murray River bank erosion

The significant change in the flow regime due to river regulation contributes to bank erosion along the River Murray between Hume Dam and Lake Mulwala. Over the last 17 years, more than \$25 million has been spent along this reach on physical bank protection works, mostly log revetment and revegetation, and monitoring. Between 2009 and 2016 monitoring identified that the significant increase in the use of motorised boats increased bank erosion, particularly in areas where there is increased vessel wash. In some high boat use areas, log revetment bank protection works are also being undermined by exposure to vessel wash and are failing. Access the report here:

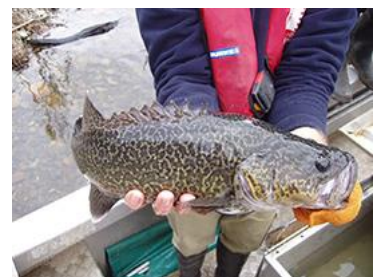
<https://www.mdba.gov.au/publications/mdba-reports/bank-erosion-along-river-murray-between-hume-dam-ovens-junction>.



This type of bank erosion on the River Murray is typical of that caused by boat wash. Photo: Ben Berry.

Clarence River on-track

30,000 individual fish representing twenty eight different native fish species, including Catfish, Australian Bass, Herring, Eels, and Freshwater Mullet, have been identified during monitoring of the Clarence River, northern NSW. Many Australian Bass and Freshwater Mullet were found to be undertaking migrations of over 300 km. In addition, threatened Eastern Freshwater Cod were also found at several of the 27 sites where sampling took place. The catch (and release) also found two pest fish species: Goldfish and Eastern Mosquitofish. The numbers of juveniles present indicated that most species are breeding successfully and, overall, fish numbers have not reduced over the ten years. Read more: <http://northcoast.lls.nsw.gov.au/resource-hub/media-releases/2017/clarence-freshwater-fish-go-with-the-flow>.



Captured Eastern Freshwater Cod - tagged and measured prior to release. Photo: Northern LLS.

INTERNATIONAL NEWS

Herring back in Third Herring Brook

For the first time in at least 183 years native Alewife and Blueback Herring are swimming upstream beyond Norwell, Massachusetts, USA. A dam was first built at this site to provide power for grain and lumber mills in 1677. A major rebuild in 1834 saw fish access to ideal spawning habitat upstream severely compromised and the River Herring populations disappeared. Negotiations and project planning are underway for the next steps for Third Herring Brook, which involve the removal of another upstream dam and construction of fish passage to allowing the migrating fish access to the 59-acre Jacob's Pond. Read more:

<http://www.habitat.noaa.gov/highlights/nativefishinmassachusettsreturnafter200years.html>



The Tack Factory Dam as it was. Photo: NOAA



Third Herring Brook as it is now at the site of the old dam. Photo: NOAA

Great fly fishers talk about their rivers

The latest short film from Conservation Hawks includes great fly fishers, including Travis Swartz (aka Hank Patterson), Perk Perkins of Orvis and Hilary Hutcheson, sharing their love of their favourite rivers. Alongside spectacular scenery and superb fishing, they also talk about their perspectives on how a warming world is changing these rivers and their fishing.

To view the film: <http://www.tu.org/blog-posts/video-spotlight-convergence-the-full-film>.

The Goldilocks Zone: where food and oxygen are both enough

Low dissolved oxygen concentration, can occur naturally or as a result of human activities. Fish avoid areas of low oxygen if possible, and studies show that if they can fish leave areas as it becomes more severe. However, fish often have to balance their need for oxygen and their need for food. Researchers looked at how Yellow Perch responded to various levels of hypoxia and food availability. They found little evidence that this fish is affected by moderate hypoxia, suggesting that Yellow Perch may be able to use hypoxic habitat as refuges from predators and continue to forage on their preferred prey. Read more:

<https://thefisheriesblog.com/2017/05/08/yellow-perch-and-the-hypoxia-goldilocks-zone/> .

New Zealand re-claiming its Eel heritage

While ‘Eel balls’ – writhing masses of up to 100 Eels tumbling together down streams at night – may be a thing of the past or the stuff of legend, New Zealanders are gradually learning more about their ecologically important and culturally iconic Eels. Once these fish were abundant and perceived to be detrimental to Trout so they had a bounty on their tails. The local fish and game council would pay anglers and children a tuppence a tail. A promising export market in the 1970s started the Eel’s change in status. There are three species in New Zealand and it is now known they spawn in the warm, plankton-rich waters between New Caledonia and Fiji. Hydropower stations remain a challenge for adult migrating to spawn, however Eel-races are helping elver migrate upstream past these obstacles. Read more: <http://www.stuff.co.nz/the-press/news/92191221/paradise-for-eels-getting-to-know-the-secrets-of-nzs-new-icon>.



A Longfin Eel can grow to 18kgs and the females take between 40 and 100 years before she will start the spawning run. Photo: Tony Foster (CC BY ND 2.0)

Dry times ahead for UK rivers

A dry winter in the UK has been followed by near record low levels of rainfall in April. In London Colney the River Colne has dried up completely and a number of the Hertfordshire chalk streams are also at risk. In addition, the latest report card indicates that the number of rivers achieving ‘Good Ecological Status’ in England has dropped from 17% to 14%. Neither is good news for fish or fishers. With the demise of the legal obligations under the Water Framework Directive (part of European Union legislation), improving the health of waterways and fish habitats is less clearly defined. The UK’s Angling Trust is now involved in the next round of water policy planning, which will determine how water extraction, and river and catchment management occurs. Read more: <http://anglingtrust-news.net/3XSU-7AL6-4/sv.aspx> or see the priorities being proposed by anglers and others for water companies: <http://blueprintforwater.org.uk/blueprintforpr19/>.



The River Colne at London Colney, where a combination of drought and over-extraction has left the river dry. Photo: Otterspool Angling Club.

What happens when the big dams go

Researchers followed what happened to fish habitats for the 7 years just prior to, during and after the large-scale dam removals on the Elwha River, USA. The dam removals led to approximately 2.6 million cubic metres of sediment material being deposited in the area of the Elwha delta, increasing it to over 150 ha. As a result, there were three main changes in the nearshore fish habitats: large scale and rapid creation of estuary habitats; delivery of large amounts of sediment to the delta/estuary in a short period of time, and a shift in original habitats from tidally influenced to non-tidally influenced habitats resulted in changes in estuary function. The usefulness of these restored ecosystem processes and newly created habitats for fish is expected to change as they mature and stabilize. The study observed a few new species, but dam removal has not yet resulted in changes in the make-up of the fish communities. Read the research dissertation by Shaffer: <http://hdl.handle.net/1828/8061>.

A seawall built for fish

In Elliott Bay, Seattle, USA, a seawall has been built that prioritises habitat for young fish and the invertebrates they feed on. The new seawall is part of a normal waterfront commercial area but includes features that protect and encourage young Chinook, Pink and Chum Salmon to navigate, grow and avoid predators along the engineered shoreline through Puget Sound and out to the ocean. The design includes steps — shelf-like structures protruding from the vertical underwater wall — which have helped recruit a greater diversity of organisms such as algae and small invertebrates that juvenile salmon feed on, and ‘marine mattresses’ along the seawall — which are mesh bags filled with rocks that create a shelf-like surface and make the nearshore shallower for fish. Engineers also constructed uneven, cobbled surfaces along the vertical wall to encourage more organisms to congregate by the shoreline. There are clear glass squares in the seawall’s pedestrian sidewalk to let more natural light penetrate to the water below. Read more: <http://www.washington.edu/news/2017/05/18/seattle-seawalls-novel-fish-features-are-a-potential-model-for-the-world/>.

In related research, the effects of seawalls and piers on fish assemblages and juvenile salmon feeding behaviour in Elliott Bay were studied. Some of the findings are reflected in the design features used in the new seawall. To read the dissertation by Munsch: <http://hdl.handle.net/1773/38139>.

Seaweed is habitat too

Tropical seaweed beds have not been commonly recognised as important nursery habitat for fish in the same way as seagrass meadows and mangroves have. Researchers have found that the abundance of juvenile fish in seaweed beds was twice as high as that in nearby seagrass meadows. In addition, the abundance of commercially important and coral reef-associated juveniles was higher in seaweed beds, as was the number of different fish species. Read more of this work by Tano and others in *Marine and Freshwater Research*: <https://doi.org/10.1071/MF16153>.

And so is sponge

In related work, researchers looked at the importance of soft habitat structure within sponge, soft coral and macroalgae habitats within a temperate estuary. They found that increased canopy height was correlated with increased fish abundance and species richness. Canopy cover was also an important factor. It appears that these soft habitats with a high percent canopy cover and height are particularly valuable for supporting estuarine fish communities. Read more of this research by van Lier and others in *Marine Biology*: <https://doi.org/10.1007/s00227-017-3068-2>.



It might not look like important fish habitat but thanks to careful design, this urban seawall is both that and home to commercial waterfront activities. Photo: SDOT/Flickr.

It's a gravel bed – so what?

River impoundments can not only result in a lack of water downstream, they can also cause a lack of gravel. In 1932, local fishers noted that salmon no longer spawned right below the Caban Coch dam on the Elan River, Wales, as they once had. Since 1904 the gravel in which the fish create their spawning nests had been washing downstream while the supply of fresh gravel from upstream had ceased. One hundred years later and the Elan River has no suitable spawning gravels, except for some sub-standard, compacted areas in the lowest sections, with negative impacts on fish populations. Now gravel beds are being formed again with the reintroduction of tonnes of gravel. The gravel is being left to wash downstream and redistribute itself naturally. A survey found a build-up of gravel settling in the areas expected of a natural river. The impact on fish populations will take longer to determine. Read more:

http://www.wyeuskfoundation.org/download.php?file=Gravelling_the_Elan_System_Year_1.pdf&id=4539&sf=true.



A newly formed gravel bed, one of the first repopulating the Elan River with essential fish habitat. Photo: Wye and Usk Foundation.

Chesapeake Bay Oysters – a force of nature

The restoration of Chesapeake Bay oyster reefs is ongoing. Once so abundant that the Bay's entire volume of water was filtered every few days, the oyster reefs are greatly diminished by land use impacts, water quality issues and overharvest. A short video is available showcasing the diversity of fish and other animals that use oyster reefs and highlights the value of this habitat for fish and more broadly:

<https://www.youtube.com/watch?v=9V3yjCplc44&feature=youtu.be>

Cooperation for fish in the Upper Colorado Basin

For years, there was wrangling and outright hostility among water users in the Upper Colorado River catchment, Colorado, USA. Now, Trout Unlimited is one of the stakeholders involved in monitoring river health and undertaking projects to both safeguard and improve these waterways. A recent event saw more than 50 volunteers gather to harvest and replant willows along nearly a mile of the Fraser River. The Fraser is beloved for its fly fishing and paddling opportunities, but its degradation has seen stream temperatures so hot trout begin to die, and it has been reduced to a trickle. The willows were harvested nearby and planted to help stabilize the stream bank, provide shade, and offer sustainable trout habitat. The project will also open up public access to roughly a half mile of the Fraser for fishing opportunities. Read more: <http://www.tu.org/blog-posts/learning-by-doing-on-fraser-flats>.



Volunteers, and dog, happy with having started the process of replanting along the Fraser River. Photo: Trout Unlimited.

RESOURCES

Proceedings: *Our Coasts, Our Future, Our Choice*

The 8th National Summit on Coastal and Estuarine Restoration and the 25th Biennial Meeting of The Coastal Society was held in December 2016 and the proceedings and posters are now available. Use the Summit Program to identify the papers or posters of interest (https://estuaries.org/images/NOLA_2016/Program_Schedule/2016-Summit-booklet-final-for-web.pdf).

Summit Proceedings: <https://estuaries.org/summit-2016-proceedings>

Summit posters: <https://estuaries.org/summit-2016-posters>

Water for the environment

A short video explaining the basics of environmental water is available here:

https://www.youtube.com/watch?v=f6QLLNsc3nk&feature=youtu.be&mc_cid=e2d5175e0d&mc_eid=a9fd0dd6b4

New Zealand's fresh waters: values, state, trends and human impacts

A two-section report intended primarily to inform the public and policy makers. It contains an overview explaining the core issues of public concern that have implications for policy development. The main body of the report is a more technical and scientifically referenced document that reviews the state of fresh water in New Zealand and issues related to restoration. To access: <http://apo.org.au/system/files/75639/apo-nid75639-76881.pdf>

6 things to know about coastal habitat restoration

The coastal habitat restoration team from the USA's NOAA share key learnings from their work: <http://www.noaa.gov/stories/6-things-to-know-about-coastal-habitat-restoration>.

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

Facebook
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

Capital Region Fishing Alliance <http://crfa.org.au/>

Ecofishers www.ecofishers.com

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

Fisheries Victoria www.dpi.vic.gov.au/fisheries

Freshwater Fishing & Stocking Association of Queensland (FFSAQ) www.ffa.com.au

NSW Council of Freshwater Anglers
www.freshwateranglers.com.au

NSW Fishing Clubs Association www.nswfca.com.au

PIRSA Fisheries and Aquaculture
www.pir.sa.gov.au/fisheries

Recfish Australia <http://recfishaustralia.org.au/>

RecfishSA www.recfishsa.com.au

RecfishWest www.recfishwest.org.au

Recreational Fishing Alliance of NSW
www.rfansw.com.au

SUNFISH www.sunfishqld.com.au

Sweetwaterfishing