

# Newstreams

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

**Welcome to Newstreams #76.** As much of Australia is once again in lockdown, I hope you enjoy and perhaps find inspiration in the stories of people like yourselves unlocking fish habitat, building on our understanding of fish habitat, and making more fish happen naturally. Newstreams is brought to you in partnership by the [Fish Habitat Network](#), with funds from the [NSW Recreational Fishing Trust](#). As well as [Newstreams](#), the recreational fishers of NSW also support fish habitat action on the ground through the [Habitat Action Grants](#), [website](#) and [Facebook](#).

Liz Baker, [Editor](#)

## AUSTRALIAN NEWS

### Fish and habitat on the move with the EAC

Researchers have recently returned from a four-week voyage along Australia's eastern coastline gathering data on the changing East Australian Current (EAC) and observing its effect on fish reproduction. The EAC system is warming significantly more than other regions and it is bringing the larvae of tropical reef fish into the temperate rocky reefs off Sydney, Eden and as far south as Hobart. Night sampling using plankton nets provided hundreds of larval fish, such as Goatfish, Snapper, Anchovy and Eels, as well as the zooplankton and jellyfish which affect their survival. Comparison with data from earlier surveys has already shown that the EAC is transporting larval fish into new territories, for example, the Pink Snapper in Eastern Victoria that come from New South Wales, and a sea urchin found off New South Wales now occurs in Tasmania and has consumed and removed the kelp which provided habitat for abalone and lobster. More: <https://newsroom.unsw.edu.au/news/science-tech/four-week-voyage-yields-secrets-changing-oceans>.



A photomicroscope image of zooplankton, a key component of habitat and productivity for larval fish. Photo: Kylie Pitt.

### Cod lodges

'Cod Lodges' made of terracotta pots and limestone reef blocks have been installed in Warren Reservoir near Williamstown in South Australia to provide refuge for Murray Cod. Murray Cod are highly territorial and aggressive fish. The fish will use the lodges to rest in during the day and ambush any prey that swims past. It also is anticipated they will use the nooks and ledges for nests. More: <https://ozfish.org.au/2021/06/cod-lodges-provide-luxury-homes-for-iconic-fish-in-sa>.



The volunteers and the blocks that contribute to making cod lodges. Photo: Ozfish Unlimited.

## Evidence of Macquarie Perch in the Georges River

DNA sampling of the Georges River in south-western Sydney, NSW, has provided evidence to back up anecdotal stories of Macquarie Perch in this river. This species had not been seen in the river since the 1990s. Once one of the most abundant freshwater species, Macquarie Perch is now only known in a few waterways and entire populations in some of these had been lost or impacted heavily by the fires and recent floods. The confirmation of their presence with help target habitat rehabilitation work and control of threatening processes. More:

<https://ozfish.org.au/2021/06/fish-forensics-indicate-not-all-is-lost-in-the-georges-river-for-the-macquarie-perch/>.



Local volunteers assisted the researchers taking water samples in the Georges River. Photo: OzFish Unlimited.

## Great news from Gunbower Creek

Building fishways on Cohuna and Koondrook weirs on Gunbower Creek in north-central Victoria meant salvaging and relocating any fish stranded in the construction coffer dams. Among the thousands of small native fish were about 50 Murray Cod of varying sizes and 28 Trout Cod. Trout Cod have only rarely been found in Gunbower Creek and finding a lot of smaller Trout Cod indicates these fish are likely breeding here. Other good news was only finding about 10 Carp at the Cohuna site. More:

<http://www.nccma.vic.gov.au/media-events/media-releases/fruitful-fish-friendly-flows>.



Finding Trout Cod was a welcome surprise and lends even more weight to the benefits of the fishways being constructed. Photo: North-Central CMA.

## No idea what attracted a fever of rays

Collectively, groups of rays are known as a 'fever' and such a fever of Cownose Rays turned up in Tallebudgera Creek on Queensland's Gold Coast. These rays migrate along this coastline every year, staying in deeper waters of 20 or 30 metres to avoid being preyed upon by sharks. They are known to normally feed in shallow waters on crustaceans and bivalves, but other than that not much is known about their habitat preferences or what would have drawn such a large fever into this creek's estuary. More: <https://www.abc.net.au/news/2021-08-18/cownose-ray-fever/100386140>.



A fever of Cownose Rays similar to that seen recently in a Gold Coast creek. Photo: Stacey Lee Harvey.

## Hardyheads in their thousands

The delivery of environmental water flows and changing weir pool levels through flow manipulation have proven beneficial for Murray Hardyhead, a little fish that's an important part of the ecosystem. Hardyheads are unique because they can survive and thrive in backwaters and creeks in water with higher salinity levels, but they need fresher water when spawning for their offspring to survive. River conditions in the past had not been beneficial, however the freshening of water through the delivery of environmental water at the right time of year cued breeding for this species and helped with egg and larvae survival. A recent study found 75,000 individual Murray Hardyhead in the river at the Katarapko Floodplain, near Loxton in South Australia. More: <https://www.abc.net.au/news/2021-07-27/murray-hardyhead-booms-in-sa-riverland/100313956>.

## South Australian Seagrass getting a boost

This seagrass restoration project uses a technique which places hessian sacks on the sea floor near seagrass meadows for young seagrass to attach and grow. The sandbags are being dropped into the ocean at strategically selected sites between Glenelg and Semaphore in South Australia and will re-establish around 10 hectares of seagrass meadow. More:

<https://www.environment.sa.gov.au/news-hub/news/articles/2021/08/Seagrass-restoration> .

## Babysitting a bushfire-ravaged creek

In February 2020, after heavy rains washed away unstable fireground, Cudgewa and Corryong Creeks in northern Victoria were filled with sludge, while hundreds of fish were scattered around lifeless or struggling to survive. A tributary of the Murray River, Cudgewa Creek had been known for its populations of Murray Cod and Trout Cod. A complete loss of riparian vegetation was evident along much of the creek and later rains delivered significant loads of ash and sediment into the waterways. Habitat restoration has begun, with the installation of three new log structures, eight bed seeding boulders to provide fish refuges and reduce the rate of bank erosion and sedimentation, and the planting of around 4,000 trees to start rebuilding the riparian vegetation. More:

<https://www.abc.net.au/news/2021-06-28/cudgewa-creek-rehab/100247984>.



The once fish-friendly Cudgewa Creek is getting some help to recover from the effects of the bushfires. Photo: Shea Bloom.

## Watching where the Eels go

Researchers now know where Eels go to spawn – the warm tropical waters around New Caledonia, an area around the Coral Sea. Eels from the west coast of Victoria were fitted with satellite trackers which enabled researchers to track their 3,000 kilometres journey to the grounds where the adults spawn, then die. On their way to the spawning ground, eels swim against the East Australian Current, which is projected to strengthen and push further south under climate change, making the spawning migration longer and harder. The relationship between Gunditjmara people and Eels can be traced back thousands of years through stone Eel traps that are some of the oldest known fish traps in the world, dated to more than 6,000 years. More:

<https://www.abc.net.au/news/2021-05-29/eel-migration-from-victoria-to-tropical-spawning-grounds/100142688>.



The relationship between Gunditjmara people and Eels can be traced back thousands of years through stone Eel traps that are some of the oldest known fish traps in the world, dated to more than 6,000 years. Photo: Gunditj Mirring Traditional Owners.

## Keep an eye out for the habitat-destroying Limnocharis

Limnocharis is a serious weed of shallow ponds, wetlands and slow-moving streams and can form dense infestations that destroy freshwater ecosystems. Once established, it spreads rapidly through massive seed production and vegetative propagation. Although plants usually grow rooted in a muddy substrate, small plantlets can be carried long distances in floodwaters. It has now been found growing from north of Mossman down to the South-east Queensland area. Any sightings should be reported. More:

<https://www.daf.qld.gov.au/news-media/media-centre/biosecurity/news/look-out-for-limnocharis>.



Limnocharis has a distinctive flower about the size of a 50c piece. Photo: www.agriculture.gov.au.

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## INTERNATIONAL NEWS

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### Fish food on the up in the Clyde Sea

Sprat is a small fish which is food for many other marine species and its population in the Clyde Sea on the west coast of Scotland has increased 100-fold since the late 1980s. Researchers also found large concentrations of krill, another major food source for fish and marine mammals. The Clyde Sea was a thriving fishery for Herring, Cod and Haddock for nearly 200 years until the late 20<sup>th</sup> century. In recent decades, these fisheries have disappeared. Despite virtually no fishing pressure on herring in over 20 years, it is the sprat population that has recovered, possibly due to their more favourable reproduction strategy and better tolerance to warmer water. Read a summary: <https://www.abdn.ac.uk/news/15218/> or more of the research by Lawrence and Fernandes in *Current Biology*: <https://doi.org/10.1016/j.cub.2021.07.020>.



A Sprat – small but mighty in importance.  
Photo: Aeron Griffith.

### Changing Eelgrass changes fish populations

Until 2007, Morro Bay in California, USA, had 344 acres of eelgrass. By 2017, this area was reduced to about 9.5 acres. Researchers have found the relatively sudden and near complete collapse of eelgrass in Morro Bay did not result in fewer fish but has changed the species of fish making up the population. The seagrass-loving specialists are much less common, while there have been significant increases in flatfish species that thrive in the less dynamic, muddy seafloor conditions that currently exist where eelgrass meadows once grew. The ongoing Eelgrass restoration project is replanting shoots taken from existing plants and the meadows have grown back to be about 40 acres. More: <https://www.newtimeslo.com/sanluisobispo/as-morro-bay-eelgrass-restoration-efforts-continue-cal-poly-studyfinds-correlating-changes-in-fish-population/Content?oid=11325551>.



The Eelgrass restoration is based on replanting in defined areas during very low tides. Photo: Carolyn Geraghty.

### Koi barrier to protect Lake Ruatuna fish habitat

Surrounded by Koi-infested waterways, Lake Ruatuna on New Zealand's North Island is mysteriously free of the pest. Known for being voracious eaters of just about anything and for degrading water quality, these pest fish are present in the stream that flows into the lake and in surrounding lakes. A new grill barrier has been installed at Lake Ruatuna to help prevent the spread of Koi Carp. The 30 mm spacings on the grill bar allow native fish to pass through and finger-type designs come off the barriers enabling eels, that can swim backwards, to raise the bars and swim through. Both features prevent Koi Carp entering the lake. More: <https://www.stuff.co.nz/national/125515684/pest-fish-trap-installed-at-mysteriously-koifree-waikato-lake>.



The design of this barrier enables native fish and eels to enter the lake but not Koi. Photo: Waikato Times.

## Seagrass restoration: first collect your seed

They came, they snorkelled, they dived and collected nearly 60,000 seagrass seeds: the first step towards the restoration of seagrass in Loch Craignish in Scotland. The seagrass seeds were transferred to a processing unit for the next stage in the process. Once the biomass is broken down, the seed will be extracted and planted on the seabed in small hessian bags that will give it purchase on the seabed. Loch Craignish currently has small, healthy seagrass meadows totalling approximately one hectare, but these are isolated and fragmented. Over fifty species of fish have been recorded in one meadow. The areas selected for restoration are alongside existing meadows which are either inter-tidal or in very shallow water to minimise the impact of dredging, fishing, or anchoring. More: <https://www.seawilding.org/seagrass-project>.



Seagrass seed 'pods'. Photo: SeaWilding.

## Record numbers of Shad journeying up the Broad River

Monitoring of the Columbia Fishway on the Broad River in South Carolina saw a record number of about 5,000 American Shad swimming through the fishway. This means the fish are successfully passing multiple barriers in their yearly journey up the river to spawn. The Columbia Fishway is a vertical slot ladder and downstream of it are the Pinopolis Navigation Lock and the St. Stephens Fish Lift. More: <https://www.fisheries.noaa.gov/feature-story/record-number-fish-migrate-through-columbia-fishway-south-carolina>.

## Mass death of sea urchins great news for Kelp forests

The giant Kelp forests off the Palos Verdes Peninsula in southern California in the USA are habitat for over 700 species and support high-value recreational and commercial fisheries. One of the most significant causes of Kelp forest loss in this area is overgrazing by both Purple and Red Sea Urchins. In large numbers the Sea Urchins graze the Kelp forests to bare rock, resulting in 'urchin barrens' and much reduced populations of fish and invertebrate species. Researchers studying what happened when the sea



Healthy Kelp forests support a wealth of fish and other marine life. Photo: Williams and others: <https://doi.org/10.3354/meps13680>.

urchins were removed – and, in this case, subjected to a mass die-off due to disease – found the drastic reduction of sea urchins in barren sites led to the restoration of the kelp forest and all species, including fish, returned to healthy conditions within six months. The restoration of kelp forests along the Palos Verdes Peninsula has recovered to the highest aerial amount covered in nearly 80 years, and several fish species have significantly increased in abundance and size. Read an overview: <https://domsife.usc.edu/uscseagrant/new-findings-on-kelp-forest-restoration/> or the research by Williams and others in *Marine Ecology Progress Series*: <https://doi.org/10.3354/meps13680>.

## New reef a memorial to a fish habitat champion

The Mary Lou Gayle Memorial Oyster Reef is a new one-acre shell reef in the Lynnhaven River in Virginia in the USA, constructed using 10,000 bushels of recycled oyster shells. Mary Lou Gayle had worked to preserve space in the river for oyster reef restoration but was the victim of a shooting in a government office. Similar to reefs previously constructed in the area, the new reef is expected to flourish and set oyster spat this summer. More: <https://www.fisheries.noaa.gov/feature-story/progress-update-engaging-recreational-anglers-habitat-conservation>.

## 660 barriers to fish migration identified in Greater Wellington area

660 fish passage barriers have been identified along waterways throughout the Greater Wellington area in New Zealand's North Island. There are around 20 species of native freshwater fish in these waterways, and most need to be able to move freely between the sea and freshwater to complete their lifecycle. There were 165 barriers assessed as being high risk and most were culverts. More: <http://www.voxy.co.nz/national/5/390384>.

## 'Mussel-ing' up habitat

The presence of infrastructure associated with the aquaculture of mussel, oyster, clam, and seaweed can have a positive impact on marine habitat for fish and invertebrates. Mussel farms tend to average about 3.6 times more fish and invertebrates compared to nearby reference sites. Oyster farms attract the greatest species diversity, with 1.3 times greater diversity compared to reference sites. The benefits of the habitat created by the aquaculture operations are dependent on careful farm planning and diligence throughout the production cycle. Farms that are too crowded, are not rinsed well by currents, are built over existing habitats like reefs or seagrasses, or produce plastic pollution, may have damaging effects on the ecosystem. More: <https://thefishsite.com/articles/restorative-aquaculture-shows-we-can-have-more-habitat-and-eat-it-too>.

## 'Sea-wilding' to benefit fish

More than 90 per cent of Seagrass meadows in the UK have been lost in the last century. The concept of rewilding of the oceans – or 'sea-wilding' – is behind the latest and perhaps the largest seagrass restoration project in England. Boats transfer sandbags containing seagrass seeds to the site in Plymouth Sound, where the bags are dropped onto the seabed. Over time the seeds inside will poke through the canvas and start recolonising the ocean floor.

More: <https://www.positive.news/environment/ocean-rewilding-englands-largest-seagrass-restoration-project-gets-under-way/>.



Over time the seeds will poke through the sandbags and recolonise the ocean floor. Photo: Ocean Conservation Trust.

## No easy solution to a habitat-destroying legacy

For decades until 1932, the Keweenaw Peninsula on Lake Superior in the USA was home to more than 100 copper mines, and some of the copper ore went through stamp mills. What resulted was 25 million tons of stamp sands, an unstable, coarse mining waste that contains copper remnants that is now washed up along the region's formerly clean sand beaches and blanketing critical fish spawning habitat on Buffalo Reef. Restoration work at one 34-acre site involved first dredging to remove much of the stamp sand, followed by placing a cap of sandy-loam soil over the site, then replanting to both stabilise and prevent further erosion and pollution into the lake. The problems associated with stamp sands extend far beyond the beach, drifting beneath the waters toward Buffalo Reef, a 2,200-acre natural cobble reef that serves as critical spawning habitats for much of the Lake Superior's Trout, Walleye and Whitefish populations. It is estimated more than 35 percent of the reef is already covered in the toxic sands. Ongoing dredging work is delaying continued reef degradation from encroaching stamp sands but there is no easy long-term solution. More: <https://news.yahoo.com/stamping-stamp-sands-keweenaw-peninsula-123200017.html>.

## The impacts of barriers of river resident fish

The impact of large barriers is well documented for large fish like Salmon but the potential selective effects of small barriers on a range of river-resident fish, such as Topmouth Gudgeon, Minnow, Stone Loach, Bullhead, and Brown Trout, are less understood. Researchers found that waterfalls as small as 7.5cm were enough to have an impact. Although all species studied tried to move upstream, only some Brown Trout succeeded. Read a summary: <https://appliedecologistsblog.com/2021/05/20/small-but-damaging-low-head-barriers-can-cause-selective-effects-on-river-fish-communities/> or the research by Jones and others in *Journal of Applied Ecology*: <https://doi.org/10.1111/1365-2664.13875> [Open access].

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## RESOURCES

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### NSW Shellfish Reef Restoration Project Planning and Implementation Guidelines

These Guidelines provide information to support shellfish reef restoration works in NSW, with a specific focus on substrate-limited, intertidal Sydney rock oyster reef restoration activities. A case study of works done at Port Stephens, NSW, is included: [https://www.marine.nsw.gov.au/\\_data/assets/pdf\\_file/0003/1322526/16741-Shellfish-Reef-Guidelines-A-1.pdf](https://www.marine.nsw.gov.au/_data/assets/pdf_file/0003/1322526/16741-Shellfish-Reef-Guidelines-A-1.pdf).

### Key steps to improve the assessment, evaluation, and management of fish kills

A review of eight major fish kill events in the Murray-Darling Darling River system, Australia, has identified that more comprehensive approaches to assessment, evaluation and management are needed. Post-kill recovery plans should include the replacement of lost ecological assets. This paper by Koehn in *Marine and Freshwater Research* makes 15 key recommendations: <https://www.publish.csiro.au/MF/justaccepted/MF20375>.

### Fish Production Calculator for Salt Marsh and Seagrass Habitats

An interactive tool to help estimate how many juvenile fish or invertebrates are produced within these habitats, specifically aimed at the northern Gulf of Mexico: <https://oceanwealth.org/applications/seagrass-saltmarsh-calculator/>.

### The World's Forgotten Fishes

Did you know there are more fish species living in fresh water than in all Earth's seas and oceans? Freshwater fishes are also critical for the health of ecosystems, and support food webs that extend from birds to bears, and from mountains to mangroves. Beyond that they drive multibillion-dollar industries for anglers and historically they've been entwined in cultures on every continent. However, migratory populations have fallen by three-quarters in the last 50 years and populations of larger species – 'megafish' – have crashed by 94 per cent: [https://www.nature.org/content/dam/tnc/nature/en/documents/WorldsForgottenFishes\\_FinalReport.pdf](https://www.nature.org/content/dam/tnc/nature/en/documents/WorldsForgottenFishes_FinalReport.pdf).

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## ABOUT NEWSTREAMS

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*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** please fill out 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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