

Newstreams

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

Welcome to Newstreams #75.

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

Grayling back in the Glenelg

The last official record of the Australian Grayling in Victoria's Glenelg River was in 1899. One hundred and twenty-two years later, two of these fish have been spotted during routine monitoring during 2020 and 2021. Australian Grayling are very sensitive to changes in habitat health, so finding them could indicate that some of the environmental degradation affecting fish habitat has been turned around. This species primarily lives in freshwater, but also have a marine phase as larvae/juveniles before migrating back into freshwater rivers and streams. It is thought that the two that had been found upstream had travelled along the coast, and detected the river through the open Glenelg estuary. More: <https://www.abc.net.au/news/2021-02-24/grayling-fish-re-emerges-glenelg-river-century-after-vanishing/13182958>.



The Glenelg River Grayling about to be returned to the river. These fish can be mistaken for Mullet but have a distinctive cucumber smell. Photo: Glenelg-Hopkins CMA.

Narran River fish get access to another 46km

A decades old barrier to fish movement on the Narran River near Lightning Ridge in western NSW has been removed, opening up an additional 46 km of fish habitat. Owners of the redundant weir were willing to retire their license and after a few day's work with an excavator the weir was removed. Removal of the weir was easier, quicker and with less impact on the riparian areas and riverbed due to dry conditions – the excavator was driven into the bottom of the normally wet channel and worked from the dry riverbed. More: <https://www.fishingworld.com.au/news/inland-waterways-ozfish-narran-river-weir-removal>.

Shellfish reef restoration means more fish

Researchers have studied the effects of a 1.5 ha shellfish reef restoration site on fish assemblages in Pumicestone Passage, southern Queensland coast. The restoration area contained different restoration types: shell patch reefs, crates of shells, and biodegradable matrix, and each of these also had areas with and without live oysters. The researchers found the restoration significantly enhanced both the diversity and abundance of fish assemblages. The density of harvestable fish at the restoration site was over 16 times more than it had been before restoration. Read more of this work by Gilby and others in *Restoration Ecology*: doi.org/10.1111/rec.13413.

Southern Purple-spotted Gudgeon spotted again

After being declared extinct in Victoria in 1998, two of these small, wetland-specialist Southern Purple-spotted Gudgeon were found in 2018. Wetland surveys near Kerang in northern Victoria have now found many more in their preferred habitat of dense reeds. Poor water quality and regulation of water bodies that changed the makeup of aquatic vegetation in the wetland areas and introduced pest species are all factors likely to have contributed to the decline of this species. More: <https://www.abc.net.au/news/2021-03-07/zombie-fish-found-in-victoria-20-years-after-going-extinct/13219440>.



Finding the cryptic Southern Purple-spotted Gudgeon in their preferred habitat of dense reeds was a surprise for researchers. Photo: Doug Gimesy.

Helping Eastern Freshwater Cod survive the Black Summer legacy

The Nymboida River in north-eastern NSW is one of the refuges for the Eastern Freshwater Cod. Once prolific throughout the Clarence and Richmond river catchments, the species is now only known to live in isolated parts of these waterways due to habitat degradation, impacts from severe fires, overfishing and introduced species. The Black Summer bushfires decimated large areas throughout the Clarence and Richmond valleys, destroying habitat right up to the river. The utter destruction caused by the fires here created new issues such as invasive weeds, erosion, and the total loss of the riparian zone. Fish-loving landholders on the Nymboida River are leading the restoration efforts planting 1,000 native plants and controlling weeds along the riverbank. More: <https://ozfish.org.au/2021/03/fire-heroes-give-eastern-cod-population-a-new-start/>. Watch an underwater video of one of these fish in the Nymboida River: <https://www.youtube.com/watch?v=SFE2vgwFDtQ>.



The bulk of the Eastern Freshwater Cod's diet is crustaceans and other fish and insects, which is why restoring the riparian zone is critical for their survival. What was left of the riparian zone along the Nymboida River (left), and the same view one year later after natural recovery, supported by replanting and weeding work (right). Photos: David Faircloth and Alacia Cockbain.

In related work, beetles have also been enlisted to help Eastern Freshwater Cod. The beetles, or biocontrol's, have been released to help control the outbreak of Cats-claw Creeper, one of the invasive weeds making a resurgence in these areas after the bushfires. Cats-claw Creeper smother and kill native riparian vegetation thereby leading to a loss of leaf and insect fall into the water (fish food!), reduced shading of the river and increased risk of bank erosion. These control beetles feed exclusively on the Cats-claw Creeper. More: <https://ozfish.org.au/2021/04/beautiful-beetle-to-the-rescue-for-fire-impacted-waterways/>.

Lamprey loving the Lock fishways

Record numbers of Lamprey were tracked migrating from the Southern Ocean up into the River Murray in 2020. The winter water for the environment flows, improved river and fish connectivity provided by fishways on the locks and weirs mean that increased numbers of Lamprey are being recorded. Using implanted Passive Integrated Transponders (like microchips for fish), researchers were able to track individuals as they moved upstream. The longest recorded distance travelled by a Pouched Lamprey was to Lock 11, more than 878 km. The fastest Lamprey travelled between Locks 3 and 4 with an average speed of 55 kilometres per day, and as they only travel at night-time this equates to approximately four and a half kilometres an hour. Read more: <https://www.environment.sa.gov.au/news-hub/news/articles/2021/04/larry-the-lamprey-results> or watch a video showing the tagged Lamprey's migration: <https://www.youtube.com/watch?v=xFmSLA7XGvE&t=97s>.



They may not be the prettiest of fish but it's good to see record numbers of them travelling the Murray River, assisted by water for the environment and fishways. Photo: www.environment.sa.gov.au

The story of a successful Carp eradication

In January 1995, invasive Carp were discovered in two large, connected lakes in Tasmania. Screens were put in place immediately to prevent Carp moving out of the lakes and downstream. This was followed by the installation of fences, to prevent Carp from accessing marsh areas (preferred Carp spawning habitat), and steel fish traps within the fences. The combination captured adult fish and prevented spawning. Following 12 years of effort, 7,797 Carp (fry, juvenile and adult) were captured from Lake Crescent, with the last being caught in December 2007. The subsequent 14 years of monitoring has not resulted in the capture of any Carp, confirming the successful eradication of Carp from Lake Crescent. These management practices have been successfully repeated in Lake Sorell, where 41,499 Carp (fry, juvenile and adult) have been removed. Read more of the story by Yick and others in *Fishes*: <https://doi.org/10.3390/fishes6010006> [Open access].



Carp were trapped and inserted with radio tracking devices. This enabled researchers to 'think like a carp', find out where they were moving and set up net traps in the best locations. Photo: ABC News, Ted O'Connor.

What makes a Catfish fat?

Fork-tailed Catfish are a culturally and ecologically important fish in northern Australia, and even more so when they are fat. Researchers looked at how river flow and habitat of an intermittent wet-dry tropical river influenced how the fish were able to build up energy reserves in the form of fat. Body condition and intramuscular fat were greater in years following moderate to high wet-season flow, highlighting the importance of wet season flows and groundwater-fed refuge pools for Fork-tailed Catfish. There was no association between how fat the fish were and whether they lived in the main channel or tributaries. Read more of the research by Beesley and others in *Freshwater Biology*: <https://doi.org/10.1111/fwb.13711>.



The Fork-tailed Catfish gets fat on good wet-season flows. Photo: NT Government.

INTERNATIONAL NEWS

The sound of the May Fish spawning

For the first time in nearly 200 years, the distinctive sound of spawning Twaite Shad will be heard on the River Severn in the UK. The twaite shad - traditionally known as the May fish because of the timing of its migration into the river from the sea to spawn – is now able to swim past the weirs that had been blocking access to spawning grounds. At Diglis and Bever, near Worcester in England, two specially built passes alongside the Victorian-era weirs have been completed. The restoration is expected to help a variety of fish, including Salmon, Lamprey, and Eels. The Twaite Shad migration was once a well-known feature of the River Severn as hundreds of thousands of fish migrated upriver to spawn in flowing water over gravel beds at night, in noisy “bull” events with lots of splashing as the male and female swim in a tight circle. Read more: <https://www.independent.co.uk/climate-change/news/river-severn-fish-twaite-shad-b1843637.html>.



The Twaite Shad, a member of the herring family, was once abundant in British rivers, with thousands of fish spawning upstream in the spring. Photo: The Independent.

The Willamette River story

The Willamette River in Oregon, USA, suffered the common fish habitat fails: channelisation, industrial pollution, dams and other barriers, and loss and degradation of most of the riparian vegetation. A partnership formed in 2008 has planted more than 3,900 acres of floodplain and riparian forest, reconnect 15.5 miles of side channels to the floodplain, removed or improved 23 barriers to fish passage, restored 18 miles of in-stream habitat, and enhanced 46 acres of wetlands. These efforts are going some way to improve the health of the river that was labelled ‘biologically dead’ in 1944 and only ‘viable’ by 1972. Read more: <https://grist.org/sponsored/building-people-power-to-restore-the-willamette-river-and-communities-relationships-with-it/>.

The U.S.A.’s 2020 dam removal total? 69

Despite the challenges of working through a pandemic, sixty-nine dams were removed in 2020 in 23 states across the USA. These projects reconnected 624 upstream river miles for fish. More, including profiles of some projects and videos: <https://www.americanrivers.org/2021/02/69-dams-removed-in-2020/>.

Having your gold and your Salmon too

Gold has been mined from river valleys around Dawson City in the Yukon, Canada, since the turn of the 20th century using ‘placer mining’, a technique where heavy machinery is used to remove the vegetation and topsoil then the underlying gravel and dirt is sifted and washed looking for nuggets and flakes. The impact of these activities on fish spreads much further than the actual site. Habitat restorers are using the high price of gold as leverage to extract any remaining gold from degraded sites then rehabilitate them properly, legally making it difficult for any mining activity on the site in the future. Creeks are being recontoured to form both the pools and shallow waters favoured by Salmon. More: <https://www.hakaimagazine.com/news/fish-friendly-gold-mines-produce-salmon-gold/>.

Beavers and humans work together to improve fish habitat

Beaver dams create complex environments used by fish. By increasing the large woody debris in streams and slowing the movement of water, beaver ponds are stable, protected, food-filled refuges for young fish, such as Salmon parr (juvenile Salmon). Sometimes beavers and their dams are removed because they are thought to be an impediment for Salmon migrating in streams. While it is rare to have complete blockage of fish passage for the span of the migratory period, Salmon spawning can be delayed due to inadequate water depth. The perception of this risk has led to a trial of fish-friendly flow devices on beaver dams, including on Shinney's Brook in Labrador, Canada. A fish-friendly flow device is a reinforced box with a wide pipe that runs through the dam. The slot in the box is designed to release water at a speed that attracts Salmon and allows them to pass through unscathed. The pipe runs until the water is deep enough that beavers won't plug it up on the upstream end. More: <https://wwf.ca/stories/when-beaver-meet-salmon-how-fish-friendly-flow-devices-keep-their-relationship-moving-forward/>.



The fish-friendly flow device is installed by making a small notch in the beaver dam. After the humans have left the site, the beavers quickly repair the hole, which secures the device in place. Photo: Kristen Milbury/NunatuKavut Community Council.

Eels move in after removing a small tidal barrier

Cloff Bridge Weir on the River Tees in north-east England was a 2.4 m high concrete barrier built around 1910 to prevent tidal intrusion. It was impassable to most fish species under most conditions, and a major obstruction to Eel migration. Researchers monitoring the fish response to the removal of this barrier have found that the removal led to a dramatic and sustained increase in fish density immediately upstream and a rapid recolonisation of most of the stream by juvenile Eels. The population of Flounder initially declined in the estuary, possibly due to silt wash, but recovered within 2 years. Brown Trout do not yet appear to have benefitted, however researchers note that there has not been a notable population of this species in the river for decades and improvement in habitat and water quality are needed before the Trout are likely to be able to take advantage of the enhanced connectivity. Read more of this study by Sun and others in *Aquatic Conservation: Marine and Freshwater Ecosystems*: <https://doi.org/10.1002/aqc.3576> [Open access].

Cold-water fish need the warm water too

Researchers have found that warm river habitats provide pulses of growth potential for cold-water fish, such as Trout and Salmon species, during the spring and fall when the rivers are not at peak summer temperatures. Foraging in these warm habitats can provide fish the needed energy to travel to cooler parts of the river during the summer and to reproduce. This insight into how growth opportunities shift across river basins throughout the year, and how a large fraction of total growth potential can accrue during the spring and autumn in places that are too hot during summer, has implications for habitat protection and rehabilitation. Read a summary: <https://www.sciencedaily.com/releases/2021/03/210325120821.htm> or the research by Armstrong and others in *Nature Climate Change*: <https://doi.org/10.1038/s41558-021-00994-y>.

Restoring the rapids brings back the fish

In 2016, the fast-flowing Little Rapids were restored on the St. Marys River in Michigan's Upper Peninsula, USA. A new bridge was installed, restoring natural water flow to roughly 70 acres of habitat used by fish. Monitoring of the restored rapids has found the number of juvenile fish using the area has almost doubled. The proportion of adult fish of species that prefer fast-moving waters increased from 1.5% to 45% in the restored area, and from 7% to 15% upstream. Read a summary: <https://www.fisheries.noaa.gov/feature-story/great-lakes-fish-are-benefiting-restored-rapids-habitat-study-finds> or the research report by Molina-Moctezuma and others in *Restoration Ecology*: <https://onlinelibrary.wiley.com/doi/epdf/10.1111/rec.13310> [Open access].

Fish-friendly wineries

More than 90% of wine grape growers in California's Napa County, representing more than 1,000 farms, have attained Fish Friendly Farming certification. The certification involves the farmers participating in revegetation efforts along local creeks and streams, water conservation practices, and controlling erosion from roadways to improve water quality and stream flow. Fish screens are also required on all water diversions to prevent fish entrainment and mortality in irrigation offtakes. The program has implemented environmental improvements on more than 546 miles of roads, 225 miles of creeks and 38 miles of rivers throughout the Napa Valley. Read more: <https://wineindustryadvisor.com/2021/04/21/fish-friendly-farming-certification-program-benefit-local-fish-populations> or <https://www.fishfriendlyfarming.org/>.



Image: fishfriendlyfarming.org

Vehicles and fish habitat don't mix

A popular riverside spot in Chilliwack in Canada is also fish habitat, supporting both Trout and Salmon species. Footage of vehicles being driven across gravel beds in which Salmon eggs were known to have been laid has raised concerns about the impacts on fish, as well as bank erosion and pollution. More: <https://www.surreynowleader.com/news/new-signage-coming-to-keep-atvs-out-of-prime-fish-habitat-near-chilliwack/>.



Not fish-friendly or habitat-friendly behaviour. Photo: www.surreynowleader.com.

RESOURCES

Conservation translocation handbook for New South Wales threatened small-bodied freshwater fishes

This handbook provides a synthesis of knowledge of nine target threatened freshwater fishes in NSW to guide conservation translocation efforts. The included freshwater fishes have all experienced historical declines in distribution and abundance: <https://www.fishsticks.co/wp-content/uploads/2021/04/Zukowskietal-2021-NSW-conservation-translocation-handbook-FINAL.pdf>.

Salmon Recovery Stories

Summaries of Salmon habitat restoration projects, compiled as part of *State of Salmon in Watersheds 2020* (Washington State, USA): <https://stateofsalmon.wa.gov/stories/>.

User defined fishway management fact sheet

An interactive tool that allows a user to define specified elements of a fishway management fact sheet to suit individual sites: <https://wetlandinfo.des.qld.gov.au/wetlands/management/fish-passage/user-fact-sheet/>.

Renewing Our Rivers: Stream Corridor Restoration in Dryland Regions

An edited book containing numerous case studies from Australia, the USA and Mexico relating to river restoration and fish habitat, and a detailed guide for planning a stream restoration project: <https://books.google.com.au/books?id=8D4LEAAAQBAJ&printsec=frontcover#v=onepage&q&f=false>.

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