#50, March 2015

Newstreams

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

Australian News

It's curtains to cold water in the Macquarie

The upgrade to Burrendong Dam on the Macquarie River, central NSW, included the installation of a floating temperature control curtain. This has reduced the amount of cold water pollution occurring downstream. Local fishers are seeing a difference in their river and its fish. The fish are reported to be more active, feeding more aggressively and growing quickly. Last October, the river temperature was seven degrees warmer than it has been for the past six years.
http://www.dailyliberal.com.au/story/2819739/macquarie-river-experiencing-major-growth-in-fish-numbers/?cs=112

Murray Cod are one of the native species benefitting from a reduction in cold water pollution in the Macquarie River. Photo: Inland Waterways Rejuvenation Association.

Australia's biggest river restoration project

Tasmania's midlands, in the area between the Eastern Tiers and the Western Tiers, is being transformed as the banks along 21 kilometres of creeks and rivers are weeded and replanted. 100 000 seedlings have already been planted, and there's another 900 000 scheduled. Landowners on both banks are supporting the project, recognising the benefits for their farm, the rivers and the fish, and other animals, as land and water are reconnected.
http://www.abc.net.au/news/2014-12-28/tasmanian-midlands-australia-river-restoration-1-million-trees/5990244

Some of the 1 million trees being planted to improve the health of Tasmania's Midland rivers. Image extracted from http://www.abc.net.au/news/2014-12-28/tasmanian-midlands-australia-river-restoration-1-million-trees/5990244.

Bream on the research team

Recreational fishers who fish the rivers of the Gippsland area, Victoria, are working alongside researchers to catch and tag Bream, who are then contributing to the research effort by providing data. The Bream are implanted with acoustic 'tags', each of which transmits a unique signal, so individual fish are identified as they swim past receivers. Bream in the Gippsland lake system regularly move into rivers like the Latrobe to spawn. The tagged Bream are enabling researchers to better understand how these fish respond to environmental water releases in the lower Latrobe River.
http://www.delwp.vic.gov.au/news/fish-tracking-to-keep-bream-healthy-in-gippsland-rivers

A tagged Bream ready to be released and be part of the research team! Photo: Victoria DELWP

Why did the fish cross the road?

Because it could! Recent heavy rain in the north and central regions of Australia has brought rivers and waterholes to life and the fish out. Spangled Perch were seen (pictured) navigating their way over a road crossing barrier on their way to the Todd River, Alice Springs, in a way not usually associated with fish. This species are found in almost every permanent or semi-permanent waterhole across inland Australia and need only a small amount of water to travel vast distances across the desert.
http://www.themorayslair.org/category/magicmoments/

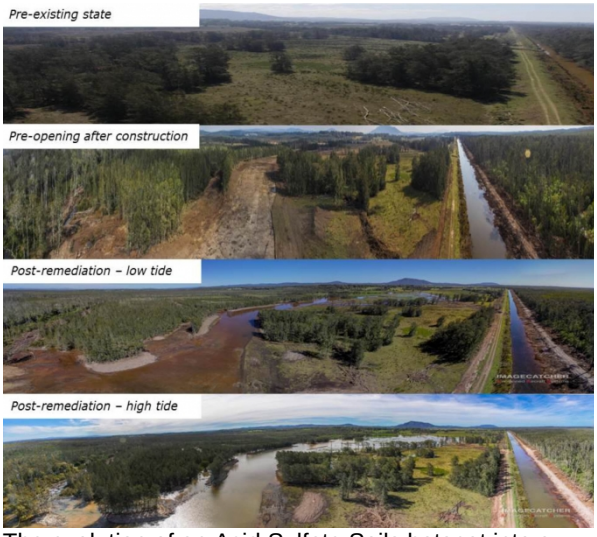
Spangled Perch on the move and taking advantage of The Wet! Photo: Jessica Brown

Werribee River fish get a fishway

A new fishway has been built on the Werribee River, Victoria, adjacent to the historic Bluestone Ford. The Ford was constructed in in the 1800s as part of the original Melbourne to Geelong Road. Since then it has been a barrier to fish movement and migration between fresh and estuarine waters. Small fish have already been observed using the new structure.
http://melbournewater.com.au/aboutus/news/Pages/Werribee-River-fish-to-scale-new-heights-with-ladder.aspx

Big Swamp gets a big tick

The Big Swamp rehabilitation project is turning a large acidic landscape into a new tidal wetland and for that it received a highly commended in the 2014 NSW Local Government Environment Awards. 'Big Swamp' is the local name for a series of drained floodplains on the Manning River estuary, near Taree, NSW. Historically, it was a large brackish backswamp known for its abundant fish populations. Over the past 110 years, the construction of an extensive system of floodplain drains and floodgates, coupled with sulfidic subsoils, has resulted in the entire site becoming an Acid Sulfate Soils hotspot. Work by Greater Taree City Council began in 2011 to remediate the problem: including the acquisition of priority properties and on-ground works. The on-ground works are enabling the area to return naturally towards a dynamic saltwater/freshwater wetland. Monitoring shows that water quality has improved significantly and wetland vegetation is recovering.
http://www.wrl.unsw.edu.au/news/a-record-year-of-success-in-wetland-remediation



The evolution of an Acid Sulfate Soils hotspot into a functional wetland. Photo: Dave Hopper.

Learning for Maccas

Students from kindergarten to year six at Bongongo Public School and in year nine at Tumut High have been working with researchers and landholders to improve the habitat of Macquarie Perch and Booroolong Frog at Adjungbilly, on the north-western edge of the Snowy Mountains, NSW. The main threat to both species is sedimentation, as each need cobble stone riparian sections in which to breed. The project is working with the landholders to stop erosion and sedimentation by replanting riparian areas and controlling weeds.
http://www.abc.net.au/news/2014-12-16/adjungbilly-creek-restoration-1612/5970588

Oysters? What oysters?

Oyster reefs once characterised over 1,500km of South Australia's coastline although there are none present today. The reefs supported a thriving oyster fishing industry in the mid-1800s through to early 1900s. They also supported the productivity of many important species of fish, stabilised sediment and helped maintain water quality. Researchers have looked at how this ecosystem has vanished, not only physically but also from collective memory. They use the term 'intergenerational amnesia' to describe how a once dominant and biologically, socially and economically important ecosystem has come to be forgotten. More on this work by Alleway and Connell in *Conservation Biology*: http://dx.doi.org/10.1111/cobi.12452

Lost from memory – an industry that disappeared with the ecosystem that supported it. Image: extracted from http://dx.doi.org/10.1111/cobi.12452

Better in the bin

8,788 metres of fishing line, 1,743 hooks and sinkers, 1,508 bait bags and 254 lures and tackle packets have been collected in one year from dedicated fishing line bins located along the Swan River, Western Australia. The Swan River Trust installed 25 dedicated fishing line bins at popular fishing spots as a trial during 2014 and the results mean that more will be installed this year.
http://www.fish.wa.gov.au/About-Us/Media-releases/Pages/More-fishing-line-bins-to-reel-in-river-waste.aspx

Cabomba no more

An outbreak of the highly invasive aquatic weed, Cabomba, in the Broken River, northern Victoria, has been largely controlled after almost six years of effort. Cabomba smothers native aquatic vegetation, removing valuable habitat for fish. The weed has been controlled by the strategic drawdown of water levels to dry or remove weed patches. Patches of native Ribbon Weed, considered an indicator of good habitat quality, have recently been found re-established in Hollands Creek. Other areas of this catchment remain infested, however, and the focus of ongoing work.
http://www.gbcma.vic.gov.au/news_events/lake-benalla-remains-cabomba-free.html


Cabomba is regarded as a major threat to freshwater systems due to its range of environmental, social and economic impacts. Photo: Andrew Petroeschevsky

How much riparian is enough?

Researchers have reviewed various studies, reports and guidelines to see if there is an ideal width of vegetated riparian area to provide good environmental outcomes, including improved water quality. Unsurprisingly, they found that the answer depends on the landscape, land-use and the environmental outcomes being sought. Forested zones for improving water quality needed to be wider than grassy buffers, for example. The researchers also found that the effectiveness of riparian zones is not being monitored consistently, and this, coupled with inadequate descriptions of the landscape context, made recommendations difficult. They did find evidence that the continuity and connectivity of vegetated riparian zones is important. For more of this review by Hansen and others in *Ecological Management and Restoration*: http://dx.doi.org/10.1111/emr.12149

Fish going with the flow

Researchers monitored Golden Perch movements in response to environment flow releases in the Goulburn River, northern Victoria. They have found that these fish migrate extensive distances downstream and upstream during spring, and even move into the Murray River at times. In addition, the migrations during the Spring environmental flows were found to coincide with high levels of spawning in the river.
http://www.gbcma.vic.gov.au/news_events/environmental-flows-trigger-migration-and-breeding-bonanza-for-goulburn-river-fish.html

Native fish also took advantage of the first watering of Gunbower Forest through the newly constructed Hipwell Road Channel, in north-central Victoria. Pulsing flows were used to send signals to native fish to leave as the watering event was finishing. Researchers then monitored fish through a purpose-built fishlock. In just two hours of monitoring over 14,000 small native fish moved through the lock. These large numbers of small fish then moved into the Murray River - just in time to feed the migrating Murray Cod and Golden Perch.
http://www.nccma.vic.gov.au/Media_and_Events/Media_Releases/index.aspx?itemDetails=8028&cId=MasterMR

The migration patterns of Golden Perch were also studied in the Loddon River, in the south-east of the Murray-Darling Basin. Some tagged fish were found to move up to 120km, but most moved less than 20km. Movement upstream appeared to be restricted by a major regulator at Box Creek. The fish appeared to respond to flows, choosing to move into one creek over another based on which had the better flow. More of this research by O'Connor and others in *Ecological Management and Restoration*: http://dx.doi.org/10.1111/emr.12140.

More quality accommodation available … in the Condamine


More fish hotels placed in the Condamine. Photo: Condamine Alliance

40 new fish hotels and cod holes have been installed in the Condamine River, near Dalby, Queensland. Monitoring of the snags and fish hotels installed last year is showing these are well used by native fish, both in terms of numbers of fish and the range of species. The fish hotels have been constructed using untreated recycled railway sleepers and these have been lashed together with the cod holes made of donated cement culverts, with the result that they are expected to remain in place during flooding. Smaller structures have also been attached within these larger aggregations to provide habitat and cover for small-bodied natives and juveniles.
http://www.condamineallianceсom.au/news/high-occupancy-rates-at-fish-hotels-leads-to-new-construction

… and in the Tambo River

Resnagging has also taken place in lower reaches of East Gippsland's Tambo River, Victoria. Bream, Luderick and Perch are likely to benefit from the additional 50 structures added to the 40 put in place in 2014. These structures consist of two or three logs tethered to piles driven into the river bed close to the bank and they have placed to complement ongoing riparian revegetation work.
http://www.egcma.com.au/file/file/Media/east_gippsland_news_wednesday_february_18_2015_p3_web.pdf

INTERNATIONAL NEWS

Salmon winter wonderland

Looking downstream into the new side channel with large wood structures. Photo: Joe Pecharich, NOAA

Winter habitats critical for juvenile Coho Salmon have been re-created in Green Valley Creek, northern California, USA, with the construction of a 200-foot long side channel and wetland pond. This part of the Russian River watershed once supported healthy off-channel habitats that slowed stream flows, which is important when heavy winter rains create flooding. Without the calm off-channel habitats, juvenile salmon are overwhelmed and spend more energy working against the current and less energy foraging and growing. The use fish make of the new habitat areas is being monitored using PIT tags detectors.
http://www.westcoast.fisheries.noaa.gov/stories/2014/12022014_green_valley_creek.html

Another 3 miles in the 1,000 miles campaign

In north-eastern Utah, USA, the wide-open and remote watersheds experience bitterly cold winters and scorching hot summers. The headwaters of one of these, Otter Creek, are primarily spring fed and provide cold, clear water that sustains ribbons of green streamside vegetation in this dry landscape. This creek historically contained Bonneville Cutthroat Trout and the goal of the fish passage remediation works is to see these fish re-establish here. As part of the Orvis/Trout Unlimited '1,000 Miles campaign', Trout Unlimited has been improving fish passage at culverts and irrigation diversions on Otter Creek. Over a dozen fish passage improvements have been completed, the latest being to increase the capacity of an undersized culvert. The new culvert will accommodate high streamflows and provide unimpeded fish passage to another three miles of creek.
http://www.orvis.com/news/conservation/1000-miles-otter-creek-ut/

One small step at a time

The Wandle River was a silt trap (left) but with the efforts of volunteers has been transformed to a well-featured, free-flowing chalk stream with natural cover. Photo: Urbantrout

In 2009, the Wild Trout Trust and Wandle Trust started battling with local authorities to get approval for some simple and cheap options to improve the poor quality habitat of this stream which flows within a heavily urbanised and densely populated part of London, UK. Now the Trusts are looking back at significant progress: many weirs have been remediated; a pre-fabricated fish pass re-fitted; and the channel has been narrowed, resulting in energised flows which are keeping the introduced gravel substrate sweet. The Trusts' initial pursuit of quite small targets snowballed into a project that has transformed the river.
http://urbantrout.blogspot.co.uk/2014/12/latest-wandle-progress-is-truly.html

Putting the river to bed

The ways of the English Riverkeeper are changing, and with that so is the look of the chalk stream. More riparian vegetation, 'messy' banks and woody debris might not look like a well-managed stream but there is a growing understanding that that is, in fact, what it is. The Riverkeepers are finding that it is better for fish too. One Riverkeeper reflects on these changes and how his job has changed:
http://eat-sleep-fish.co.uk/content/2015/01/bad-tradition

Messy but better for fish. Photo: www.eat-sleep-fish.co.uk.

What were they thinking?

What to do with remnant project money? One council in Wales decided to go against the flow of restoring urban rivers and instead diverted the stream through pipe in the middle of spawning season, cleaned up riparian vegetation, dredged the gravel, put in concrete footings and covered it all in concrete slabs. This in spite of there being no history of flooding and in the presence of sea trout redds in the gravel. The outrage from local anglers might have surprised them but in the face of questions being asked in the Welsh Assembly and news segments on the BBC, the Council has agreed to remediation measures.
http://www.urbantrout.net/afon-cae-person-llanwrst-conwy-councils-masterclass-in-trashing-an-urban-stream/

Afon Cae Person, Llanwrst, Wales. Unfortunately, these photos show the original stream on the left and the end result of the local Council's efforts on the right. Photo: Pierino Algieri

What's in the bag?

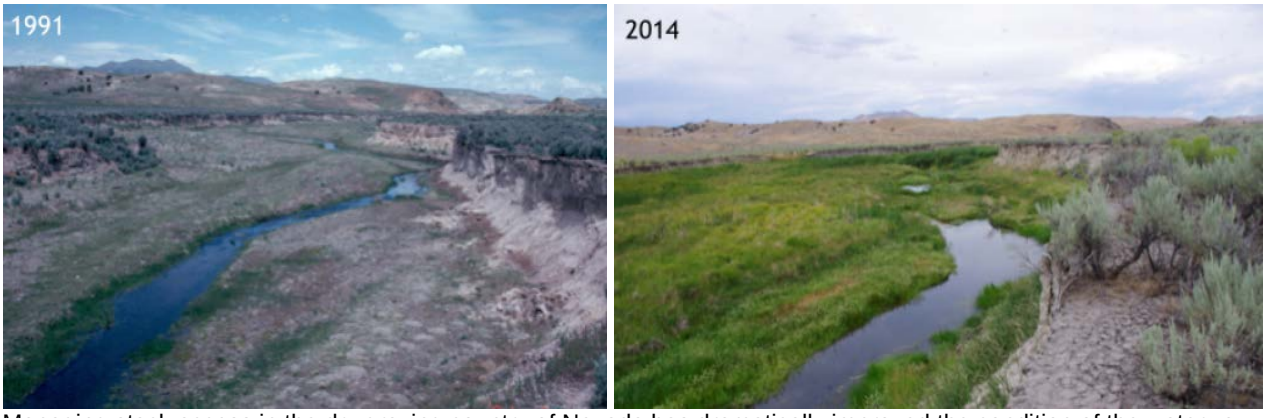
The litter and rubbish removal efforts along the River Wye have cleaned 900 miles (1400 km) of river bank and removed 100 tonnes of rubbish. So far, the 2015 haul of things anglers would not expect to pick up along a river bank have included a large photographer's reflector dish, a guitar, a vacuum cleaner and, in one spot, dozens of golf balls. Volunteers are also starting the process of re-doing lengths of river cleaned in past years.
http://www.wyeuskfoundation.org/projects/litter-2015.php

The other things these anglers are finding in their favourite fishing spot. Photo: Wye and Usk Foundation.

Manage cows, help fish

In hot weather, cows go to water, both to drink and to cool off by standing in it. Their movement causes waterways to become wider, shallower and warmer as riparian vegetation is trampled and trees which once shaded the stream no longer grow. Pugging contributes to erosion and siltation. Researchers in Oregon, in the north west of the USA, looked at what happens when cattle are prevented from accessing waterways but there is no other active restoration activity. They found an increase in woody riparian vegetation and patches of bare soil decreased to a tenth of what they were while livestock accessed the area. Both the number of eroding banks and the width of stream channels decreased dramatically. Read more of this research by Batchelor and others in *Environmental Management*: http://dx.doi.org/10.1007/s00267-014-0436-2

Complete removal of cattle is not the only option. In Nevada, USA, landowners are experimenting with changing the length and timing of the cattle's stay on different pastures, along with a little fencing here and there. It appears that these strategies are enough to give riparian vegetation a foothold. In one area, which was once good Cutthrout Trout habitat, riparian vegetation has increased over 300 percent. In addition, more water is being held in the system, providing other benefits to the landholders.
http://www.tu.org/blog-posts/cows-and-conservation-in-nevadas-desert



Managing stock access in the dry grazing country of Nevada has dramatically improved the condition of the waterway but also improved water security. Photo: Trout Unlimited

Fish passage matters for Shad

Alabama Shad are one fish species taking advantage of a 'conservation lock' to get upstream of the Jim Woodruff Dam on the Apalachicola River, Florida, USA. Spawning of this species has been greatly affected by dams and the population plummeted. The conservation lock has enabled Shad to get upstream to spawn and the population has increased four-fold. Researchers wanted to know if the fish born upstream of the dam were re-joining downstream populations. By shooting a laser at the otolith (the inner ear bone) of juveniles, the researchers were able to get the chemical signatures for fish born either above or below the dam. They then lasered the otoliths of adult fish and found that 86 percent of the adult caught downstream were born above the dam. Fish transported over the dam via the lock are breeding, and those young Shad are making it back down river to the Gulf of Mexico. For more of this research by Schaffler and others in *Transactions of the American Fisheries Society*: http://dx.doi.org/10.1080/00028487.2014.954056 or a summary:
http://blog.nature.org/science/2015/02/04/new-research-strong-fish-passage-lasers-technology/


An Alabama Shad – using a 'conservation lock' to improve spawning and recruitment. Photo: Matt Miller.

Getting the Trout-friendly treatment

The reconstruction of a creek in the Blackfoot Basin, Montana, USA, involved creating bends and curves in the stream, decreasing the mean channel width from 14.5 metres to 2.8 metres, and reducing accumulations of fine in-stream sediment. A stream was created with a channel that was 39 percent longer, 85 percent narrower and 169 percent deeper than the original channel. In addition, coarse woody debris was placed within the new channel and livestock were excluded to promote recovery of riparian vegetation. Researchers monitored Trout numbers and size in the reconstructed reach compared with reference reaches over 4 years. They found that the creation of a deep, narrow, vegetated stream increased wild Trout populations. Instream wood provided primarily short-term benefits during the early phase of habitat recovery. Read more of this research by Pierce and others in *Transactions of the American Fisheries Society*: http://dx.doi.org/10.1080/00028487.2014.982261

A wide, straight stream in 2001 is transformed into a Trout friendly, narrow, faster flowing and sinuous stream with riparian vegetation. The result was more wild Trout. Photo: sourced from http://dx.doi.org/10.1080/00028487.2014.982261

Bonefish spawning migrations

Bonefish support a catch-and-release fishing industry that generates over US$140 million annually for The Bahamas. Grand Bahama Island is an example of the fragmented habitat now common across the region. However, it was hoped the construction of a waterway bisecting the island would connect the mangroves and seagrass habitats, used for foraging and protection, on one side to deeper spawning habitat on the other. Researchers tracked Bonefish and found that while some fish travelled through the canal, others migrated more than 50 miles along one side of the island to reach the spawning aggregations in deeper waters. More: http://coastalanglermag.com/bahamas/the-science-behind-movement-tracking-bonefish-spawning-migrations-around-grand-bahama-island/

RESOURCES

Guiding principles for delivering coastal wetland carbon projects

A distillation of best practice principles for coastal wetland carbon projects, drawing on wetlands restoration, terrestrial carbon projects, carbon policy and community engagement. http://www.unep.org/pdf/Guiding_principles_for_delivering_coastal_wetland_projects.pdf

Climate change and fish

Marine life is particularly susceptible to climate change: loss of their habitats due to coastal development, temperature rise and ocean acidification are some of the most immediate threats. The US State Department has put together an outline of reasons why climate change matters to fish, with a focus on marine and estuarine species. http://blogs.state.gov/stories/2014/12/12/eight-reasons-climate-change-matters-fish#sthash.flCn4oK5.dpuf

A Teacher's Guide to Freshwater Fishes, Crayfishes and Mussels of South-Western Australia

Separate booklets for each year level from Years 1 to 10 provide a supporting document for the book, 'A Field Guide to Freshwater Fishes, Crayfishes and Mussels of South-Western Australia'. Activities link directly to the National Science Curriculum with a local focus.
http://www.sercul.org.au/ffteacherguide.html

British freshwater fish underwater

The latest underwater film from Jack Perks, showing many of the 53 fish species found in British freshwater.
https://www.youtube.com/watch?v=uGoijnAGxG0&noredirect=1

FROM THE ARCHIVES

"The key to the abundance of the mighty Murray cod could well depend on the lowly western carp gudgeon."

This was one of the conclusions from the earliest observations of Murray Cod breeding at the Narranderra facility in the early 1960s. Earlier attempts had failed as the Cod larvae starved. Here are some snippets from the report 'Progress at Narrandera', by John S. Lake, in *The Fisherman*, March 1964:

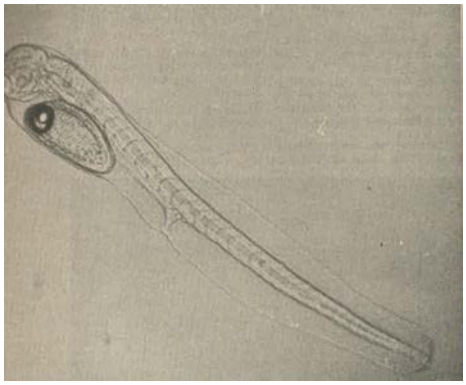
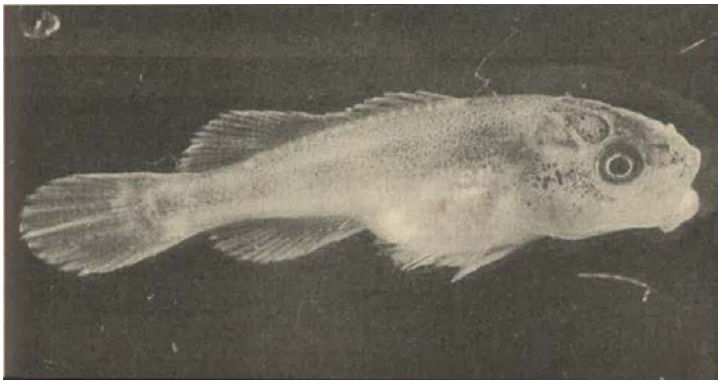
Cod spawn … and as the water warms in the shallows … the western carp gudgeon commence spawning and attach their tiny eggs to twigs and grass which have been inundated by the rising water level which helped induce the cod to breed. … [T]he western carp gudgeon commenced breeding about two weeks after the cod breeding at a time when the cod were hatched but still feeding on their yolk sacs.

The western carp gudgeon eggs … hatch in two days and are thus available as food for the cod as their yolk sacs are absorbed.…

The half-inch cod were largely dependent for their growth and survival on these so called "useless" species [western carp gudgeon and Australian smelt].

.. the gudgeon spawns in very shallow water and if river levels are made to fall, even by a few inches … then their eggs are dried ad killed prior to hatching so there would then be less food for young cod…

[B]ecause our baby [western carp gudgeon] are so important as food for the very young cod any factor which operates against the survival and breeding of western carp gudgeon will obviously affect the survival of cod

A Western Carp Gudgeon hatchling (left) at 2mm long is the preferred food for the Murray Cod larvae (right), here shown at 5 weeks old and with a bulging stomach. Images extracted from article.

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 (newstreams@industry.nsw.gov.au). Back issues can be accessed from http://www.fishhabitatnetwork.com.au/archive.

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FISH HABITAT NETWORK

FHN 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.ffsaq.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 http://www.sweetwaterfishing.com.au

Victorian Department of Environment and Primary Industries www.depi.vic.gov.au

VRFish www.vrfish.com.au

Western Australia Department of Fisheries: www.fish.wa.gov.au/Pages/Home.aspx

Website www.fishhabitatnetwork.com.au

Facebook www.facebook.com/fishhabitatnetwork

NSW GOVERNMENT Department of Primary Industries

Recreational Fishing Trusts