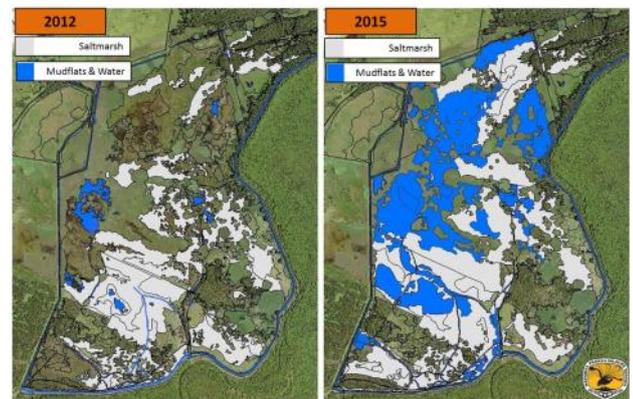


News, research, on-ground works, innovation and events with a focus on improving fish habitat

## AUSTRALIAN NEWS

### Fish habitat returns to Tomago

The reintroduction of saltwater into wetlands at Tomago, on the NSW central coast, has seen an 80% increase of saline wetlands between 2012 and 2015. Recent field surveys have confirmed that the reintroduction of tidal flows has created additional fish habitat, including 10 hectares of saltmarsh and 57 hectares of tidal mudflats and shallow ponds. Stages 1 and 2 included the installation of water control structures that were designed to provide fish passage. Stage 3 will create additional saltmarsh and mudflats, as well as introducing saltwater to 3.4km of drainage channels which will provide even more fish and prawn habitat for the lower Hunter estuary. For more information about this project: <https://www.youtube.com/watch?v=BH5SpFVnhOU>



What a difference some salty water makes! The blue shows mudflat and shallow water; the gray, saltmarsh. Image: NSW Office of Environment and Heritage.

### Seagrass better for calamari

Some habitats are better than others for Calamari spawning. A study in Port Phillip Bay, Victoria, has found that the seagrass habitats in the southern and western Bay area are preferred for egg laying. The northern habitats in the Bay, characterised by more seaweed, sponges and sea squirts, were typically home to smaller calamari and fewer egg clusters. The study also found that Calamari in the Bay are spawning throughout the year, with a peak between spring and summer. The Calamari seem to be staying within the Bay for about a week during spawning. One tagged calamari travelled 51 km within the Bay over eight days. A short video about the findings of the study is at: <http://youtu.be/010xLIMYHsU>



An egg cluster laid amongst the preferred seagrass habitat within Port Phillip Bay. Image extracted from video.

### Removing mangroves puts a hole in the budget

A development company has been fined \$10,000 and ordered to perform restoration works for clearing 752 square metres of mangroves from a site on the Brisbane River, Brisbane, Queensland. The company did have permission as part of their development consent to clear some mangroves. A member of the public called the Fishwatch hotline concerned about what was happening at the site and subsequent investigations found the company had several breaches of the conditions of their development approval. The cost of the restoration is expected to be substantial. For more information on this story: <http://www.fishingworld.com.au/news/mangroves-destroyed-developer-fined>

## Elders build fish hotels

Construction has started on new homes for native fish in the Lower Darling River. The Barkindji Maraura Elders Environment Team (BMEET) is restoring structural woody habitat or 'fish hotels' in the Pomona Priority Habitat Reach of the Lower Darling to enhance habitat for native fish. The enthusiastic team of BMEET Paaka River Rangers is building the new fish habitat at their works depot just outside Dareton, NSW. The hotels are boosting habitat at the sites where structural habitat density is currently low. More at: <https://www.facebook.com/fishhabitatnetwork/posts/839836986088419>



More homes for fish on the way for the Lower Darling River. Photo: BMEET

## Mangrove monitoring is as easy and point-and-click

Volunteers are increasingly playing a vital role in monitoring mangroves along the Queensland coast. Their work has been helped by a simple, scientifically rigorous assessment tool known as MangroveWatch Shoreline Video Assessment Methodology, which involves using video-cams, GPS and cameras. A group of these citizen-scientists monitoring Pumicestone Passage, southern Queensland, has completed collection of base-line data that shows approximately 25% of mangroves in this estuary area are in poor condition with key issues being bank erosion, water quality and altered hydrology from urban drainage. More on this story: <http://www.seqcatchments.com.au/news/community-scientists-leading-the-way-for-mangrove-monitoring>



One of the newly trained MangroveWatch volunteers. Photo: SEQ Catchments

## When are a couple of farm dams the best thing for fish?

The answer: when one of the most important habitat refuges for the endangered Southern Pygmy Perch, is threatened by Redfin. Southern Pygmy Perch were once widely distributed throughout the Murrumbidgee and Murray River Systems however there are now only three known remnant populations remaining in NSW. When Redfin invade the Southern Pygmy Perch soon decline and disappear. Two farmers came to the rescue for fish in Blakney Creek, just north of Yass in central western NSW and their dams are now providing a safe refuge for hundreds of relocated fish. It is hoped they will breed and grow in numbers so that they can be re-introduced into other refuge areas in future. More information: <http://www.dpi.nsw.gov.au/aboutus/news/all/2015/farmers-helping-to-save-threatened-fish>



It might not look like much, but this is a welcome and safe home for the relocated Southern Pygmy Perch. Photo: Trevor Daly.

## 1000 hours and cheering

Bass Sydney Fishing Club have now passed 1000 hours of volunteer labour on behalf of Australian Bass and other fish living in the rivers and creeks of the Greater Sydney region, NSW. The club has been involved in projects to rehabilitate the Nepean River banks at Emu Plains, to restore fish passage on the Georges, Lane Cove and Parramatta Rivers and other riverbank restoration projects on South Creek and the Grose, Nepean and Lane Cove Rivers. The Club was founded in 1981 by a group of dedicated bass fishermen who were concerned with the plight of Australian Bass. They decided to start a club that would devote their time not just to fishing for Australian bass, but to do whatever they could to improve the fishery. To keep up with their activities: <https://www.facebook.com/BassSydneyFishing>



"We don't just enjoy fishing for Australian bass but we do whatever we can to help improve the bass fishery – we're putting something back!" (Alan Izzard, Club President). Photo: Bass Sydney

## Resisting desert invaders

Large parts of arid Australia sit over the Great Artesian Basin and where there are weak points in the aquifer, water seeps to the surface and forms permanent springs. Red-finned Blue-eye is a species of fish that has evolved to live in these springs, but they are only found on one property, Edgbaston Reserve. These resilient little fish have evolved to cope with the challenges of living in a groundwater-fed spring in the desert but not to deal with the invasion of *Gambusia*, which has found its way to Edgbaston's springs. Originally from North America, *Gambusia* is one of the worst invasive fish species in the world. It's thought they spread during floods, but once *Gambusia* show up, Red-finned Blue-eye usually disappear a short time later.

Researchers are studying the impacts of the invasion and developing a better understanding of how Red-finned Blue-eye take advantage of their unusual habitat. There are physical factors, such as elevation, that appear to favour the natives but it's thought that biological factors, such as water quality, might be even more important. A summary of this research is available [here](#) and the link to the research by Nicol and others in *Ecosphere*: <http://www.esajournals.org/doi/abs/10.1890/ES14-00412.1> [open access]



Red-finned Blue-eye in the crystal clear water of a desert spring. Photo: May-Le Ng.



No shortage of mosquitofish in a typical net drag through a bore drain at Edgbaston. Photo: Sam Nicol.

## Black Bream hedge their bets for survival in the Coorong

Fish ear bones ('otoliths') are once again telling interesting stories about how fish make use of different habitats. Analysis of the otoliths of Black Bream living in the Coorong, the estuary of the River Murray, South Australia, can show whether the fish is migratory or 'resident' by mapping the ratios of two elements: barium and calcium. The higher levels of barium indicate when the fish was in fresher water. The research has revealed that 38% of the Black Bream were migratory within different parts of the estuary, while 62% generally stayed in the one location. The migratory fish also grew more than the resident fish in the period after 2005, which the researchers think is likely to be a result of the deteriorating conditions in the Coorong and the ability of the migratory fish to find more favourable conditions and source more food. A summary of this research by Gillanders and others in *Biology Letters* can be found [here](#), with the research article available from: <http://dx.doi.org/10.1098/rsbl.2014.0850>

## 5 steps for marine restoration

In an editorial for the Australian journal *Ecological Management and Restoration* it's been suggested that the projects currently being pursued to repair our coastal environments are rarely of sufficient size to improve ecosystem services at the landscape scale. Whilst efforts in the USA and UK are now working at such larger, landscape scales, this is not happening in Australia. The authors suggest that there are five key elements to securing the public and private support necessary to bring marine restoration up to a level that is ecologically, socially and economically meaningful. These elements are: 'communicate the business case for marine restoration', 'build awareness, capacity and confidence that key degraded coastal and marine habitats can be repaired', 'develop the policy framework', 'build skills and experience in restoration practitioners', and 'learn from terrestrial restoration initiatives'. To read more of this review: <http://www.natureaustralia.org.au/wp-content/uploads/2015/01/Scaling-up-marine-restoration-projects-in-Australia.pdf>

## Maccas into the Ovens

Macquarie Perch are being reintroduced into the Ovens River, northern Victoria, in an effort to re-establish this once common species. The Ovens River is the only river in the southern Murray-Darling Basin that does not have a dam on it so it has natural water flow regime, gets floods most years and has reasonable habitat available. Previous projects have improved riparian vegetation and in-stream structure, such as snags. Both fingerlings and older fish were re-introduced so that a more natural age class structure existed in the introduced population.

To watch a video: <https://www.youtube.com/watch?v=821GJXVAJ1Y>



Re-introducing an older Macquarie Perch into the good fish habitat areas of the Ovens River. Photo: DELWP, extracted from video.

## Barwon-Darling habitat mapping

The fish habitat assets along 1,126 km of the Barwon – Darling Rivers between Walgett and Wilcannia, NSW, have now been mapped. The data collected means that the habitat needs of native fish can be built into the development of environmental water requirements for this system. The researchers found 36,577 snags and 1,925 refuge holes greater than 3.5 m deep. Weeds were sparse along the reaches surveyed, however it appeared that unmanaged stock access is having a significant and detrimental impact on native trees and shrubs. For more information please contact [Anthony Townsend](mailto:Anthony.Townsend@delwp.vic.gov.au) on 02 6763 1440.

## What 'home' means for Eastern Freshwater Cod

Researchers tracked the movements that Eastern Freshwater Cod made between habitats in the Mann River, northern NSW. Two main types of behaviour were observed: extended periods when the fish stayed around a 'home-site' and short periods of when they moved around and shifted home-sites. The fish liked slow water and deep pools, most often in association with boulders and woody debris as cover. When water flow was high they would occupy ephemeral backwaters and edge habitats, with inundated riparian vegetation often used as cover. Males moved around more during breeding season and nest sites were under large boulders or rock shelves. More on this research by Butler and others in *Endangered Species Research*: <http://dx.doi.org/10.3354/esr00557>



Perfect habitat for Eastern Freshwater Cod. Photo: Kevin Clark

## Golden Perch follow the flow

Researchers used an environmental water flow to investigate the spawning and recruitment of Golden Perch in the southern Murray-Darling Basin. Using strontium isotopes found in the fish otoliths ('ear bones') they were able to determine where and how the fish moved and used different waterways. They found the fish spawned primarily between October and December and this coincided with both rising and falling water and temperatures at or above 17 degrees Celsius. It appears that not all of the spawning resulted in young-of-year, though, as spawning was observed in several rivers but there were no subsequent juveniles. They also found that Golden Perch populations in the southern Basin were dominated by 4 year old fish. It's thought that this reflects a spawning event during a substantial summer flow in the Darling River in 2009-10, after which the juveniles, when aged about one year, moved out of the Darling River and into the lower and mid River Murray. This study confirms that Golden Perch move hundreds, even thousands, of kilometres within the rivers of the southern Basin. More of this research by Zampatti and others, published by SARDI: [http://www.pir.sa.gov.au/\\_data/assets/pdf\\_file/0019/248131/Golden\\_Perch\\_Murray\\_Darling\\_Basin\\_Report\\_-\\_FINAL\\_.pdf](http://www.pir.sa.gov.au/_data/assets/pdf_file/0019/248131/Golden_Perch_Murray_Darling_Basin_Report_-_FINAL_.pdf)

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## INTERNATIONAL NEWS

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### River Tweed and its fish are the winners

The partnership project known as the Tweed Forum has taken out the 2015 UK River Prize. The Forum's work straddles the border between England and Scotland and an element of their success has been the focus on working with land managers to get the right measures in the right place, at the right scale, in order to address key issues such as habitat loss, drainage and channelisation. In the last 5 years they have restored and enhanced over 60km of river through fencing off and planting, re-meandered over 2km of straightened channel, installed 120 engineered woody debris features, removed 9km of flood embankment, planted 230ha of riparian woodland, created 30 ponds/wetlands, enhanced 125ha of raised bog, dammed 9km of ditch and controlled invasive plant along 300 miles of river. More information below: <https://www.youtube.com/watch?v=5MgPse54eRs>  
<http://www.therrc.co.uk/uk-river-prize>



Salmon in the River Tweed – benefiting from 5 years of significant habitat work.  
Photo: extracted from video

### Sri Lanka the first to protect all of its mangroves

More than half the world's mangroves have been lost over the last century but all of those surviving in Sri Lanka are now to be protected. Mangroves protect coastlines against flooding and provide vital habitat for marine animals, especially juvenile fish. In Sri Lanka, mangroves are under pressure as timber is needed for firewood for cooking. In order to protect the mangroves, local people needed other ways of supplying that need. A solution which takes cultural norms into account involves local women being provided with microloans to start small businesses, in return for which they will stop using the trees for firewood and guard the forests near their homes. Women from 1,500 communities are looking after mangroves covering 8,815 hectares in 48 lagoon systems and a further 3,885 hectares will be replanted. More on this story: <http://www.theguardian.com/environment/2015/may/12/sri-lanka-to-become-the-first-nation-in-the-world-to-protect-all-its-mangroves>



Sri Lanka is the first country in the world to protect all its remaining mangroves.  
Photo: Alamy.

### Concrete coastlines

A study of what's called "marine urbanisation" has found that some estuaries in Australia, the United States and Europe have had more than 50% of their natural coastline modified with artificial structures. Marine urbanisation includes foreshore developments, port facilities, marinas and offshore energy platforms and is most widespread in Europe where over 9,000 marinas and more than 200 operational offshore energy installations exist. Indiscriminate construction within the marine environment is thought to contribute to the loss and degradation of important habitats such as sediments, seagrasses, mangroves and wetlands. The review notes that more recently, eco-engineering practices are providing innovative strategies on how to manage coastal development, restore coastal habitats for their ecosystem services, such as flood mitigation and, increasingly, build structures in ways that provide environmental benefits as well as utility. For more information:



An aerial view of extreme marine urbanisation in Dubai. Photo: NASA\_Wikimedia Commons

<http://theconversation.com/concrete-coastlines-its-time-to-tackle-our-marine-urban-sprawl-38175>

## The investment that has impact

Restore America's Estuaries has released a new report *Impact Assessment: Federal Coastal Habitat Investments Support People, Fish, and Wildlife* highlighting the benefits that coastal habitat restoration efforts provide for job creation, tourism, fishery production, recreation, community protection, and human health. The report includes case studies that detail the projects and their ecological, social and economic outcomes. An example is the San Diego Bay Salt Marsh Restoration in California where the investment in restoration created 130 jobs and added US\$13.4 million to the local economy. To access a PDF copy of the report, go to: <https://www.estuaries.org/ImpactAssessment>

## Not just any stream is home for Salmon

When it is time to reproduce, Salmon leave the sea and swim up rivers to spawn and die. The hatchlings grow in freshwater streams, swim to sea and reach adulthood. While it's known that Salmon return to the river in which they were spawned when ready to breed, it's not known if some parts of the river system are more important than others. Researchers examined the otoliths of Chinook Salmon caught in Bristol Bay, Alaska. Otoliths grow new outer layers daily as a juvenile fish matures, and those layers incorporate strontium from stream water where Salmon are born and swim. The ratios of strontium-87 to strontium-86 in water, and thus in otoliths, reflects the ratios in the rocks eroded by the streams. The study found 71 percent of the Salmon came from only three of the seven stream groups in the Nushagak watershed which flows into the Bay. One basin alone was home to 27 percent of the Salmon. The proportion of Salmon from each waterway correlated well with the estimated amount of habitat in it. The study also found that almost 30 percent of the Salmon had a more complex life history than simply hatching and growing up in one place. A summary of this research is available [here](#) or read the article by Brennan and others in *Science Advances*: <http://dx.doi.org/10.1126/sciadv.1400124>.



The study involved cutting the otoliths lengthwise (pictured), then zapping them repeatedly with a laser, from the inner to outer layer. The changing strontium isotope ratios in the samples showed where the fish lived from the time it hatched until after it entered the sea. Photo: Sean Brennan.

## 'Many small' better than 'one large' when it comes to wetlands

Different wetland types provide a range of ecosystem services so it is important to consider more than total wetland area when protecting and restoring wetlands. This is the conclusion of a study of the patterns of wetland loss in the Prairie Pothole region of Iowa, USA. This region has lost more than 90 per cent of its wetlands since 1800. Large numbers of smaller, isolated wetlands have been drained, and the remaining wetlands have much simpler shapes, leading to an extensive loss of wetland perimeter. These areas provide important habitat for aquatic species. Smaller wetlands function best as a group, forming an interconnected mosaic of different habitats, and functioning like landscape filters, preventing excess nutrients, sediments and contaminants from entering larger waterways. The researchers note that many restoration efforts have focused simply on restoring wetland area, with no consideration of the type or size of the wetlands being restored. A summary can be read [here](#) or the research by Van Meter and Basu in *Ecological Applications*: <http://dx.doi.org/10.1890/14-0662.1>

## The good soil

Researchers have found that a simple column of common soil can reverse the toxic effects of urban runoff that otherwise quickly kills both young Coho Salmon and the insect prey they feed on. Polluted stormwater has been identified as a risk factor for Salmon and Steelhead and has caused fish kills in the Pacific Northwest of the USA. The research examined the toxic effects of runoff collected from a major highway during storms. The untreated runoff killed all juvenile Salmon exposed to it within 12 hours. But all fish survived in runoff filtered through the soil column of sand, compost and bark. The soil filtration also prevented reproductive damage to the insects salmon eat. More information:

<http://www.sciencedaily.com/releases/2015/01/150120185956.htm>

## Flooded farmland helps baby salmon

Researchers flooded 2 acres of riverside farmland in California, to see if it could provide waterborne insects and other food the juvenile fish need before heading out to the Pacific Ocean. The site, which sits amid wheat fields, was flooded to about shin depth. Researchers set up a few 30-square-meter pens so they could monitor the salmon as they ate. Mayflies, stoneflies and water fleas are typical foods. They found that the Salmon grew rapidly and tripled their weight on average over three weeks. Chinook salmon populations have struggled for decades because of dams blocking part of their spawning grounds and reduced flows on the rivers. Natural floodplains have been cut off by the levees that line many river stretches in this region. Breaching them at certain times and places allows the water to slow down and spread out, exposing it to sunlight that encourages the algae that feed the insects that in turn feed the fish. More information:

<http://www.modbee.com/news/local/article14751383.html#storylink=cpy>

## Bring on the oysters

The Baykeeper program operating in the Hudson – Raritan Estuary, New York, has used reef building and stocking activities to restore hundreds of thousands of oysters to the estuary. Baykeeper produces juvenile oysters for oyster restoration projects. Microscopic oyster larvae are released into tanks of saltwater that also contain mesh bags full of clam shells. The larvae attach themselves to the shell and grow in this protected environment. Once the oysters have 'set' on the shell, and grown for about two months, they are released onto newly established oyster reefs. More information:

<http://nynibaykeeper.org/resources-programs/oyster-restoration-program/>



The return of the oyster to the Hudson estuary. Photo: Baykeepers

## That Goldfish Problem? Pelicans were onto it!

The release of a few Goldfish into Teller Lake, Colorado, USA, made the news as the population of the pest fish multiplied into the thousands. Draining the lake was being considered when pelicans arrived and took care of the problem. A survey of the fish populations in the lake after the pelicans had been busy revealed a mix of species that was typical of what it had been prior to the arrival of the goldfish. It's thought that the bright orange colour of the goldfish was what both attracted the birds and enabled them to capture so many of them so effectively. More information: <http://news.discovery.com/animals/that-goldfish-problem-pelicans-were-on-it-150430.htm>



A well-fed pelican signalled the end of a pest fish invasion problem. Photo: <http://news.discovery.com>

## Shade reduces predation

Shade is generally thought to benefit fish because of the regulation of water temperature, but researchers have found that providing adequate shade and cover in small streams has an additional benefit - it appears to reduce predation. Using Coastal Cutthroat Trout, the researchers found that individual fish sought cover at least as large as their own bodies and the addition of in-stream cover reduced the rate of predation from just one species of bird, the kingfisher, by as much as 12 percent. Trout also had better survival in areas with greater shade. It appears the shade and cover made it more difficult for kingfishers, the number one predator of small trout, to spot and catch fish. The researchers note that eighty percent of the streams in the USA are the same size or smaller than those studied so adding wood or rocks to streams for cover, especially during late summer months when water levels are naturally low and deep pools are hard to find, may help protect Cutthroat Trout and other fish at a low cost. A summary can be read [here](#) or for more on this research by Penaluna and others in *Ecology of Freshwater Fish*: <http://dx.doi.org/10.1111/eff.12221>.

## Remarkable shark migrations

Tiger sharks were thought to be mainly a coastal species, but tracking research has discovered that these sharks made round-trip journeys of more than 7,500 kilometres every year. One travelled more than 44,000 kilometres. They travelled between two very different ecosystems: the coral reefs of the Caribbean and the open waters of the mid-North Atlantic, and returned to the same overwintering areas each year. The reason for the migration is not understood, although the researchers believe the presence of female Tiger Sharks in the Caribbean in the winter is likely to be a factor. Their travel north might be to avoid colder temperatures. All of the satellite tracking for Tiger Sharks in this study, as well as ongoing tracks for other species including Mako Sharks, Oceanic Whitetip Sharks and Marlins, can be found online at <http://www.ghritracking.org>. For more about this story: <http://www.sciencedaily.com/releases/2015/06/150609213349.htm>

## Salmon brought tears to their eyes

Salmon are swimming in the Owyhee River, Nevada, USA, for the first time since 1928, enabling the Shoshone Paiute tribe to hold a sacred “first salmon ceremony,” last celebrated 87 years ago. Several elders are old enough to have memories of salmon as a child and tell of Salmon so large they ‘would hang off the saddlehorn of a horse with its tail touching the ground.’ Development during the 20th century gradually closed the migration route for the Salmon that made the 900-mile journey from the Pacific, up the Columbia and Snake rivers and into the Owyhee. The last run was 1928, before Owyhee Dam construction closed off the river. Other dams were built and even though they were required to have fish passage, these systems failed. But the fish that were so welcomed by the Shoshone Paiute did not make it up into the Owyhee on their own – they were transported there and released. The Tribes Business Council is working to restore fish migration more permanently. More on this story: <http://www.idahostatesman.com/2015/06/04/3834587/salmon-swim-in-the-owyhee-river.html>



When the fish arrived, some of the elders had tears in their eyes. Elders spent the previous day teaching traditional fishing methods to two generations who had not had the opportunity to fish their tribal waters. Photo: Shoshone Paiute Tribal Business Council.

## Getting the most out of removing barriers

Removal of barriers to fish migration is a costly business so researchers based in the Great Lakes Basin, USA, set out to develop ways of maximising the benefits for fish per dollar spent. There are 7,000 dams and 230,000 road crossings disrupting fish passage throughout the Basin, an area that supports a recreational fishing industry worth US \$7 billion a year. The researchers have a model that can now be accessed via a free, online tool, called 'Fishwerks', to help select barrier removal projects that open more fish habitat at lower cost. For example, a coordinated \$70 million investment to remove 299 dams and 180 road crossings across the entire Great Lakes Basin could double the amount of habitat accessible to migratory fish. However, this doubling of habitat would cost would cost US\$690 million if funding was distributed equally across all tributaries. A summary about this work is available [here](#) or access the research report: [www.pnas.org/cgi/doi/10.1073/pnas.1423812112](http://www.pnas.org/cgi/doi/10.1073/pnas.1423812112)

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## RESOURCES

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### Kevin Clark: nature's gentleman

This short video tells the story of Kevin Clark who grew up on the Richmond River, northern NSW. Over his lifetime he has seen the long term effect of in-stream barriers on native fish. He has quietly chipped away in the background with DPI, Councils and his fishing club to help out and is now seeing some great changes to the local fish stocks. [https://www.youtube.com/watch?v=OSKmxq7j\\_z4&feature=youtu.be](https://www.youtube.com/watch?v=OSKmxq7j_z4&feature=youtu.be)

### SHELLSHOCKED: Saving Oysters to Save Ourselves

A film following the efforts to prevent the extinction of wild oyster reefs, with a focus on the work by scientists, government officials, artists and environmentalists to bring oysters back to the former oyster capital of the world - New York Harbor. <http://www.shellshockedmovie.com/about>

### Launch of the Australian Mangrove & Saltmarsh Network website

An informal network established in 2008 primarily to promote sustainable communication and collaboration amongst stakeholders, including postgraduate students. A further aim with this group has been to promote and support community mentoring and participation. <https://research.jcu.edu.au/tropwater/research-programs/australian-mangrove-and-saltmarsh-network>

### Performance of fish-friendly boat moorings

A pull test demonstration was undertaken at Lake Macquarie, NSW, to compare the performance of block and chain moorings with two types of environmentally friendly moorings: the Seagrass Friendly Mooring and the Eco Mooring. <https://www.youtube.com/watch?v=nHsKVm9UMxQ&feature=youtu.be>

### European Atlas of the Seas

The European Atlas of the Seas is available for anyone interested to learn more about Europe's seas and coasts, their environment, related human activities and European policies. It was developed to raise awareness of Europe's oceans and seas, and offers a diverse range of information. [http://ec.europa.eu/maritimeaffairs/atlas/index\\_en.htm](http://ec.europa.eu/maritimeaffairs/atlas/index_en.htm)

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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** use the [form](#). You can send in your habitat news by emailing the editor, Liz Baker ([newstreams@industry.nsw.gov.au](mailto:newstreams@industry.nsw.gov.au)). Back issues can be accessed from <http://www.fishhabitatnetwork.com.au/archive>.

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### 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](http://www.ansansw.com.au)

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

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

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

Fisheries Victoria [www.dpi.vic.gov.au/fisheries](http://www.dpi.vic.gov.au/fisheries)

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

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

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

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

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

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

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

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

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

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

Victorian Department of Environment and Primary Industries [www.depi.vic.gov.au](http://www.depi.vic.gov.au)

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

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

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