

# Newstreams

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

## AUSTRALIAN NEWS

### More fish-friendly infrastructure in place

Fish access to habitat continues to improve with works to improve fishways, culverts and causeways.

On the Little River, in the NSW Central West, the third barrier to be remediated opens up access to 90 kilometres of the river. This project is a partnership between NSW DPI, Cabonne Shire Council and Central West CMA. For more information contact [Sam Davis](#), NSW DPI, on 6881 1284 or see: [www.dpi.nsw.gov.au/aboutus/news/recent-news/fishing-and-aquaculture/passage-for-little-river-fish](http://www.dpi.nsw.gov.au/aboutus/news/recent-news/fishing-and-aquaculture/passage-for-little-river-fish)

Another troublesome causeway on Dungay Creek Road, near Kempsey on the NSW mid north coast, has also been replaced with culverts. The work was completed despite extended periods of wet weather, and improves both fish passage in the creek and local residents' passage over it. For more information contact Kempsey Shire Council on 0478 318 770 or see: [www.kempsey.nsw.gov.au/media-releases/2012/mr20120423.html](http://www.kempsey.nsw.gov.au/media-releases/2012/mr20120423.html)

It might not be often that boulders weighing up to 4 tonnes are associated with helping fish but that's what happening at the Sydney Beach weir fishway on the Ovens River at Wangaratta, Victoria. The boulders create resting pools and shelter spots for fish migrating upstream. The placement of large boulders means that instead of working against the current, the fish are able to stop and rest in pools within the channel and then continue on their journey upstream when they have more energy. For more information, contact Anthony Wilson, North East CMA, on 0428 297 880 or see:

[www.necma.vic.gov.au/NewsJobsTenders/MediaReleases/Documents/images/20120516FishLadder.pdf](http://www.necma.vic.gov.au/NewsJobsTenders/MediaReleases/Documents/images/20120516FishLadder.pdf)

As part of the approval to raise Yass dam, Yass Council agreed to upgrade four road crossings on the Yass River which had small pipes and were fish passage barriers. Three of these have now been completed and the design work for the fourth is complete. For more information, contact [Allan Lugg](#), NSW DPI or visit: [www.yassvalley.nsw.gov.au](http://www.yassvalley.nsw.gov.au)



One culvert might look the same as another to us, but 'thinking like a fish' puts these functional structures in a new light. The new culverts on the Dungay Creek crossing (above, photo: Kempsey Shire Council) and on the Yass River (below, photo: Yass Valley Council.)



### Fish Superhighways

State Water's *Fish Superhighways Program* has received an award at the 2012 International Water Association's Asia Pacific Regional Project Innovation Awards. *Fish Superhighways* is the largest native fish passage restoration program in Australia and is set to open up the equivalent distance of Sydney to Cairns through projects along NSW rivers. Construction of 12 fishways and the removal of six redundant weirs has already opened up 1,317 kilometres of waterway, with an additional 1,398 kilometres to be opened up through projects over the next two years. Working in conjunction with NSW DPI, fish passage priorities have been identified at some 300 State Water dams, weirs and culverts across NSW. For more information contact Matthew Gordos, NSW DPI, on 6626 1395 or see:

[www.statewater.com.au/About+us/News+and+events/Media+releases+2012/International+honour+award+for+Fish+Superhighways](http://www.statewater.com.au/About+us/News+and+events/Media+releases+2012/International+honour+award+for+Fish+Superhighways)

## Habitat and fish protected by weir

More often than not, weirs are targeted for removal or for fishways because they impede fish movement, but the Murray CMA had to do the opposite for fish in Coppabella Creek, a tributary of the Upper Murray. This creek was home to one of the few sites in the catchment of the Southern Pygmy Perch a threatened species. With advice from NSW DPI a 50 year old weir on the creek, damaged during the floods of 2010-11 was reinstated to remain an effective barrier to the movement of alien fish including Carp, Redfin and Gambusia. Fortunately the repairs were made before any alien fish made it upstream. For more information, contact [Trish Bowen](#), Murray CMA, on 02 6051 2203.



The reinstated weir was just what threatened species of fish upstream needed. Photo: Luke Pearce.

## Seeing the difference habitat rehabilitation makes

A project aimed at restoring habitat for the threatened Southern pygmy perch has found a new population of the species. Southern pygmy perch are a threatened species in NSW and now very rare with only three know population remaining within the NSW Murray Darling Basin. As part of the project monitoring sites were established to track any changes to the fish communities before during and after the rehabilitation works. One of the control sites in a creek that had previously never been sampled for fish before turned up a healthy population of Southern pygmy perch. The team from Holbrook Landcare was thrilled and the discovery was even more rewarding due to the fact that this population was thriving in a creek that the Landcare group had previously been involved in rehabilitating. For more information contact Kylie Durant, Holbrook Landcare Network on 02 6036 3181 or [Luke Pearce](#), NSW DPI.



Southern Pygmy Perch, enjoying the benefits of habitat rehabilitation work. Photo: NSW DPI.

## Don't mow the saltmarsh!

Eurobodalla Shire Council is working with residents living along the foreshore of Mummaga Lake at Dalmeny to minimise damage to saltmarsh. The Lake is a Recreational Fishing Haven and the saltmarsh is an important element of local fish habitat. Residents had been keeping the area neat by mowing it, but are now working with Council to create no-mow zones and replanting plants associated with saltmarsh along the foreshore. For more information, contact [Courtney Fink](#), Eurobodalla Shire Council.



Replacing mown saltmarsh with more fish-friendly approaches to managing the foreshore of Mummaga Lake. Photos: Trevor Daly

## Drought increases food competition between carp and the natives

Researchers looked at how the diet of European Carp and the native Carp Gudgeon changed as water levels changed in wetlands within the Murray-Darling Basin. They found that when the water level was low the amount of insects eaten by juvenile carp increased five-fold and the pest fish was eating much the same things as the native fish. To read more of this research by Mazumder and others in *Wetlands*:

<http://dx.doi.org/10.1007/s13157-011-0262-8>

## Carp relief for the Namoi

Fishers at the first Walgett Community Carp Muster took over 300 carp from the Namoi River in a little over 6 hours – not bad work for a Saturday! The Carp Muster was one of several events held recently in Walgett that provided opportunities to learn about native fish. These included Waterwatch activities at the local school, when the children got to get their hands dirty and their feet wet down by the river. For more information, contact [Milly Hobson](#), NSW DPI, on 6763 1206.



The Walgett carp muster brought out fishers of all ages. Photo: Milly Hobson

## Native fish faced with red spot disease in the Murray-Darling

Epizootic ulcerative syndrome (EUS), also known as red spot disease, is a fish disease of international significance. In June 2010, several species of native fish, including Bony Herring, Golden Perch and Murray Cod, were found between Bourke and Brewarrina, NSW, with severe ulcers. Tests showed that the fish had been exposed to the pathogen that causes EUS. EUS is a very invasive disease and when it first occurs in an area many fish die within a very short time. Outbreaks of infectious diseases in fishes are closely linked to environmental conditions, particularly temperature and water quality. Temperature is a critical factor determining the severity of EUS outbreaks and most deaths occur when water temperatures are relatively low. This research suggests that high flows and low temperatures may have contributed to this outbreak. Read more about this research by Boys and others in *PLoS ONE*: <http://dx.doi.org/10.1371/journal.pone.0035568> [OPEN ACCESS]



Golden Perch showing the ulcers characteristic of red spot disease. More information about EUS is available from:

[www.dpi.nsw.gov.au/fisheries/pests-diseases/animal-health/wildfish-shellfish/#Diseases-in-Wild-Fish](http://www.dpi.nsw.gov.au/fisheries/pests-diseases/animal-health/wildfish-shellfish/#Diseases-in-Wild-Fish)

Photo: NSW DPI

## Listening in on snapper

Researchers have tagged over 100 snapper in Port Phillip Bay, Victoria, and are listening in to their movements around the Bay using a network of receivers. Information is pouring in about snapper behaviour, including their movement inside the bay, preferred habitats and their diet. Port Phillip Bay is a key spawning ground for these fish as well as providing critical nursery habitat for juveniles replenishing the whole fishery, according to the researchers from Fisheries Victoria. For more information:

[www.theage.com.au/environment/fisheries-scientists-snapper-happy-on-the-job-20120527-1zd5p.html#ixzz1wEfnlooX](http://www.theage.com.au/environment/fisheries-scientists-snapper-happy-on-the-job-20120527-1zd5p.html#ixzz1wEfnlooX)



The key players in the study are the snapper. The fish were anaesthetised, fitted with an acoustic tag in their stomach cavity during surgery on the boat, then released. Photo: Fisheries Victoria

## What drives blackwater events?

Blackwater events were seen across the Murray-Darling Basin after the widespread flooding of 2010-2011, with over 2000km of river channels affected. This situation provided researchers with an unusual opportunity to study what was driving the formation of blackwater in the Murray-Darling. Blackwater occurs when the breakdown of high levels of dissolved organic carbon (from floodplain vegetation, leaf litter and soil) in the water column depletes the oxygen available for fish and other aquatic organisms. This can cause fish kills. The researchers found that there were multiple factors contributing to both the development and the persistence of this blackwater event. After the decade-long drought the prolonged inundation of both forested and agricultural floodplains meant large amounts of carbon were dissolved into the floodwaters. In addition, altered flow patterns, due to a combination of climatic effects and river regulation also contributed to the high levels of dissolved carbon. Read more about this research by Whitworth and others in the *Journal of Hydrology*:

<http://dx.doi.org/10.1016/j.jhydrol.2012.04.057>

A summary of the blackwater event in the Murray, Murrumbidgee and Lower Darling River catchments in March 2012 is available from:

[www.dpi.nsw.gov.au/fisheries/habitat/threats/fish-kills/black-water-events-causing-fish-kills-in-the-murray-murrumbidgee-and-lower-darling-river-catchments-march-2012](http://www.dpi.nsw.gov.au/fisheries/habitat/threats/fish-kills/black-water-events-causing-fish-kills-in-the-murray-murrumbidgee-and-lower-darling-river-catchments-march-2012)

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## INTERNATIONAL NEWS

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### Habitat work: a 6 to 1 return on investment

In Muskegon, Michigan, USA, coastal habitat along the Muskegon Lake is being restored. At 10 sites, wetlands are being restored, debris removed and shoreline areas stabilized with native vegetation. These works will help Muskegon Lake, the Muskegon River and Lake Michigan recover from the degradation of wetlands and bring the fish back. As well as benefits for fish, a study by the Great Lakes Commission has found that the projects' US\$10 million investment will create \$66 million in economic benefits. Read more: <http://structurespot.com/habitat-education/habitat-restoration-in-michigan/>



As part of the project, 10,000 feet of hardened shoreline is being replaced with native vegetation. Photo: Structurespot.com.

### Habitat action needed to future-proof Pacific fisheries

Fish is a critical part of the diet of many peoples living on Pacific Island countries and fishing is important both culturally and economically. The availability of fish is threatened by the changing climate so the Secretariat of the Pacific Community has provided an overview of the issues and adaptations needed. These include increasing the amount of vegetation throughout catchments, prohibiting development that affects mangroves and inter-tidal areas, ensuring fish passage and ensuring water can move into low level areas so that habitat can gradually extend landwards as it is drowned out. Read more: [www.spc.int/DigitalLibrary/Doc/FAME/Brochures/Anon\\_12\\_PolicyBrief16\\_ClimateCoastal.pdf](http://www.spc.int/DigitalLibrary/Doc/FAME/Brochures/Anon_12_PolicyBrief16_ClimateCoastal.pdf)



The future availability of fish for Pacific communities depends on helping habitats adapt to sea level rise and changing climate patterns. Photo: Jack Fields/Corbis.

### Looking after both fish and flooding

A project in Kent, Washington State, USA, is restoring salmon habitat while also reducing the city's flood risk. The construction of a side channel on the Green River will create summer rearing habitat and a high flow refuge for several endangered salmon species. For more than 100 years the Green-Duwamish River system had been altered in a way that degraded its ability to function as clean, productive habitat for fish. This project is one of 23 complementary projects underway that will restore salmon habitat, reduce flood risk and improve water quality. For more information: [www.kentreporter.com/news/155447325.html](http://www.kentreporter.com/news/155447325.html)

### MoU gives fish habitat federal clout

In the USA, a Memorandum of Understanding is now in place to promote collaborative, science-based conservation of the nation's waterways and fisheries through the National Fish Habitat Partnership. Many federal agencies are involved in the Partnership, with key roles for the US Fish and Wildlife Service, US Geological Survey, US Forest Service and the National Marine Fisheries Service. The mission of the National Fish Habitat Partnership is to protect, restore and enhance the nation's fish and aquatic communities through regional grass-roots networks that foster fish habitat conservation and improve the quality of life for the American people. For more information: [http://fishhabitat.org/index.php?option=com\\_content&view=article&id=437:secretaries-salazar-vilsack-and-bryson-commit-to-agreement-on-nfhp-&catid=36:news&Itemid=50](http://fishhabitat.org/index.php?option=com_content&view=article&id=437:secretaries-salazar-vilsack-and-bryson-commit-to-agreement-on-nfhp-&catid=36:news&Itemid=50)

## Bringing the bay back to life – from the bottom up

McKay Bay, Tampa, Florida, USA, is under renovation. When this US\$5.5million project is complete, the Bay will again provide suitable habitat for fish instead of being a drab reminder of reckless 1960's development. The shoreline is being re-contoured and planted with native grasses and mangroves and thousands of invasive trees, such as Brazilian pepper, have been removed. A 56-acre dredge hole at the Bay's centre is being filled in so that it will converge again with nearby mud flats. Filling this hole is a substantial undertaking, requiring 326,000 cubic yards of sand, but it will re-create a healthy community on the bottom of the bay, which provides food for fish and shrimp. For more information:

[www2.tbo.com/news/community-news/2012/apr/29/memeto1-fixes-bring-mckay-bay-to-life-ar-397845/?utm](http://www2.tbo.com/news/community-news/2012/apr/29/memeto1-fixes-bring-mckay-bay-to-life-ar-397845/?utm)

## Fish shown the ropes over barriers

Some native New Zealand fish are known to be able to climb, including eels and the banded kokopu, a galaxiad. Researchers used laboratory trials to investigate whether mussel spat ropes could be used by young-of-the-year banded kokopu to negotiate a 0.5-m perched culvert and found that, on average, more than 85% of the fish were able to climb vertical 0.5-m ropes within 3 hours! Given this success, ropes were installed on culverts. The researchers found a significant increase in fish abundance was recorded following the retrofitting of ropes. Read more of this research by David and Hammer in *Marine and Freshwater Research*:

<http://dx.doi.org/10.1071/MF11245>



Left: upstream rope installation using metal pickets driven into streambed (looking downstream)

Centre: completed upstream installation with knotted ropes laid in culvert base

Right: completed downstream attachment of ropes to custom-made gabion basket and filled with local substrates (looking upstream).

Photos sourced from David and Hammer 2012.

## More structure means an easier life for trout

Large woody debris ('snags') are important structures for fish but there has not been a lot of research into how wood affects fish behaviour. Researchers in the USA looked at how the behaviour of brown trout changed in the presence of wood. They found that the presence of large wood significantly reduced the overall activity of the fish. The fish also caught more food relative to the time they were active so they had a net energy gain. For more on this research by Gustafsson and others in *Freshwater Biology*:

<http://dx.doi.org/10.1111/j.1365-2427.2012.02767.x>

## Even more reasons why seagrass is good

Seagrass meadows are known to be amongst the most productive ecosystems on Earth and highly significant fish habitat. It appears that seagrass is also very good at storing carbon, better even than forests! A review has found that coastal seagrass beds store up to 83,000 metric tons of carbon per square kilometre, mostly in the soils beneath them. In addition, although seagrass meadows occupy less than 0.2 percent of the world's oceans, it is estimated that they are responsible for more than 10 percent of all carbon buried annually in the sea. Read more of this work by Fourqurean and others in *Nature Geoscience*:

<http://dx.doi.org/10.1038/ngeo1477>

## A year in the life of juvenile Atlantic Bluefin Tuna

By tracking tagged fish, researchers have gained an understanding of the early dispersal routes, horizontal and vertical movements and habitat utilisation of juvenile Atlantic Bluefin Tuna. These fish are the basis of significant recreational and commercial fisheries however where they went and how they used different water depths in the first few years of life was not known. The research showed how the fish use different water depths depending on the season and range far more widely during the winter months. For more of this research by Galuardi and Lutcavage in *PLoS One*:

<http://dx.doi.org/10.1371/journal.pone.0037829>

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## HABITAT DATES

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June 13 - 15	<b>Healthy Waterways Alliance Symposium (Reef Catchments), CQU, Mackay, Qld</b> <a href="http://gallery.mailchimp.com/79c8028283c7ea02239433bdf/files/HWAAwardsFlyer_v1print.pdf">http://gallery.mailchimp.com/79c8028283c7ea02239433bdf/files/HWAAwardsFlyer_v1print.pdf</a>
June 19 – 21`	<b>Carp Management in Australia Forum, Melbourne</b> <a href="http://carpforum.eventbrite.com/?ebtv=C">http://carpforum.eventbrite.com/?ebtv=C</a>
June 23	<b>Fishers for Fish Habitat mini-forum, Maitland.</b> <a href="http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012">www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012</a>
June 24	<b>Fishers for Fish Habitat mini-forum, Hawkesbury Environmental Network Community Day, North Richmond Community Centre.</b> <a href="http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012">www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012</a>
July 12 - 15	<b>Fishers for Fish Habitat mini forums at Sydney, Merimbula and Nowra</b> <a href="http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012">www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012</a>
August 4	<b>Fishers for Fish Habitat mini forum, Port Macquarie</b> <a href="http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012">www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012</a>
August 5	<b>Fishers for Fish Habitat mini forum, Yamba</b> <a href="http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012">www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers/fishers-for-fish-habitat-forums-2012</a>
August 17 - 19	<b>National Recreational Fishing Conference, Gold Coast</b> <a href="http://www.recfishing2012.com.au">www.recfishing2012.com.au</a>
September 3 – 5	<b>National Landcare Conference 2012, Sydney</b> <a href="http://www.daff.gov.au/natural-resources/landcare/national_landcare_conference_-_sydney">www.daff.gov.au/natural-resources/landcare/national_landcare_conference_-_sydney</a>
October 8 - 11	<b>15th International Riversymposium, Melbourne</b> <a href="http://www.riverfoundation.org.au/index.php">www.riverfoundation.org.au/index.php</a>
October 16 - 17	<b>Native Fish Forum, Dubbo</b> For information, contact <a href="mailto:Tony.Townsend@dpi.nsw.gov.au">Tony Townsend</a> on 02 6763 1440
October 19 - 26	<b>Native Fish Awareness Week, Murray-Darling Basin Authority</b> Basin-wide activities celebrating native fish and fish habitat rehabilitation.
October 20	<b>Narrandera Fish Festival</b> Free event, with a focus on native fish and celebrating the 50th Anniversary of the Narrandera Fisheries Centre. <a href="http://www.trade.nsw.gov.au/events/fisheries/fish-festival">www.trade.nsw.gov.au/events/fisheries/fish-festival</a>
October 20-24	<b>6th National Conference on Coastal and Estuarine Habitat Restoration, Tampa, Florida, USA</b> <a href="http://www.estuaries.org/conference/">www.estuaries.org/conference/</a>
November 28 – 30	<b>The inaugural conference of the Society for Ecological Restoration Australasia, Perth</b> <a href="http://www.seraustralasia.com/pages/conference.html">www.seraustralasia.com/pages/conference.html</a>

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## ENGAGEMENT AND FUNDING OPPORTUNITIES

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### Are you a Habitat Hero?

If you or your club is involved in making your local fish habitat more healthy then consider nominating for the inaugural National Fish Habitat Hero Award. The winner will be announced at the National Recreational Fishing Conference dinner on 18 August. Nominations close **28 July**. For more information and nomination forms, contact Liz Baker on 0429 300 486 or go to: [www.fishhabitatnetwork.com.au](http://www.fishhabitatnetwork.com.au)

### CMA funding opportunities - NSW

Various CMAs in NSW have funding available for natural resource management works. Closing dates vary. To find your regional CMA go to: [www.cma.nsw.gov.au/](http://www.cma.nsw.gov.au/)

### Community NRM projects – Western Australia

The WA State Natural Resource Management Program's Community Grants are now open. Applications close **29 June**. For more information: [www.nrm.wa.gov.au/grants/state-nrm-program.aspx](http://www.nrm.wa.gov.au/grants/state-nrm-program.aspx)

### 2 million trees project - Victoria

The 2 Million Trees Project is supporting tree planting projects run by councils, schools, community and Landcare groups, among others. One of its targets is to have half a million trees planted along waterways in regional Victoria. Applications close 2pm, **5 July**. For more information and application forms: [www.dse.vic.gov.au/conservation-and-environment/biodiversity/2-million-trees](http://www.dse.vic.gov.au/conservation-and-environment/biodiversity/2-million-trees)

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## HABITAT RESOURCES

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### Living and working on riverbanks

New advisory brochures will help people who own riverbank properties, manage livestock accessing waterways or who undertake works on riverbanks to comply with the NSW *Fisheries Management Act 1994*. There are coastal and inland versions available.

[www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/living-and-working-on-a-riverbank](http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/living-and-working-on-a-riverbank)

### Fish poster

The Murray-Darling Basin Authority has a new poster featuring some of the native fish found within the Basin. Available for download (PDF) or in hardcopy from:

[www.mdba.gov.au/services/publications/more-information?publicationid=130](http://www.mdba.gov.au/services/publications/more-information?publicationid=130)



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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** or send in your habitat news, email the editor, Liz Baker ([newstreams@industry.nsw.gov.au](mailto:newstreams@industry.nsw.gov.au)). Back issues can be accessed from [www.dpi.nsw.gov.au/aboutus/resources/periodicals/newsletters/newstreams](http://www.dpi.nsw.gov.au/aboutus/resources/periodicals/newsletters/newstreams).

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*Newstreams* is published electronically every two months by the Conservation Action Unit within NSW DPI (Fisheries NSW) on behalf of the Fish Habitat Network a partnership of organisations working on fish habitat and a network of fishers engaged in fish habitat issues.

### FHN Partners

- Fisheries NSW [www.dpi.nsw.gov.au/fisheries/habitat](http://www.dpi.nsw.gov.au/fisheries/habitat)
- NSW Council of Freshwater Anglers [www.freshwateranglers.com.au](http://www.freshwateranglers.com.au)
- Recreational Fishing Alliance of NSW [www.rfansw.com.au](http://www.rfansw.com.au)
- Australian National Sportfishing Association [www.ansansw.com.au](http://www.ansansw.com.au)
- ECOfishers [www.ecofishers.com](http://www.ecofishers.com)
- NSW Fishing Clubs Association [www.nswfca.com.au](http://www.nswfca.com.au)
- SUNFISH [www.sunfishqld.com.au](http://www.sunfishqld.com.au)
- VRFish [www.vrfish.com.au](http://www.vrfish.com.au)
- Fisheries Victoria [www.dpi.vic.gov.au/fisheries](http://www.dpi.vic.gov.au/fisheries)
- VIC Department of Sustainability and Environment [www.dse.gov.au](http://www.dse.gov.au)
- Australian Fishing Trades Association <http://afta.net.au>

Website [www.fishhabitatnetwork.com.au](http://www.fishhabitatnetwork.com.au)



Department of  
Primary Industries

