

Newstreams

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

This issue of Newstreams is brought to you in partnership by the [Fish Habitat Network](#), with funds from the NSW Recreational Fishing Trust, and [OzFish Unlimited](#), with funding from the Fisheries Research and Development Corporation, as part of a project to build the capacity of recreational fishers in Australia to address fish habitat issues.

AUSTRALIAN NEWS

Soft habitat leads to John Holliday Award for researcher

Joshua van Lier's research into the fish communities supported by 'soft habitat microstructure' habitats, such as sponges, soft corals and macroalgae, led to him being awarded the [John Holliday Student Conservation Award](#) in late 2017. Joshua discovered sponge and macroalgae habitats support their own unique fish communities, while soft coral supports what appears to be a subset of sponge-associated fish community. Canopy height and percentage cover of the local canopy-forming organism were the best predictors of fish diversity across all habitats. The research suggests that a survey of canopy height is a potential quick and cost-effective surrogate monitoring method for evaluating fish diversity and determining the status of fish habitats. Read more: <https://www.dpi.nsw.gov.au/about-us/media-centre/releases/2017/winner-of-2017-john-holliday-student-conservation-award-announced> or read the article by Josue van Lier and others in *Marine Biology*: <https://link.springer.com/article/10.1007/s00227-017-3068-2>.



Soft corals provide habitat for a distinct fish community, including Pearly Monocle Bream. Photo: Paul Asman and Jill Lenoble, Shared under Creative Commons, www.flickr.com.

Think you understand environmental flows?

Water and fish go together, but in recent years we have gained a better understanding of how fish numbers are linked to the way water flows throughout river systems. However, understanding environmental flows and how native fish interact with them can be confusing, with different fish species responding in different ways at different times. Keen anglers from across the NSW Basin have worked with various agencies to develop five easy-to-read infographics (pictures which aim to present information quickly and clearly) which answer some common questions posed by fishers and lovers of our river systems. These infographics are based on best available science on fish and flows across the Murray-Darling Basin. To find out more and to access the documents:

<https://www.dpi.nsw.gov.au/fishing/habitat/rehabilitating/fish-and-flows>.



One of the infographics addresses the question "How do flows in my river help fish?"; another focuses on "Do the fish I like to catch really need different types of flow?". Images: NSW DPI.



More snags mean a merrier Merri

After waiting for months for favourable weather, 7 'fish habitat packs' were installed in the Merri River, near Warrnambool, Victoria. These packs contained large redgum root balls, rocks, lay down snags and fish hotels. Previously devoid of any in-stream structure, the new installations in the Merri River are now providing important habitat for local fish species, including Estuary Perch, Bream, Mulloway and Tupong. More: <https://ozfish.org.au/resnagging-the-merri-river-part-2/>.



Rocks and root balls ready to go, supervised by Percy the Perch. Photo: OzFish.

Oyster sausages and potato starch: the recipe for regenerating reefs

Along the Queensland coast at Noosa, Bribie Island and Pumicestone Passage, oysters are being encouraged to return to once-prolific reef areas. Even 100 years ago, large hauls of oysters were common from these areas, but from the 1950s, Oysters began to disappear and the fish also began to decline. The restoration efforts are using several techniques, including 'oyster sausages', large bags of coconut mesh filled with oyster shells; collections of oyster shells from local restaurants; and a complex three-dimensional plastic mesh made from biodegradable potato starch. The mesh provides stability, prevents predators from eating the oysters and is designed to break down over five years as the oysters grow and eventually provide their own reef structure. More: <http://www.abc.net.au/news/2018-01-13/artificial-oyster-reefs-bringing-qld-waterways-back-to-life/9323176>.



An 'oyster sausage', with some oysters attached to start the regeneration of the reef. Photo: Ben Gilby.

Fish responding to flows throughout Victoria

In a specific example, fish in Mount William Creek, in the Wimmera region of Victoria, are responding to environmental flows from Lake Lonsdale. Many people remember catching large numbers of fish in this creek in the past but due to habitat loss, introduced species and droughts their numbers have declined drastically. The flows will help keep refuge pools topped up and preserve habitat and water quality for the native fish, including River Blackfish. More: <http://wcma.vic.gov.au/news/news-detail/2018/01/30/flows-target-fragile-native-fish-in-mt-william-creek>.

To read more about the monitoring of the effects of flows on fish in Victoria, see https://www.ari.vic.gov.au/_data/assets/pdf_file/0020/90344/VEFMAP-Stage-6-2017-Project-Update-Northern-Rivers-Fish.pdf for the northern areas of the State and https://www.ari.vic.gov.au/_data/assets/pdf_file/0021/90345/VEFMAP-Stage-6-2017-Project-Update-Southern-Rivers-Fish.pdf for the south.

A report card on the impacts of environmental water on fish in Victorian area of the Murray-Darling Basin (go to page 6 here: https://www.water.vic.gov.au/_data/assets/pdf_file/0016/91420/DEL1-Basin-Plan-Report-Card_8.0.pdf) highlights increases in the abundance of large-bodied native fish, including Murray Cod, Golden Perch, Silver Perch, Trout Cod and Catfish in all systems monitored.

Increased populations of native fish are being reported across Victoria, thought to be a result of improved water management and the efforts of anglers to improve habitat. Also, fewer adult Carp numbers are being found in some rivers, with a 40 per cent reduction in numbers in the Murray River between Yarrowonga and Tocumwal compared to 1999. More: <https://www.weeklytimesnow.com.au/news/national/native-fish-populations-on-the-rise-as-species-come-back-from-brink/news-story/4c8adff29515450c4403f77a45f8b907?nk=604eb505023339f372dfb548daf4726f-1518481083> .

The fish are biting ...

Mary River Cod are known for being fierce in defence of their territory, and this doesn't change when eggs are being taken for a good cause. Wild population numbers of this species are very low due to loss of habitat and overfishing, however conservation re-stocking efforts are underway. One of the challenges involved is collecting the eggs from the breeder ponds. The eggs are laid on fly screens in pipes in a pond, and to get the eggs out someone has to dive down and put their head up a pipe and have a look. The male, doing his job, will come out and bite legs, snorkels and face masks in defence. More about this work: <http://www.abc.net.au/news/rural/2018-01-29/mary-river-cod-endangered-hatchery-species-survival/9369276>.

Golden Perch using river connections

Golden Perch and Silver Perch were two of the native fish species that were able to move between the Macquarie and Barwon Rivers, NSW, because these rivers were connected by environmental flows in one timed to take advantage of a flow pulse in the other. Over 27,500 ML of environmental water was delivered to the lower Macquarie River, via the Macquarie Marshes, to connect it and the Barwon River. This flow was designed to help native fish move between the two systems and, taking advantage of a Golden Perch spawning event in the Barwon the previous Spring, provide opportunities for juvenile Golden Perch, Spangled Perch and Silver Perch to migrate into the Macquarie catchment. To read a summary and access the full report: <http://www.environment.gov.au/water/cewo/publications/making-the-connection>.

An eye on pest fish in Queensland

At the onset of the northern Wet, the pest fish Spotted Tilapia were found in the Walsh River, near Chillagoe, and near the Bruce Weir, Dimbulah. Field surveillance focused on the Mitchell and Walsh Rivers, Emu Creek, Mareeba Wetlands and the Mareeba-Dimbulah Irrigation Scheme. Tilapia are one of the greatest threats to Queensland's native aquatic biodiversity and if established pose a significant threat to the ecosystem and the commercial and recreational fisheries in the Gulf of Carpentaria. More: <https://www.daf.qld.gov.au/about-us/news-and-updates/biosecurity/news/help-stop-the-spread-of-spotted-tilapia> . Better news was the failure of sampling to find any trace of Peacock Bass in the Pioneer River, near Mackay, after 4 pairs of these highly invasive species were reportedly released into the river (see: <https://www.4mk.com.au/dave-perkins/98660-in-2-years-this-fish-destroyed-95-of-native-fish-density-in-brazil-s-parana-river-some-idiot-has-put-it-in-the-pioneer-river>). Using electrofishing and netting, nearly 5,000 native fish from over 20 species were found, including Barramundi, Sooty Grunter, Sleepy Cod, Mangrove Jack and Jungle Perch, but no Peacock Bass. More: <https://www.daf.qld.gov.au/about-us/news-and-updates/fisheries/news/no-peacock-bass-found-in-pioneer-river-following-sampling>.

More habitat works for the Macquarie

The weirs in Bathurst, central NSW, have been opened up to allow native fish to move more freely in the Macquarie River. The existing rocks were replaced in different positions to enhance fish habitat and increase fish passage, while acting as a scouring device during high flows to increase pool depth. The work is part of ongoing projects to bring native fish back in the Macquarie River. More: <http://www.fishingworld.com.au/news/macquarie-river-rehabilitation-works-commence#hCTFtL7KIXicoObA.99>.

Assessing the health of a dry river

Dry riverbeds are often the 'typical' state of many intermittent rivers and streams. The health of waterways usually is assessed using aquatic indicators, such as fish, making it impossible for assess the health of a river during its dry phase. Researchers trialled the use of terrestrial invertebrates as indicators of dry riverbed health in four dryland catchments in Queensland, namely the Bulloo, Paroo, Warrego and Nebine. Livestock and other animals such as feral pigs are significant stressors on these ecosystems and impact dry riverbeds by compacting, rooting and pugging the river bed. Terrestrial invertebrate communities were found to respond negatively and significantly to a gradient of disturbance, as so could be used as indicators of dry river health. Read more of this work by Steward and others in *Ecological Indicators*: <https://doi.org/10.1016/j.ecolind.2017.10.053>.



A dry Warrego River: being dry does not mean health status can't be better understood. Photo: Carrie Lock. Source: ABC Open.

Saltmarsh supports fisheries productivity

Researchers have found that saltmarsh habitat plays a large and significant role in contributing to fisheries productivity in the Hunter and Clarence River estuaries, NSW. Saltmarsh made the greatest contribution to the diet of fish and prawns when the researchers examined where commercially important species were getting their food from. In the Clarence estuary, seagrass also appeared to be important for prawns. Mangroves, however, were far less important. Read more of this work by Raoult and others in *Hydrobiologia*: <https://link.springer.com/article/10.1007/s10750-017-3490-y>.

Snapper spawning, thanks to fishers

Thanks to the actions of recreational fishers 17 years ago, Pink Snapper are once again forming large spawning aggregations, seen as a spiralling vortex on the surface. Cockburn and Warnbro Sounds, off the southern coast of Western Australia, are the largest and most important spawning grounds for Pink Snapper in the entire West Coast bioregion. These are relatively calm and accessible locations close to the metropolitan area. The closure of these areas to fishing for the spawning period was driven by recreational fishers to ensure long-term protection for this highly-valued species. More: <https://recfishwest.org.au/news/conservation-leads-to-the-return-of-a-natural-phenomenon/>.



Pink Snapper are now amassing in numbers not seen for decades, so many local fishers are witnessing the spawning spectacle for the first time in their lives. Photo: RecfishWest.

Marine-based citizen science ticks all the boxes

'Redmap' stands for 'Range Extension Database and Mapping project', and involves people sharing sightings of marine species that are 'uncommon' to their local seas. An evaluation of Redmap as an example of marine-based citizen science has found that it is enabling people to contribute and work together towards a common purpose. It also sets individual observations in the context of broader data, which contributes to the learning participants experience about the marine environment. The review concludes that the Redmap program has overcome many of the historical challenges of conducting marine citizen science programs. Read more of this work by Nursey-Bray and others in *Ocean & Coastal Management*: <https://doi.org/10.1016/j.ocecoaman.2017.10.031> [Open access].

Fishways pass inspection

Several fishways constructed in south-east Queensland in recent times were included in a tour of fish-friendly infrastructure for researchers, biologists, planners, engineers and catchment and fisheries managers. One of the sites visited was at Slacks Creek, Logan. Slacks Creek is surrounded by urban and industrial landuse, creating a catchment with impermeable surfaces, high runoff rates and occasional flooding. Fish passage was restricted by a 1.8m high barrier, which included a 1.3m drop on the downstream side of 50m long culverts, through which the water was both shallow and fast. Two fishways were needed to restore fish passage: one a rock ramp and the other a horizontal culvert baffle. Five days of pre-fishway monitoring revealed only 18 fish were able to ascend the barrier, and most of these were fish that can climb wet surfaces. Post-construction monitoring showed a significant improvement, with 6546 fish successfully ascending the fishway in just under five days, including over 1200 juvenile Sea Mullet. More: <http://catchmentsolutions.com.au/projects/slacks-creek-rock-ramp-and-horizontal-culvert-baffle-fishway/>.



As well as the Slacks Creek site (pictured), the tour also inspected Berry's Weir fishway, Bremer River, Ipswich; Hilliards Creek Fishway, Redlands; South Pine River Fishway, Brendale; and a problematic site on Moggill Creek. Photo: Catchment Solutions.

The relationship between hydrology and freshwater biodiversity

Changes in hydrology - the movement, distribution, and quality of water – are often seen as the cause of changes in freshwater biodiversity, however researchers have been looking at whether there are more subtle patterns involved relating to spatial and functional relationships. By reviewing other studies, it appears that while hydrological connectivity influences local and landscape biodiversity, responses vary depending on spatial scale. Biodiversity at local scales is generally positively associated with increasing connectivity. At landscape-scale, fragmentation and the history of disturbance influence biodiversity. Read more of this synthesis by Rolls and others in *Biological Reviews*: <https://doi.org/10.1111/brv.12381>.

INTERNATIONAL NEWS

Next makeover for a 1000 year old weir a win for fish and anglers

A stoush between the UK's Environment Agency and anglers over the removal of Powick Weir on the River Teme, Worcester, appears to be resolved with the best interests of the fish and the fishers being served. The weir will be lowered rather than completely removed, the new river bed stabilised using locally sourced rock and a narrow rocky channel for fish passage at low flows constructed. This new arrangement is in fact a return of an old one. There has been a mill taking water from the Teme at Powick since the 11th century. In Victorian times the mill was converted into the UK's first ever Hydro Electricity station and the weir included a large sluice gate. However, by the 1950s the Hydro was no longer in use and by the 1980s the sluice was welded open, creating a central channel that was always available for fish passage upstream even in times of low flow. More: <https://linesonthewater.anglingtrust.net/2017/11/13/good-news-for-anglers-barbel-and-shad/>.



Modification of the weir will improve passage to upstream spawning grounds for endangered Twaite Shad (pictured), as well as for the anglers' favourite, Barbel. Photo: Angling Trust.

Fish-friendly flood barrier

Puget Sound Salmon got a boost from a redesigned levee on the White River, Washington State, USA. Expertise in habitat restoration has resulted in improved resilience to flooding along the unpredictable river, keeping neighbourhoods and businesses happy, and restored much-needed salmon habitat. The old White River levee, built in 1914, ran along the narrow channel of the river, cutting off the floodplain. With the redesign, young fish gained an additional 121 acres off-channel habitat, more than a mile of natural shoreline, and thousands of sheltered places to eat, rest and grow. Eighteen acres replanted with native flora reinforces a protective riparian border. In its first test, a sudden storm raised river levels and the old levee breached as planned, spreading excess water over reconnected lowlands without flooding any nearby property. More:

<https://www.fisheries.noaa.gov/feature-story/flood-barrier-designed-fish-friendly-features>.



Using 'nature-based infrastructure', such as log-jams, the project engineers are able to reduce flooding and benefit salmon. Photo: NOAA.

Created wetlands supporting better habitat but not necessarily more fish

In the USA's Mississippi River Basin wetland conservation is being used as a way to reduce environmental impacts from agricultural activities. Researchers looked at the differences between streams draining areas that were mostly cropland and those draining created wetlands. They found that total habitat measures and some water quality conditions were generally better in wetland streams. However, fish species diversity, species evenness, and species richness, were not significantly greater in wetland streams. It appears the conservation wetlands in the Lower Mississippi River Basin have significantly improved stream habitat and moderately improved water quality, but not had a significant effect on the fish community. More on this work by Shrestha and others in *Ecological Engineering*:

<https://doi.org/10.1016/j.ecoleng.2017.06.054>.

80 years of habitat change reflected in fish populations

Researchers studied the change in habitat in the lower Lima estuary, north-west Portugal, to better understand how the degree and rate of change impacts fish communities. They compared the habitat types and their extent as they were in 1933 against what was present in 2013. The lower estuary was highly affected by urbanisation and development, including a port expansion that moved its boundary seaward, resulting in an increase in total area. The estuary lost most of its sandy and saltmarsh intertidal habitats, which were replaced by deeper subtidal ones. The habitats best for fish, namely spawning, nursery, feeding and refuge areas and migratory routes, decreased, making the estuary less attractive for fish and less able to support fish populations. Read more about this study by Amorim and others in *Estuarine, Coastal and Shelf Science*: <https://doi.org/10.1016/j.ecss.2017.08.043>.

Noisy seagrass, spawning Seatrout and black mayonnaise

The throaty gulping of a Redfish, a clicking Saltwater Cattfish, and a sound like a horse walking quickly down a road that signals a male Spotted Seatrout during spawning. These are some of the sounds within the Florida Everglades, in the southern USA, that point to healthy seagrass beds. Using hydrophones, researchers can hear the healthy seagrass beds, and how the fish are affected by changes in salinity during spawning. For instance, when water is discharged from Lake Okeechobee, on the St. Lucie River, a major spawning area just gets very quiet. Discharges of nutrient-saturated lake water have caused extensive blooms of blue-green algae, killing fish and destroying the seagrass beds that are the basis of the fishery. This was once the most diverse fishery in the U.S.A, where more than 800 species of fish were once found within 10 miles of the St. Lucie Inlet. In recent years an estimated 47,000 acres of seagrass have disappeared owing to discharges of black nutrient-laden water from Lake Okeechobee, nutrients from urban sewage and stormwater runoff, and the smothering algae blooms these pollutants cause, known locally 'black mayonnaise'. While there appears to be widespread understanding and agreement that re-connection and restoration of flows will help, there does not yet seem to be a way forward for the Everglades. To read more on this story:

<https://www.fieldandstream.com/catastrophe-in-everglades-and-how-to-fix-it#page-11> .



Water discharged from Lake Okeechobee overwhelming the St. Lucie River. Photo: Hal Herring.

Crowfoot good news for juvenile fish

The high biodiversity supported by chalk streams is thought to be due to the presence of the aquatic plant known as Water Crowfoot. Researchers studying the River Frome, Dorset, UK, have found a significant, positive association between increasing cover of Water Crowfoot and an increase in the numbers of juvenile Salmon. The plant alters flow dynamics within the river by greatly reduces water velocity within and immediately downstream of the plant stands, whilst increasing velocity elsewhere by directing water around it. This results in an increase of fine sediments being deposited downstream. Conversely, increased flow elsewhere keeps gravels free from fine silts. The creation of more complex habitats within the river supports invertebrates that provide diverse food sources, such as black fly larvae and dragonfly larvae, juvenile Salmonid. Read more on this work by Marsh: <http://www.wildtrout.org/wttblog/communities-created-crowfoot>.



The Water Crowfoot cover in this chalk stream points to healthy and productive habitat for juvenile Salmon. Photo: Bill Beaumont.

An expensive spill

The contractor building the new Aberdeen bypass has been issued with a £280,000 (nearly A\$500,000) penalty for polluting two of Scotland's most important Salmon rivers. The contractors were responsible for 47 silt pollution incidents into about 17 watercourses including the River Don and the River Dee. Both of these rivers and their tributaries are significant for Salmon and Freshwater Pearl Mussels, and habitat and other conservation projects are ongoing to support these species. More: <http://www.bbc.com/news/uk-scotland-north-east-orkney-shetland-42412425> .

A family, a ranch and a river

As with many stories, it often takes a crisis to bring things that matter into focus. This is a story about a farming family who came to recognise that their livelihood and wellbeing was inherently linked with the health of the river. Severe drought, ill health and family stress brought the bigger picture into focus, while neighbours, like-minded people with river restoration expertise, and partnerships with supportive organisations made 'could do' possible. The actions of restoring Trout habitat in the headwaters of the Colorado River, Colorado, USA, lead to a realisation that sustaining their ranch and their family depended heavily on their stewardship of the river. More: <https://www.tu.org/blog-posts/voices-from-the-river-a-rivers-reckoning> (includes a video).



The rancher and his river. Photo: Trout Unlimited.

Connectivity the key to restored floodplain habitat

The Danube River, like most European rivers, has experienced centuries of changes in flow, sedimentation and channelization. To address the negative effects on aquatic habitats and biodiversity, a new 9 km long floodplain river was constructed to reconnect the Danube with its former floodplain, increase groundwater levels, provide additional freshwater habitat and restore the river's continuity by bypassing a hydropower plant. It was built with structural features such as boulders and dead wood, and in some sections, gravel was introduced. Besides newly built river sections, formerly temporary or very small Danube tributaries and disconnected oxbow lakes were incorporated into the waterway. Researchers studying how fish and other aquatic animals and plants colonised the new habitat found that the highest species diversity was near the contact zones of the floodplain channel to the main stem of the Danube, and in the transition zones of river sections and oxbow lakes. The river was quickly colonised by current-adapted species, while generalists favoured the oxbow lake and floodplain habitats. It appears that while re-establishment of maximum connectivity is important, so is a mosaic of distinct habitat types with different degrees of connectivity and disturbance. Read more of this research by Pander and others in *Biological Conservation*: <https://doi.org/10.1016/j.biocon.2017.10.024> [Open access].

5 adds up to 875 tonnes

Anglers in the UK are 'Taking Five', that is collecting five pieces of litter or doing five minutes picking up litter, to improve their fishing spots. As well as cleaning up after litter-bugs, the efforts by anglers help non-anglers feel a bit less ambivalent about the sport. It turns out that if every angler in the country picked up 5 pieces of litter once a month for a year when they were out fishing, the litter collected would be equal to the weight 70 double decker buses – that's about 875 tonnes. More: <https://linesonthewater.anglingtrust.net/2018/01/18/litter-anglers-can-make-a-huge-difference/>.

RESOURCES

More 'Catchment stories'

Catchment stories use map journals, integrated spatial information, photographs, animations and an informative narrative to demonstrate the features of catchments. These stories are now available for the Maroochy and Mooloolah, Mary and Baffle catchments:

<https://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/processes-systems/water/catchment-stories/>.

Freshwater Ecosystems in Protected Areas: Conservation and Management

A book focussing on better practices for conserving inland aquatic ecosystems in protected areas, including rivers, wetlands, peatlands, other freshwater and brackish ecosystems and estuaries: <https://www.routledge.com/Freshwater-Ecosystems-in-Protected-Areas-Conservation-and-Management/Finlayson-Arthington-Pittcock/p/book/9780415787147>.

US Forest Service's new National Fish and Aquatic Strategy

The US Forest Service has found that conserving healthy fish habitat and restoring aquatic resources is central to its mission. This strategy provides a vision of how the US Forest Service will contribute to fish and aquatic stewardship:

<https://www.fs.fed.us/naturalresources/fisheries/resources/risetothefuturestrategynov2017.pdf>.

How to sink a Christmas Tree

25 to 30 million Christmas trees are sold each year in the USA – that's a lot of potential fish habitat. A guide to repurposing the tree into something useful for fish (relevant to USA only):

<https://keepamericafishing.org/christmas-trees-for-improved-fish-habitat/?v=7516fd43adaa>.

ABOUT NEWSTREAMS

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Back issues can be accessed from <http://www.fishhabitatnetwork.com.au/archive>.

Newstreams is supported by funds from the NSW Recreational Fishing Trust, raised from the NSW Recreational Fishing Fee.

This issue of *Newstreams* is also co-funded by OzFish Unlimited with funds from the from the Fisheries Research and Development Corporation on behalf of the Australian Government.

Newstreams is published electronically every three months by the Aquatic Habitat Rehabilitation Unit within 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.



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Amateur Fishing Association of the Northern Territory (AFANT)
[http://afant.com.au/](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/](http://crfa.org.au)

Ecofishers www.ecofishers.com

Fisheries NSW www.dpi.nsw.gov.au/fisheries/habitat

Freshwater Fishing & Stocking Association of Queensland (FFSAQ)
www.ffaqs.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/](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 Dept of Environment, Land, Water and Planning (DELWP)
www.delwp.vic.gov.au

Victorian Fisheries Authority: <https://vfa.vic.gov.au>

VRFish www.vrfish.com.au

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