

# 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](#).

## AUSTRALIAN NEWS

### A natural wonder out of a natural disaster

The catastrophic floods in Queensland in early 2019 caused significant damage but they also had led to a watering event not seen for 45 years: the filling of Kati Thanda-Lake Eyre after only 2 months. The Lake Eyre Basin covers one-sixth of Australia and is fed by three systems: the Georgina and Diamantina rivers and Cooper Creek. Unlike the Murray-Darling, this system has no major irrigation, diversions or floodplain developments. Most of the flow spills across the floodplains, filling waterholes and wetlands, in the 1,000-kilometre journey to the lake. With the water comes an explosion of fish, as they take advantage of a small window of opportunity to breed. More: <https://www.abc.net.au/news/2019-05-09/lake-eyre-is-a-wild-river-system-left-to-run-its-course/11035506>.



The fish in the Diamantina River at Birdsville making their way upstream. Photo: Brendan Esposito.

### Fish thriving despite low flows

Fish in Victoria's Broken River appear to be in good condition despite low flows and hot, dry conditions in Summer and Autumn. Good numbers of Murray Cod, from 40mm to 970mm in size, as well as Silver Perch, and an increased number of juvenile Golden Perch and Murray River Rainbowfish were recorded. The Silver Perch moved into the Broken system as a result of co-ordinated deliveries of water for the environment along the Murray, Goulburn and Campaspe rivers in 2017. The fish are also benefitting from improved water quality from the decommissioning of Lake Mokoan which led to a significant reduction in murky, cloudy water and nutrients entering the river. More: [https://www.qbcma.vic.gov.au/news\\_events/silver-lining-for-broken-river.html](https://www.qbcma.vic.gov.au/news_events/silver-lining-for-broken-river.html).

### Gauging station fishways

Stream gauging stations are a water resource management tool that underpin, for example, the Bureau of Meteorology's flood warning system. However, like any in-stream structure they can act as a barrier to fish passage. Fishways are being constructed at Sandford (Glenelg River) and Homerton (Darlot Creek) gauging stations in south-west Victoria. These rocky fishways allow fish passage while maintaining accurate hydrological flow measurement. More: <https://www.water.vic.gov.au/media-releases/2019/two-new-fish-friendly-fish-ways-in-south-west-victoria>.

## Black Bream recruits in the Coorong

Fish monitoring in South Australia's Coorong has found good numbers of juvenile Black Bream, fish that were spawned and recruited in Summer 2017-18 as a result of water for the environment. While Black Bream are a hardy species common in most estuaries across southern Australia, the population is severely depleted in the Coorong. Fishers also reported that one-year old Black Bream are widespread throughout the North Lagoon of the Coorong. Over the past two years, flows over the barrages have managed to create a salt wedge - an area where freshwater sits above saltwater. The salt wedge keeps the Black Bream eggs and larvae buoyant.

More: [https://www.environment.sa.gov.au/news-hub/news/News\\_Events\\_Listing/190430-black-bream-coorong](https://www.environment.sa.gov.au/news-hub/news/News_Events_Listing/190430-black-bream-coorong).



This news comes on the back of similar survey results this time last year, when nearly 100 juvenile Black Bream were found. Photo: SARDI.

## Lower Lakes survey has both good and bad news

An extensive survey of South Australia's Lower Lakes found a hotspot for some freshwater fish, especially Southern Pygmy Perch and Congolli, but the absence of another; the Yarra Pygmy Perch, which are a small fish that was once abundant in wetlands fringing Lake Alexandrina but has not been recorded in the wild for more than a decade. During the Millennium Drought, the last of the wild Yarra Pygmy Perch was found shortly before key habitats deteriorated or dried out completely in 2008. Some fish were rescued to maintain breeding populations however wild populations have not yet been re-established. More:

<https://www.naturalresources.sa.gov.au/samurraydarlingbasin/news/190416-lower-lakes-fish-survey-reveals-health-of-native-fish-populations-nws>.

The wild populations of Yarra Pygmy Perch are now thought to be extinct throughout the Murray-Darling Basin. These fish are a specialist edge dweller, living among the ferny plants on the edge of creeks, and spending little time out in the open water. These habitats have changed completely with the vegetation clearance, barriers, water regulation, flows controlled and the impacts of Carp, Redfin and Mosquitofish. Researchers have been looking for the last three years and have failed to locate any wild populations in the Basin.

More: <https://www.abc.net.au/radionational/programs/offtrack/golden-fish-gone/10993326>.



These Yarra Pygmy Perch, from the captive population, are some of the last known individuals with the genetics of the Murray Darling Basin population. Photo: Ann Jones.

## Water for the environment to help Barwon River fish

The Barwon River in the northern Murray-Darling Basin had not flowed for over 200 days, drying back waterholes with declining water quality. Water was released from Glenlyon Dam and Copeton Dam throughout April, May and June to replenish critical waterholes, supporting Murray Cod, Silver Perch and Eel-tailed Catfish. Combined with natural inflows from the Warrego and Castlereagh tributaries, the Barwon-Darling is seeing flow along large sections of the river for the first time in more than 6 months. More:

<http://www.environment.gov.au/water/cewo/media-release/water-environment-fish-northern-basin>.

## Habitat is more than a 'honeypot' for fish

The 'honeypot effect': does the number of fish increase when habitat is added in a large river, or do the fish already present simply move to the new habitat? Researchers have the answer, more habitat means more fish. The researchers studied 110 km of the Murray River over seven years and monitored what happened with the installation of over 4,450 snags. They recorded more than ten thousand fish and analysed six million records of tagged fish. When they compared the river where habitat work was done with sites where habitat remained constant, they found that habitat rehabilitation resulted in an increase in the population size of native fish, including a three-fold increase in the abundance of Murray Cod and a doubling of abundance of Golden Perch. Read more of this research by Lyon and others in *Ecological Applications*: <https://doi.org/10.1002/eap.1882> [Open access] or a summary: <http://www.fishingworld.com.au/news/murray-river-restoration-increases-native-fish-populations>.

## Saltmarsh feeding prawns

Researchers have discovered that Eastern King Prawn and Eastern School Prawn are not found directly in inundated saltmarsh habitats, unlike similar species of prawn in other parts of the world. However, saltmarsh is the dominant source of prawn nutrition in NSW's Hunter and the Clarence river estuaries, both of which provide important nursery grounds for Eastern King Prawns. Saltmarsh was responsible for as much as 95 per cent of the diet in prawns in the Clarence and 47 per cent in the Hunter. In both estuaries, saltmarsh was also a significant source of nutrition for fish species such as Mulloway, Dusky Flathead, and Sea Mullet. This pattern has been confirmed in other NSW estuaries, even those where seagrass is much more abundant than it is in the Clarence and Hunter River estuaries. Read more of this research report: <http://frdc.com.au/Media-and-Publications/FISH/FISH-Vol-27-1/Saltmarsh-value-to-fisheries-productivity-uncovered>.

## Water for Mehi River fish

The Mehi River, in the Gwydir valley floodplain downstream of Moree in north west NSW, is drying to pools in the upper and central reaches; while the lower reach has experienced extended drying since June 2018. While fish and pools in the upper and central reaches remain in a good to fair condition, fish in the isolated and drying waterholes in the lower Mehi reach are showing signs of stress. Water from Copeton Dam was delivered to help native fish, including Murray Cod and Eel-tailed Catfish, to survive the dry conditions. More: <https://www.environment.nsw.gov.au/news/water-for-native-fish-mehi-river-flow>.

## Are Tasmania's lakes soon to be Carp-less?

Fewer than 20 European Carp remain in Tasmania's lakes after 25 years of eradication efforts. The Carp invasion had been isolated to Lake Sorell and Lake Crescent in the state's Central Highlands. Eradication was completed at Lake Crescent in 2007 and Lake Sorell is now expected to be Carp-free by next year. Strategies including 'spawning sabotage' and barrier netting have proved effective. A 14-kilometre barrier net was used to funnel Carp looking for new breeding grounds into attached nets. About 60,000 carp have been eradicated through the program. More: <https://www.abc.net.au/news/2019-03-20/carp-set-to-be-eradicated-from-tasmanian-waters/10915380>.



Hopes are high that the end of Carp is in sight. However, fish numbers were down to 50 previously, then there was an unstoppable mass spawning and the population jumped back to thousands. Photo: Cameron Atkins.

## Muscles to the rescue of Muscle Creek

A lot of hard work over the last three years has gone into regenerating Muscle Creek, in Muswellbrook, NSW. Muscle Creek had been heavily infested by exotic weed species, including balloon vine, privet, willow, wandering dew, madeira vine and morning glory, all of which were smothering the native vegetation. In a series of working bees these weeds have been substantially reduced, with local native species continuing to be planted to improve the habitat. More: <https://www.muswellbrookchronicle.com.au/story/6126142/club-to-club-project-comes-to-an-end/>.

## 50,000 Oysters

In the first of two deployments, more than 50,000 native oysters have been introduced to the pre-laid rocky substrate as part of South Australia's Windara Reef restoration. The juvenile native Australian Flat Oysters are approximately eight months old and are about the size of a 50-cent piece. Shellfish reefs dominated by Australian Flat Oysters were once commonplace, spreading across 1500 kilometres of South Australian coastline in the 1800s. However, there are now no known native oyster reefs left in South Australia. Construction of Windara Reef began in 2017 with 150 limestone reefs installed across a bare, sandy twenty-hectare area off the coast on the Yorke Peninsula.



Over 7 million juvenile oysters are due to be deployed on the Windara Reef restoration site this year. Photo: Anita Nedosyko.

More: <https://www.natureaustralia.org.au/explore/newsroom/50-000-oysters-find-new-home-on-windara-reef/>.

## Shark report card

Australia is home to 322 species of fish commonly known as sharks, rays and chimaeras (ghost sharks). These fish play important roles in maintaining and regulating marine ecosystems, keeping these systems in balance, and contributing to a healthy marine environment. However, many species of sharks and rays are also vulnerable to the threat posed by habitat loss. Overall, Australian sharks were found to be in relatively good condition. The nine species that suffered historical declines are now rebuilding thanks to improved management regimes. Read the report by Simpfendorfer and others: <http://www.frdc.com.au/project/2013-009?cldee=bmV3c3RyZWFTc0BncmVlbnBpZ2Vvbi5jb20uYXU%3d&recipientid=contact-98980e20f3f3e311940a0050569f5140-e95c5c90399a43e7865786ff8fee2834&esid=a058859b-bb60-e911-942b-000d3ae012a4>.

## Seagrass success in WA

Efforts to return seagrass beds to Western Australia's Oyster Harbour are meeting with success with one area now completely rehabilitated. When assessed in 1997, the area had suffered unsustainable loss of seagrass and there was little hope for its return. Since then, a combination of restoration work, natural regrowth and re-colonisation by seed has led to 100 per cent regrowth from the very shallow water down to an average water depth of 2.8 metres. More: <https://gsweekender.com.au/albany-wa-oyster-harbour-catchment-geoff-bastyan-sea-grass-rehabilitation/>.

## Oyster shells drying in the sun

70 cubic meters of oyster shells are drying and sterilising in the sun before being converted into reef restoration units for the Moreton Bay restoration project. A test site created habitat supporting large populations of crabs, shrimp, Bream, Perch and Mullet. More: <https://ozfish.org.au/hitting-the-refresh-button-on-moreton-bay/>.

## Restoration progress in Port Phillip Bay

Dives to monitor progress of the Shellfish Reef Restoration project in Port Phillip Bay, Victoria, are providing good news. The site is teeming with fish, mainly Pinkie Snapper, calling the new reefs home. The hatchery-bred oysters that were introduced to the site are thriving and there are now lots of baby oysters on-site through natural recruitment.

More: <https://www.vfish.com.au/2019/05/15/shellfish-reef-restoration-is-bringing-fish-back-to-the-bay/>.

## Genetic fingerprints show where fish call home

Genetic fingerprints have enabled scientists to determine whether populations of threatened fish that turn up in unexpected places have always been there, or are a newly established population, or are introduced. The techniques have been used to confirm, for example, that a population of Southern Purple Spotted Gudgeon found in a small urban creek on the NSW north coast was natural and had been clinging on, undetected. This species had not been identified in the north coast region for 38 years. More: <https://www.dpi.nsw.gov.au/about-us/media-centre/releases/2019/csi-style-genetic-fingerprinting-finds-native-fish-in-unexpected-places>.

## Men's shed & micro-tech helping mussels

Mandurah's Marine Men's Shed are helping to deploy native Blue Mussels in cages throughout the Peel-Harvey Estuary, Western Australia, as part of a study into the viability of creating new shellfish reefs. The Mussels are being fitted with a purpose-built 'valvometer', a tiny device attached to each individual Mussel to record when it's open and feeding, and when it's closed. The data from the miniature devices will be used by researchers to track the health of the mussels over time and link this to changes in water quality. The best sites for Mussels will be the focus for ongoing restoration efforts.

More: <https://www.natureaustralia.org.au/explore/newsroom/micro-tech-innovation-aids-peel-harvey-estuary-reef-restoration/>.

## More mussels, more Bream

Mussels are also the focus for a restoration project in Western Australia's Swan River Estuary. The first stage involved cleaning and re-snagging existing habitat in the upper Swan River ready for the Black Pygmy Mussel spawning cycle. The newly hatched mussels attach themselves to the clean snags and will provide an important food source for Black Bream. The second part of this project was the deployment of a mussel reef. The mussels, filter feeders by nature, are already attached to the reefs and will immediately begin to consume plankton and non-living material from the water column, in turn improving water quality. More: <https://recfishwest.org.au/news/swan-rivers-first-mussel-reef-trial/>.



One of the 'mussel stakes' being deployed to recreate the reef. Photo: RecfishWest.

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## INTERNATIONAL NEWS

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### Plymouth celebrating 400 years and the return of Herring

Next year, Plymouth in Massachusetts USA, will be marking 400 years since the arrival of Pilgrims in America and the town has been preparing a key part of the celebration for the last 20 years; enabling the fish to return to Town Brook. For hundreds of years, dams in the stream blocked fish from passing and caused populations to decline. The first dam was removed in 2002 and now five dams have been removed and major improvements to fish passage have been implemented at the sixth, returning Town Brook to natural flow and providing River Herring access to 269 acres of prime spawning grounds. Alewife, Blueback Herring, American Eel, and Rainbow Smelt rely on this spawning habitat and are an important food for marine fish such as Cod, Striped Bass and Tuna. Approximately 160,000 fish are now running annually in Town Brook.

More: <https://noaa.maps.arcgis.com/apps/Cascade/index.html?appid=3bfc0ebc749041a895794b0753c9a82f>.



This defunct fish ladder offered almost no fish passage. The removal of the structure and replanting has returned the stream to a natural state, contributing to the run of fish now seen during spawning season. Photos: NOAA.

### Structured marine habitats make good nurseries

Researchers reviewed the evidence for the nursery value of so-called structured marine habitats, including mangroves, seagrasses, marshes, coral and oyster reefs, and patches of rock. Scientists have long considered these habitats better nursery grounds than flat stretches of seafloor sand or mud. They found that most structured habitats often translate to greater abundance, growth, and survival of juvenile fishes, crabs, and shrimps. The highest density of juveniles occurs in mangroves and seagrasses. The only difference among the habitats in terms of juvenile growth or survival was in coral reefs, which had slightly greater juvenile growth compared to seagrasses, mangroves, or macroalgae. Read more of the study by Lefcheck and others in *Conservation Letters*: <https://doi.org/10.1111/conl.12645> or a summary: <https://www.sciencedaily.com/releases/2019/03/190327152854.htm>.

### Celebrating the Forest & Fish Law

Washington State, USA, celebrates the historic 20th anniversary of the Forest & Fish Law, a collaboration of federal, state, tribal, and county governments and private forest landowners that led to the protection of 60,000 miles of streams running through 9.3 million acres of forestland. The timber industry's contribution has been valued at US\$314 million in road maintenance and abandonment efforts, which have removed 7,900 in-stream barriers and the opened 5,200 miles (8,386 km) of fish habitat on non-federal forest lands. More: [http://www.chronline.com/specialty\\_productions/private-timber-companies-collaborate-to-save-salmon-government/article\\_8e4fdaba-5a1f-11e9-afda-87dfeee2ee17.html](http://www.chronline.com/specialty_productions/private-timber-companies-collaborate-to-save-salmon-government/article_8e4fdaba-5a1f-11e9-afda-87dfeee2ee17.html).

## Bat boxes help protect fish habitat

The anglers of the Royal Tunbridge Wells Angling Society have a neat trick to help rebuild fish populations in the River Medway, England: they build bat and bird boxes. These animals take up residence and the riparian trees are then protected from being removed, continuing to provide shade, food and shelter for the fish. The group are also restoring gravel beds, installing wicker fencing along the banks for both erosion control and shelter, and creating 'spawning boards'. These are floating wood and old net to which fish eggs can stick and assist Roach in particular. This was once a legendary stretch of river and the club's projects are long-term however even in the short-term, things are looking up. In one recent survey, 13 species of fish were found in just a short section of river, including a two-pound Roach and some wonderful Barbel. More: <https://linesonthewater.anglingtrust.net/2019/03/08/a-blueprint-for-better-river-fishing-meet-the-medways-intrepid-monday-club/>.

## Climate proofing Welsh rivers for fish

Several approaches are being used to 'climate proof' fish habitat in the Wye and Usk catchments in Wales. One is to restore upland bogs, increasing the permeability of the catchment and improving natural flood management. This means more water is held back and stored in the soil and released into the rivers at times when fish need it most. Fish-friendly management of water abstraction and reservoirs is also providing benefits. Water releases from the reservoirs in the Usk catchment and regulated flows from Elan provided extra and cooler water during periods of extreme low flows and high-water temperatures when the rivers and fish were severely tested. Extra water is also being used to extend the opportunities for migratory fish and to return the rivers to a more natural flow regimen. More: <https://www.wyeuskfoundation.org/Blogs/e-news/climate-proofing-rivers>.



The restoration of upland bogs is one of the actions that is helping deliver water for fish in the Wye and Usk Rivers. Photo: Wye and Usk Foundation.

## Rockfish recruits going without protection

Kelp Rockfish born in Marine Protected Areas (MPAs) around the Monterey Peninsula in California USA, have been found to recruit to areas outside of these zones, including areas where commercial and recreational fishing is allowed. Rockfishes are part of a diverse group of closely related species that live in the same habitat and are extremely difficult to distinguish as juveniles. Researchers used a novel and non-lethal method called 'intergenerational genetic tagging' to track individual juveniles and their movement between and outside of MPAs. The research also confirmed that Kelp Rockfish do not disperse after settlement into their adult kelp forest homes. More: <https://www.fisheries.noaa.gov/feature-story/researchers-demonstrate-key-benefits-marine-protected-areas-california>.

## Floaters to help fish

Floating habitats on the River Weaver in Northwich, England, are helping to improve water quality and wildlife habitat along some of the most heavily engineered sections of the river. These habitat installations have contributed to a dramatic improvement in water quality in the area in the last decade. They also improve the riverbank's appearance and the potential for the river to maintain a higher stock of coarse fish, benefitting anglers. More: <https://www.northwichguardian.co.uk/news/17534766.floating-habitats-installed-along-northwich-river-weaver-for-wildlife/>.



Floating habitats installed on the River Weaver to river wildlife and improve water quality. Photo: The Environment Agency UK.

## Preparing Hangman Creek for the return of Salmon

After more than a century of degradation, Hangman Creek is frothy and full of silt during the Spring flow, bringing polluted water into the Spokane River in Idaho, USA. Nearly 20 years restoration effort aimed at reducing erosion and runoff is making progress. In one reach, the creek has been restored to its earlier self with bends and turns, often spilling its banks, tree-lined and running cool even in the Summer. Near the creek's headwaters, Trout are still found, although miles of polluted water keep them isolated from the Spokane River fish population. The pollution comes from a combination of factors, including clearing riparian vegetation, straightening channels, plowing land to the creek edge, erosion and stock access. For the Coeur d'Alene Tribe, the rehabilitation of Hangman Creek is an aspirational task and one that aims to return Salmon to this waterway. More: <https://www.spokesman.com/stories/2019/may/05/coeur-dalene-tribe-spokane-trout-unlimited-working/>.

## Sea problems for Scottish Salmon

Scottish lovers of Salmon are witnessing a significant reduction in the numbers of fish in the Rivers Tweed, Spey and the Dee. 2018 was the worst year on record for wild Salmon numbers, with only 37,000 caught across the country. Extensive monitoring of Salmon breeding suggests there has been no fall in the number of juveniles leaving the Tweed. The problem appears to be that very few, perhaps only 1%, make it back. Changes to the North Atlantic oscillation, a weather phenomenon that affects the climate across the region, is thought to be part of the problem as it affects food supplies for Salmon out at sea, increasing competition for food with species such as Mackerel, and warming water temperatures.



For Tweed River Salmon anglers, it's not so much a case of 'the one that got away' as the chance of seeing a fish at all. Photo: Murdo MacLeod.

More: <https://www.theguardian.com/environment/2019/apr/27/scotlands-salmon-crisis-anglers-only-want-one-but-its-just-not-happening>.

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## RESOURCES

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### Coral comics

An e-comic exploring coral reefs and the ecological relationships that create and sustain them: <http://www.secore.org/site/our-work/detail/coral-heroes-comic.53.html>.

### Coastal Resilience Evaluation and Siting Tool (USA)

An interactive analytical tool that can identify specific coastal areas of the USA with the greatest potential to boost community resilience while also improving habitats for fish and wildlife: <https://www.nfwf.org/whoweare/mediacenter/pr/Pages/nfwf-releases-assessments-that-identify-target-areas-for-coastal-resilience-conservation-projects-2019-0501.aspx>.

### Lake Restoration Handbook: A New Zealand Perspective

An edited book, includes a chapter on the restoration of fish in lakes and reservoirs: <https://books.google.com.au/books?isbn=3319930435>.

## 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.

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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.

*Newstreams* is published electronically every three months by the **Aquatic Environment Branch** 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.



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

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### 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>

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

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

OzFish Unlimited <http://www.ozfish.org.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 Dept of Environment, Land, Water and Planning (DELWP) [www.delwp.vic.gov.au](http://www.delwp.vic.gov.au)

Victorian Fisheries Authority: <https://vfa.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)