

Murray



Talking fish

Making connections with the
rivers of the Murray-Darling Basin



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Aboriginal readers are warned that this publication may contain the names and images of Aboriginal people who have since passed away.

The rivers of the Murray-Darling Basin

The rivers and creeks of the Murray-Darling Basin flow through Queensland, New South Wales, the Australian Capital Territory, Victoria and South Australia. The 77 000km of waterways that make up the Basin link 23 catchments over an area of 1 million km².

Each river has its own character yet these waters, the fish, the plants, and the people that rely on them are all different.

The booklets in this series are about how the rivers, fish and fishing have changed. The main stories are written from oral history interviews conducted with local fishers in 2010-11, and relate individuals' memories of how their local places have changed. They showcase three ways of knowing the Murray River: personal experience, scientific research and historical research. Just as individual fishers do not always agree with one another, so their understanding might not necessarily agree with current scientific information or historical records. Similarly, specific items and events might be remembered differently by different people. These varied perspectives show the range in views about fishing and the rivers, each important in its own way. There are many other great stories out there about fishing in the Murray-Darling Basin. These booklets are just the beginning.

Acknowledgements - Murray

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Front page photographs (L-R)

Source: NSW DPI.

Source: Aboriginal and Torres Strait Islander Pictorial Archive, N3766.34: Henry Atkinson, a Yorta Yorta man in the 1890s.

Source: Colin Green: Colin Green and grandson, Blake.

Source: Colin Green.

Source: Scott Nichols.

Back page images

All fish images: NSW DPI.

The loveliest picnic places abounded along the banks of the river, with sand bars, and shaded gullies, red-gum and wattle trees, and deep quiet pools enjoyed by the anglers. ... Fish abounded such as Murray cod, yellow bellies, catfish, redfin, which was introduced, mussels and Murray cray The water was clean in those days.

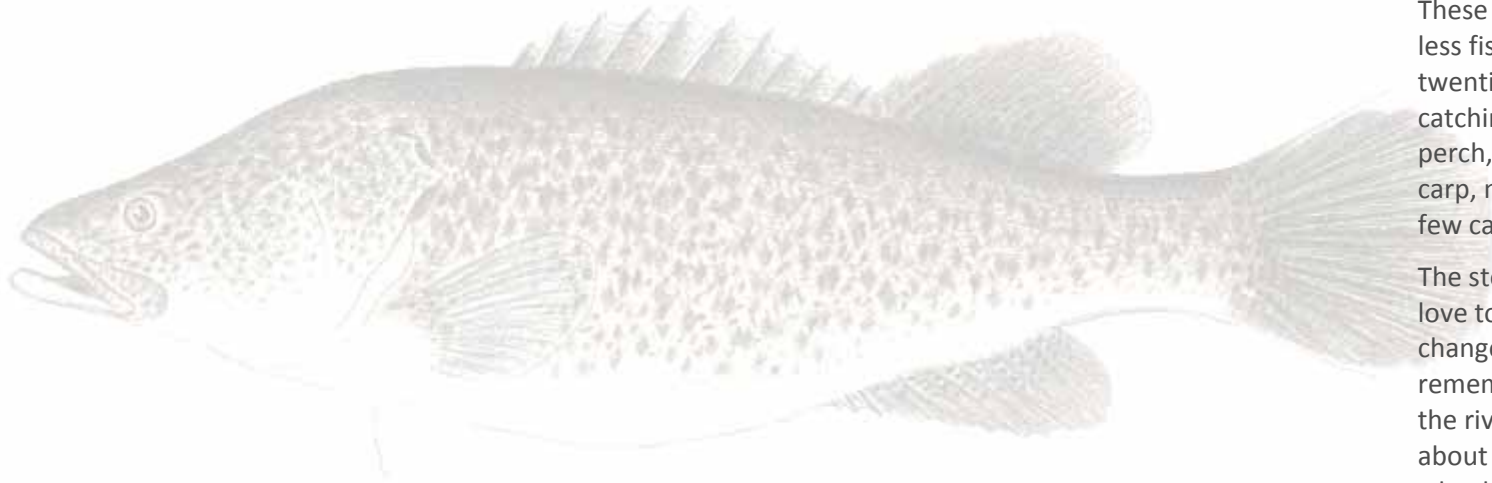
A. N. Loughnan (ed). *Harnessed Waters - a River Dammed* (Yarrawonga, Vic: The Yarrawonga Shire Council, 1989), p 13

The Murray River is the boundary between NSW and Victoria. The river both defines boundaries and unites them with the waters that sustain townships, irrigation and the floodplain forests, including the 70 000ha of the iconic Barmah and Millewa Forest. The river and its floodplain are the traditional lands of the Yorta Yorta and Bangerang people. The Murray is a very different river to the one the Yorta Yorta and Bangerang peoples once knew and fished.

The health of the river and its fish has been shaped by the people who came to live around it and by the industries that brought those people to the area. Today, flows in the river are controlled by Hume Dam – the first of 15 structures on the main channel. By the time it reaches Corowa, the Murray has changed from a small clear stream to a fast flowing river, its waters tea brown. Near Yarrawonga the Murray enters Lake Mulwala, where the skeletons of old drowned red gums are a stark memorial to the way the river's changed.

These changes to the river mean there are a lot less fish than there were. Before the turn of the twentieth century, there are many stories of catching Murray cod, trout cod, catfish, Macquarie perch, silver perch and yellowbelly. There were no carp, no redfin and no trout. Now, there are very few catfish and no Macquarie perch.

The stories of those who love the river and who love to fish the river are part of the bigger story of changes to the Murray and its fish. They help us remember that the river we see now is not what the river was and can be again. People want to talk about a future for the Murray and their visions for a healthy river that is, once again, full of fish.



Introducing the river and its people

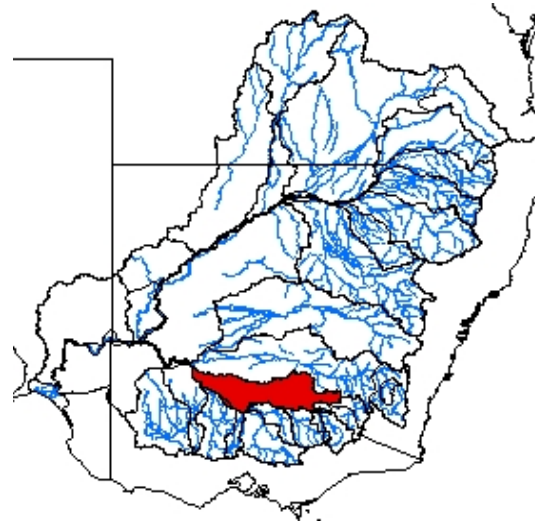
Baiaime beginnings

Dr Wayne Atkinson, a Yorta Yorta man, tells the creation story of the Goulburn and Murray Rivers:

Baiaime created the river by sending his woman down from the high country with her yam stick to journey across the flat and waterless plain. Baiaime then sent his giant snake along to watch over her. She walked for many weary miles, drawing a track in the sand with her stick, and behind her came the giant snake following in and out and all about, making the curves of the river bed with his body. Then Baiaime spoke in a voice of thunder, from up high. Lightening flashed and rain fell, and water came flowing down the track made by the woman and the snake.¹

The arrival of the Europeans

Hamilton Hume and William Hovell crossed the Murray upstream of Albury in 1824 and declared it be named the Hume River. There they saw Aboriginal people setting fish traps made from sticks and wattle boughs and noted:



The river abounds with that species of cod fish which is common in all the western rivers. In the lagoons they caught a kind of bream or carp, of the weight of about two pounds, and of the finest possible flavour. ... Fish caught in the river, seem to form the principal part of their food.²

The abundant water and regular flow from the spring snow melt made this area prized by both sheep and cattle graziers. The 1850s gold rush started the river-boat trade that connected the Upper Murray to Adelaide.



Commercial fishers, such as David Rolton pictured in about 1957 (above), plied their trade to local towns, and sent stock to market by river and rail.
Photo: NLA- NLA.PIC-VN4189240.

Nineteenth century dreams of controlling the unpredictable river flows led to the major engineering plans of the Murray Water Agreement: 26 weirs and locks between Echuca and Blanchetown, and a channel system to deliver water for irrigation. By the end of the 1940s, Yarrawonga Weir, Weir 15 at Euston and Weir 26 at Torrumbarry had been built. Eleven weirs on the lower Murray were also finished, but plans for 13 other weirs from the River Murray Agreement were abandoned.

Fruit growing, dairying, wheat and fodder cropping joined the continued sheep and cattle grazing in the area. New industries brought new people to the area. Aboriginal and Anglo people were joined by Chinese, Italian and, more recently, people from Africa and Asia. As industries changed, so different nutrients and wastes ended up in the river, changing the water quality for the fish.

Fishing for recreation and for food has been a constant throughout these changes. In recent times, fishing-based tourism has developed and brought big summer influxes of people to the area.



Juvenile red gums line a lagoon on the Murray.
Photo source: Colin Green.



Gavin Vale is a third generation farmer and fisher. Gavin learnt to fish in the many irrigation channels that run through the Murray River floodplains Picola.
Photo: Jodi Frawley.



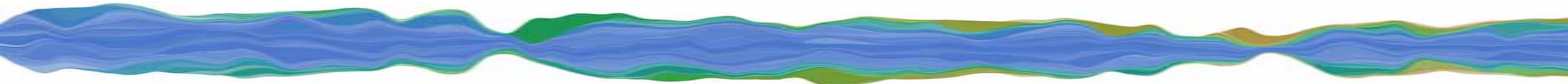
Like his father and grandfather, **Dennis Lean** is a hairdresser in Yarrawonga. Dennis was fishing before he was going to school and continues his hobby today – even selling fishing gear in his hairdressing shop!
Photo: Jodi Frawley.



Wally Cooper lived on Yeilima Station on the Murray River. From the time he was three, he and his grandfather lived between traditional Moitheriban culture and modern lifestyle. Photo: Jodi Frawley.



Marg Crago and her brothers **Colin, David** and **Hayden Green** are four of the five Green siblings who grew up swimming and fishing in the lagoon that bordered the family home. Marg, Colin and David photos: Jodi Frawley. Hayden photo source: Colin Green.



Gavin Vale – *A poacher's paradise*



Gavin is the fifth generation of his father's family to live right near the Barmah Forest, where they were originally timber workers. For three generations they have run a sheep farm at Picola.

Folklore and Fishing

Gavin learnt to enjoy fish through the simple pleasures and personal folklore of his childhood home.

Fish was a part of our staple diet. My mother always caught a fish for our tea on Friday nights. We always had fish and chips and that was great. If she couldn't get fish, she'd always have a thing she called mock fish that was made with potato. In the whole of my growing, we never, ever went without fish.

Gavin was born in 1957, the year after the largest Murray–Darling floods in living memory. Gavin recaps the family folklore about fishing and this flood.

My father tells me that in 1956, and that was a year before I was born, it was a wet winter

and then lots of water late, and the river and forest was flooded 'til Christmas. The fishing was phenomenal. He caught five fish on one Bardi grub and it was just the skin of the grub left by the time he'd finished. They used to use rubber bands, just to hold the grubs on the hooks. The cod just went berserk and back those days, they took every fish.



A frozen bardi grub – a favoured bait for catching cod. The one pictured is about 6cm long. These grubs are the larvae of various types of moth or beetle. While originally referring to longhorn beetle (*Bardistus cibarius*) larvae, fishers along the Murray River more often apply the term to the larvae of *Trictena* and *Abantiades* moths. These grubs live about 60cm below ground and feed on the roots of river red gums and black wattles.⁷ Photo: Scott Nichols.

Gavin also knows the community folklore of much earlier days – of a history of taking huge numbers of fish that relied on the cross-cultural relationships between Aboriginal and non-Aboriginal fishers.



River red gum forests are adapted to cycles of flood and dry. These trees in the Barmah Forest benefit from environmental water allocations. Photo source: MDBA.

Around 1850, Joseph Waldo Rice, one of the first settlers in the Barmah area, used to fish on the Moira Lakes with the Aboriginal people. Together they used their fish traps. I don't know whether they caught yellowbelly or Murray cod. The Aboriginal people used to help him and they loaded them in drays. And then they drove them to Bendigo to the miners.¹⁷

Murray cod

(*Maccullochella peelii* – Cod, Guduu, Pondie, Pondi)



Photo: Gunther Schmida.

- Largest Australian native freshwater fish, growing to 1.8m and 113kg (average 40cm)
- Found around deep holes, woody debris ('snags') and overhanging vegetation or rocks
- Ambush predator eating other fish, crustacean, molluscs and frogs
- Migrate in Spring – often 100s of kilometres upstream with water level rises
- Males guard the eggs which are laid on logs or rocks
- Listed as 'Vulnerable' in Victoria and by the Commonwealth



Photo: Luke Pearce.

Fishing the channels

Gavin himself learnt to fish in the many irrigation channels that run through the plains around the Murray River at Picola.

All my early fishing was done in the channels that ran through our property which were prolific with redfin. When I got home from school I'd go down and go fishing. I would have been probably eight or ten. I have caught brown trout and yellowbelly out of the channel system but in my time, the main fish we caught were redfin.



An irrigation drain. Photo source: from Arthur Rylah Institute technical report #176.

Spoilt for choice as he grew up, Gavin continued to fish in the channels, but could also venture into other spots that were all close by.

The only reason we ever fished in the river or the creeks close in the forest area was for Murray cod. It was a prize to catch a cod and that was

your aim, to catch a big cod. Spent a lot of time trying, and not much time succeeding, I s'pose. But there is a certain amount of fun in that.

Poachers in tinnies

Gavin believes that the coming of the aluminium punt - the flat bottomed tinnie - saw a big change in the number of fishers on the river, and the number of fish that could be taken out.

That was the poachers' paradise. Because you could sneak in over mud banks and things like that. You could pull right into the bank, you could get out of it easy, it was comfortable, you didn't need a big motor. It got across the water.

Fishing's the trophy

Gavin often fished in the river while camping with his uncles and his cousin, David. They taught the boys how to tether fish to keep them fresh until they went home.

You'd tie the fish up just like you'd tie up a dog. We'd put 'em on a muddy bank where we knew there was no snags. You tether them through the two soft bits of skin on either side of the nose and you can hook quite easily, just make a small hole through there. My uncle always had a bag needle which he'd thread through. I've tethered fish up to thirty pound.



Tethered Murray cod in the 1940s. Photo: Fred Bailey (NSW DPI collection).

Gavin and his family have seen people on the river exploit this way of keeping fish.

I saw a lot of people abuse the fact that they could tether the fish and take big amounts of fish out of the river, and I never really thought that was good. Once they go over sixty centimetres they're not all that nice to eat so why keep them, why kill them and why have them stuffed. You know? The trophy is what you feel in your heart, not what you have hangin' on the wall.

Fish in irrigation channels

One of the major impacts of the irrigation industry has been the alteration to the volume, timing and fluctuations of water flow. The direction of many native fish movements is driven by flow volume. Many fish move upstream to breed in response to an increase in flow. But it's not just changes to volume that impact on fish. A massive amount of water is diverted each year from rivers into irrigation channels. A substantial number of fish go with it and are lost into irrigation channels, from which they are unlikely to escape.

It is thought that most fish die fairly soon after entering the channel system. They get killed or injured moving through the various regulating structures (weirs, turbines, pumps) or find themselves stranded by the system drawdown at the end of the irrigation season, when no water is diverted into the irrigation system. Other impacts include barriers to fish movement, enhanced dispersal of exotic species and the loss of native fish eggs and larvae through direct pumping.

Native fish found in the Murray irrigation channels included five threatened species: Murray cod, Murray–Darling rainbowfish, unspotted hardyhead, golden perch and silver perch. Murray cod are probably washed into the channels system when very young and few survive beyond the juvenile phase once they are there. Golden perch enter the channels later in their life history.

Drifting eggs and larvae appear to be coming from the river and not from successful spawning within the channel system. This means there is also significant loss of eggs and larvae from the river into the channel system, which means the number of juvenile fish in the river itself also declines.¹⁵



Upstream of the Mulwala Irrigation Canal inlet regulator. Such conditions favour both predators, such as pelicans, and alien fish, such as carp. Photo: Jodi Frawley. Pelican photo: Scott Nichols.



Downstream of the Mulwala Irrigation Canal inlet regulator. Native fish larvae (pictured) are mostly killed when they go through this type of structure. Photo: Jodi Frawley. Larva photo: Lee Baumgartner.

Dennis Lean – *Barbers, bait and bobbing*



In 1911, Dennis' grandfather opened a barber's shop in the main street of Yarrawonga. Like his father and grandfather, 68 year-old Dennis is a hairdresser.

Fishing & haircuts are in the family

When he took over the shop 27 years ago, he got his chance to indulge his hobby and expanded the shop to include fishing gear. There he swapped fishing stories for haircuts with his clients.

Yarrawonga, on the Victorian side of Lake Mulwala, is a great place for tourists, especially if they are interested in fishing. Dennis says:

We get people from nearly all over Australia to fish. It's a very, very popular area. We get them from Hervey Bay, Forbes, Canberra, Harden, Geelong. A lot of Sydney people come down here. It's a very popular area for Murray cod, that's what they mainly come for.

Dennis and his family lived on the Lake until he was eleven. He learnt to fish with his siblings and family.

I was probably fishing before I went to school. My father, he was always a mad keen fisherman, my grandfather he was the same. It went back, right back through the whole family. And my uncle he was a keen fisherman. We've been into the shooting and fishing all our lives. When I was a kid, we used to tie springers off the willow trees in the backyard to catch redfin. And you'd get up in the morning go swim around to get the fish. It was a beautiful lifestyle.

Redfin was the family's favourite eating fish when he was growing up.

But, you know, we had no money, we struggled, and that sort of thing all contributed to the kitchen. We had a wire cage on that jetty. Then every time we caught redfin we threw them in there so we had a supply of fish. And if Mum wanted fish for tea we'd go down and get a few. We had ducks, chooks, ferrets, lambs - you name it, in the back garden. It was a menagerie at times.

Redfin FAQs

(*Perca fluviatilis* - English perch)



Are redfin native?

No, they are a native of Europe and Asia and were introduced to Australia in the 1860s. They are now widespread throughout temperate regions of Murray-Darling Basin.

Why were redfin introduced?

Redfin are a sport fish popular with recreational anglers. Non-native fish were thought to be better sport and better eating than native species.

What sort of habitat do redfin prefer?

Redfin inhabit a variety of habitats, but prefer slow flowing or still habitats, particularly those where there is aquatic vegetation.

Are redfin a problem?

Yes. Redfin eat native fish and compete for food and space. Redfin are also a host of the epizootic haematopoietic necrosis virus (EHNV), which many native fish species are susceptible to.

What are the control options?

In NSW waters, including the Murray River, redfin are now a Class 1 noxious fish. This means it is illegal to keep them alive or use them as bait.

Don't transfer them between waterways, stock them in dams or return redfin to the water alive.

Tent cities and relief work

Yarrawonga weir, Mulwala channel and Yarrawonga channel were built between 1934 and 1939. Hundreds of men and sometimes their families came to work on these projects, causing a temporary population explosion. Some men were sent from Melbourne under Unemployment Relief Schemes implemented during the depression. They came and went in 10 week blocks. Others stayed for the duration and many made the district their permanent homes.

Some housing was provided, but many came to live along the river in tent cities. Water was carted in buckets, and timber was cut from local forests for rough building and firewood. Butchers and bakers visited 'The Grove', but families also fished to supplement their diets. Health inspectors visited the camps, nominally checking on sanitation and reported on unlicensed dogs. A warning 'coo-ee' along the river sent giggling kids scurrying with their pets into the safety of the forest.⁵



Building the canals was hard work but provided welcome employment during the Depression. Photo source: <http://www.irrigationhistory.net.au/>.

The coming of the Lake

The Yarrawonga Weir was finished in 1939, creating Lake Mulwala. In 1989, 87-year-old Jim Pidgon recalled the waterways before the weir:

*The common was beautiful with its lagoons and marshes and wildlife. There were always lots of boats on the river and very few motor-boats, and the children of my generation were not glued to the television with its video fantasies. We had the real world of the river on our doorstep. We fished and swam and hunted in its lagoons.*⁵

After the weir was built, the authorities dropped the water levels for maintenance every four years. Not only was it an artificial lake, it also created the conditions of an artificial drought.

Dennis remembers how this changed the habitat for the small creatures of the river, which in turn changed the fishing. The cycle was repeated just as the river was recovering from the last one. Dennis says:

To my way of thinking, it comes back to the shrimp population in the water, first year after they drained the water it is very hard. We'd drop four or five nets and you might get half a dozen shrimp. And you'd head to the deep water to get them. Because in the



The plaque commemorating the 'turning of the sod' for the Mulwala Canal in 1935. The then NSW Premier, the Hon. B.S.B. Stevens, MLA, did the honours 'in the presence of a large and representative gathering of citizens'. Photo: Jodi Frawley.

River boats

In the 1840s, locals dreamed of the river as a transport route. A decade later, wealth from the gold rush brought shallow-draft steamboats that moved produce, including fish, to Echuca. There they connected with the rail that took goods to market in Melbourne. By the time the locks and weirs were built in the 1930s, rail and later road transport had replaced river trade.

The post-war era saw the rise of tourism across the Murray. Echuca was popular for its history as an inland port, where tourist could enjoy the river from the restored riverboats. Desnagging to clear channels for this new generation of riverboats and other river craft continued until the late twentieth century.

shallow water shrimp have all died because the water's gone. They live in the willow roots and rocks and all that sort of thing. And the second year they'll start to pick up, third year they'll be going pretty well. Fourth year you could catch them anywhere. When the shrimp are thick, you can go and stand on the boat ramp and they'll bite your legs. They'll have a go at you. We used to catch them by hand.

Canoes, catfish and carp

Dennis and his mates also made their own tin canoes. Then they would roam around in the Lake and river and explore the different fish in different areas.

We all had a canoe each. We used to go over to the lagoon near the golf club because that was beautiful catfish country and you'd get a lot of catfish. We used to get long boards, tie three or four droppers to them, about three foot long, take them out and then go back in the morning and find them. I went over there one morning, and this board bobbing along. Oh, I'll get that. So I dived in and swam out, grabbed the board. The catfish spun around and spiked me in the stomach. And I thought, this is going to hurt. So I left the board and headed for the shore. It did hurt too – it burned. It's sort of a poison, I mean, they'll bite you up!



Canoes made of bark were commonly used by Aboriginal people on the Murray River well into the nineteenth century. Photo source: State Library of South Australia, SLA: PRG 422/3/802 – Moira Native Bark Canoes.

Dennis has seen big changes to the catfish population since the arrival of the carp.

When the carp came that put pay to the catfish. When the carp first hit here, the kids were down near the weir and we were shovelling them out with pitchforks that's how thick they were. It was like a blanket. Balls Lagoon over there at the golf club was probably the last real habitat of catfish. We used to be able to go up to the billabongs, at Colombo and Yanco. They all had good supply of catfish, they still do to a degree. Barrenbox Swamp was probably the home of catfish, brilliant up there. But the carp came and they competed for the same food and that was the end of the catfish. The old carp, she does some damage.

Desnagging

In the past barges removed snags with steam-driven winches to clear passages for larger boats. The water then moved along the channel faster, scouring the riverbed as it went. Snags were also removed from the rivers as it was thought they caused erosion of river banks and increased the incidence of flooding by reducing the capacity of water that the river channel could hold.¹¹

In many cases the presence of a natural load of snags may reduce erosion by protecting the river banks. Similarly, the notion that snags increased flooding is now known to be largely incorrect.

Almost 25 000 snags removed from the Murray River between Hume Dam and Yarrawonga (headwaters of Lake Mulwala) from 1976 and 1986 - a distance of only 200km.¹²

The removal of snags ('large woody debris') is a Key Threatening Process under the NSW *Fisheries Management Act 1994*. Desnagging is implicated in the decline of endangered Murray cod and trout cod and has been associated with a decline in fish biodiversity in many rivers in southeastern Australia.



A natural snag load is a good thing for a river ... and its fish. Photo: Colin Green.

Wally Cooper - Moitheriban traditions for a modern Murray



Wally Cooper was born in 1947 and lived on Yeilima Station on the Murray River – a place for spelling brood stock from Flemington Racecourse.

From the time he was three, he and his grandfather lived between traditional Moitheriban culture and modern lifestyle. On the station they helped look after the Barmah Muster, but in the forest Wally's grandfather taught him about the river from Yarrawonga down to Echuca.

Tickling fish

Wally remembers the Murray of the 1950s:

I can remember when I was about eight years old, the river was so clean. It was a massive, beautiful, clean river. You could see through the water and you could see better in the deep part than you can today. And you could probably see fifteen feet in front of you when you were diving down.

This clear water was perfect for diving and Wally's grandfather taught him one traditional way to catch fish – by tickling them!

I used to watch my grandfather. The snag would be comin' out of the river and the current would be dropping in the water slowly. He'd get in upstream and he'd just float down along like a log, coming down toward the fish and as he came towards the yellow belly or the cod, he'd run his fingers under the fish. And you can see the fish, they'll feel the tickling. Grandfather would move his hand towards the gills and the gills just open up. He'd get up real close and go bang with the two fingers and he'd have a fish. That's it. No fishin' line.

Danny, Colin Green's son, does his own version of 'fish tickling' when the flows are low and the carp numbers are high in the lagoon close to the Green family house. The following series of photographs show.



Carp hunting, November 2009. After finding a spot with lots of carp (above), Danny Green gently moves in to tickle a carp, and hoists it out of the water. Photo source: Colin Green.



As well as learning the traditional art of fish tickling, Wally also fished out of boats and off banks, with hooks and lines, along with the rest of his community. Finding the right bait meant learning to read the local feeding habits of the fish they were chasing.

What we'd do is check the fish to see what they were eating and then we'd get the bait according to what we found. Because that's what the fish would be eating for the next month or so. The seasons and the weather determine if it's shrimp or worms or mature larvae of insects.



Terrestrial insects, such as mayflies (pictured), are an important part of native fish diet. It's not just bardi grubs that will attract the attention of a hungry Murray cod – a fly made to mimic a mayfly fallen into the water is also irresistible at certain times of year. Photo: Luke Pearce.



Allowidgee, pictured fishing using a bark canoe and reed spear in a way common to Yorta Yorta men. He is shown here at Maloga on the Murray River. Photo source: State Library of South Australia, SLSA:PRG 422/3/704.

Special river creatures

Not all the animals in the river area were available to everyone in the community. Wally remembers that water rats were valued for their meat and their skins. However, only the elders could eat the meat, and the skins were made into pouches that could only be carried by certain people.

Trout cod, now a protected species, were another special animal to the Moira Forest people, and they were restricted for everyone.

Even when we caught the small trout cod, grandfather would say, 'Don't eat him, put him back.' Because the trout cod wasn't in abundance like the Murray cod.

One of the river animals that Wally doesn't see anymore are a special type of mussel.

I remember there used to be a beautiful white mussel. From two inches down to about the size of your thumbnail. They were in abundance all along the river. You'd find them round the lake system and also along some hard banks into the sandy loam areas. We used to dive for 'em and pick 'em up and take 'em home and eat 'em. Absolutely wonderful.

Impacts on the river

Over Wally's lifetime industry and agriculture have had impacts on the river. The Green family remember the devastating impact of spraying the tobacco. Colin Green remembers:

When I was in primary school I used to stand out in front of the house when they aerial sprayed the paddock next door and wonder what the cool mist was – it was DDT. But it felt nice.

David Green thinks that the sprays affected the fish:

We never ever found a fish before that with a spinal deformity. Behind the dorsal fin there was spinal curvature.

Trout cod

(*Maccullochella macquariensis* - blue nosed cod, blue cod)



Photo: Gunther Schmida.

- Large deep bodied fish, growing to 85cm and 16kg, but more mostly less than 5kg
- Associated with deeper water, pools with cover such as logs and boulders and faster flowing water
- They move less than 500m from their home snag, with occasional explorations of 20-60km before returning home
- Adhesive eggs probably laid on hard surfaces
- Eat other fish, yabbies, aquatic insect larvae, and shrimp
- Potential threats include interactions with trout, redfin, habitat modification such as desnagging, sedimentation, removal of riparian vegetation, barriers to migration and cold water discharges from large dams
- Listed as 'Endangered' in NSW, ACT and the Commonwealth and as 'Threatened' in Victoria

But like all families, not everyone agrees. David's brother Colin thinks that a shag shaking, then dropping the fish could just as easily be blamed.

Wally's worried also about the chemicals harming the fish habitat as well as the rest of the environment along the river. A poisoned river means less fish for all fishers.

In the old days, they really killed the land with all those chemicals, like DDT and Dieldrin. We had to stop it. You've got to know how to put on different poisons that you're running through our river. With the ecosystem, everything is so magnificent and everything goes in the cycle. And you take somethin' out here and something over here has to die. If we didn't stop it then we wouldn't have a lot of things today.



Low water exposes the snags so loved by Murray cod. Photo source: Colin Green.

Cummeragunja

Aboriginal people had lived on and fished the Murray River for centuries before a missionary established a school at Maloga in the 1870s, which was later moved to the government settlement at nearby Cummeragunja.

By 1887, William Cooper, Wally Cooper's great uncle, was among many Aboriginal residents who petitioned to secure land selections there to grow wheat.

In 1934, frustrated by government policies which had undermined farming, William Cooper appealed to the NSW Premier for Yorta Yorta autonomy at Cummeragunja. His plan was to irrigate the lands from the Murray River so that they could grow tomato, vines, tobacco, citrus as well as raise cows and experiment with lucerne and pigs. Traditional fishing and hunting would compliment the modern agricultural development and make the Yorta Yorta self-sufficient.

These plans were quashed by the NSW government, who installed an unsympathetic manager and eventually the Aboriginal people withdrew their labour in 1939. During this long strike a large group of Aboriginal people walked off the settlement completely and moved to riverbank camps along the Goulburn River near Mooroopna, where they lived for many years.

The Green Family - *A lagoon for a back yard*



The five children of the Green family – Marg, Colin, David, Hayden and Pauline (not pictured) – were born in Corowa in the late 1940s and early 1950s. Their father, George, was born near Yarrawonga and spent his entire life on or near the river. The family lived in 'Brocklesby House', an old homestead built in 1857.



Living by the lagoon

The family's small acreage overlooks a horseshoe lagoon, the largest in a series of lagoons that join when flooded by the Murray. The kids made their own fun in the surrounding bush, paddocks and State Forest adjoining the lagoons. It was known as 'The Lagoon' to the Greens, 'The Chinaman's' to the locals and 'Dairy Lagoon' on the map. David recalls:

Dad remembered the Chinese market gardeners. They had a huge steam-driven pump down on the Lagoon. Later, Italians took over and they grew vegetables then tobacco. Now the land is used for grazing.



The view of 'The Lagoon' near the Green family house after it filled in late 2010. Photo: Scott Nichols.

With the lagoon so close, they all learnt to swim when they were little – diving for mussels with their Dad. They remember:

We went down there from when we were four years old, diving for freshwater mussels that Dad would find in the mud with his feet. The Lagoon was full of them. The earlier people must have eaten them because shells have been found up on the bank. No doubt the Aboriginal people would have eaten them. But we thought they tasted horrible.

The kids made canoes from old sheets of corrugated iron, sealed with melted tar and paint. One of these boats was called 'Fish and Chips'.

Leeches

While not everyone's favourite river creature, leeches are part of life near a lagoon.

Leeches are a segmented worm, related to earthworms, which feed by sucking blood from passing animals. It is for this reason that leeches have a long history of use for medicinal purposes in both Aboriginal and European traditions.

Wayne Atkinson, the historian, talked about his Yorta Yorta grandfather, Henry Atkinson, photographed here on a Murray riverbank near Cummeragunja in the 1890s:

Puppa Henry is one of many who gathered leeches for medical purposes and used them for traditional healing practices.



Photo: Aboriginal and Torres Strait Islander Pictorial Archive, N3766.34.

Fishing at any time

Fishing was part and parcel of daily life on the outskirts of town. Hayden said:

You could just come down and fish any time. You could just come and catch a fish every morning. No worries at all. There were that many there. Mainly redfin. Beautiful fish, one of the nicest eating fish you'll get. But it's not a native fish.

When the Greens were on the lookout for native fish in the lagoon they chased blackfish.

We'd only catch the blackfish at night. We'd go down just after dark, light a fire and just sit down just on the bank and catch them. But the blackfish will be gone forever now, they'll never come back. Because they were an extremely delicate fish.

'The big cod'

The Green's family home was surrounded by bush, paddocks and lagoons. At different times the kids would come across old timers who lived in the bush: Phil the Charcoal Burner, Johnny Hollowtree and Gunboat Smith. There was also a big cod that was just as well known to everyone in the district. A fish story told to the Green kids by their father is vividly recalled by the boys:

He was a legend because everybody knew about him. We knew guys that had set 500 pound breaking strain line with car tyres. It pulled our uncle into the river, and he was 26 stone. And Dad tried and it pulled him down the river for about a kilometre. But they saw it. They could get it up to the top but he'd just roll and break the line. Could never land it. Had eyes like dray wheels, Dad used to say. Beard of spinners, gravel rash on his belly and sunburn on his back.

Blackfish

Gadopsis marmoratus (river blackfish, slippery, greasy, muddy, slimy)



Photo: NSW DPI.

- Maximum size 35cm, commonly 20-25cm
- Pair of fine, white, soft spines under the throat
- Found in upland and lowland streams, prefers habitats with good cover – woody debris, aquatic vegetation or boulders
- Spawns from October to January when the water temperature is greater than 16°C. Eggs deposited inside hollow logs, or on rocks and undercuts. Male guards and fans the eggs
- Eats aquatic insect larvae, terrestrial insects that fall into the water, occasionally other fish
- Very small home range (10-26m)
- 'Endangered' listing in SA and Snowy River population.



A large cod caught with a lure. Photo source: Corowa Fishing Club.

Spinners & spoons

Spinners and spoons are types of lures that attract fish by reflecting light as they move through the water. Spoons are a simple metal lure that looks like, well, a spoon! Its wobbling motion attracts fish. Spinners have a blade that rotates (spins) as the lure is retrieved, reflecting light so that it looks like light glinting off fish scales. Today there are many variations of both these types of lures, but in their early history they were literally just rounded metal plates that spun or wobbled around a hook like the aeroplane spinners pictured here.



Photo source:
lureandmore.com/viewtopic.php?f=286&t=2479&p=18677.

The drying of a lagoon

In the 1950s and '60s the Lagoon would be topped up from the Murray and then slowly drop over the summer season. In the summer the boys would take their boat out at night with a home-made fish finder.

The lagoon would go through its cycle and then clear completely to pristine clear water. At night we just put a headlight off a car on the end of a pole four metres down and could see all the little fish at the bottom. That was before the canal was put in.

As tobacco came to the district in 1960s and '70s, a canal was built to ensure water security for irrigators. The Greens remember these changes:

The Lagoon had a natural ridge originally, like a barrage, but about 40 years ago they cut a canal through, which allowed water from the Murray to be used for ever-increasing irrigation. The construction of Dartmouth Dam also had an impact on the Lagoon. With the change in the natural highs and lows the ecology changed quite a lot. From then on with the increase in irrigation the Lagoon could be pumped almost 'dry' which killed a lot of stuff on the bank.

During the recent drought, the Greens have seen the lagoon completely dry out – something they have never seen before. Over the last decade, the basin has filled with leaves and young gums have sprouted in the floor of the lagoon. Since the 2009-10 rains and floods the lagoon has filled – but it is still no place for fish.



Blackwater is visible in this photograph of the lagoon near the Green family house. Blackwater events occur naturally when there has been a build up of leaf litter and woody debris on the floodplain, followed by enough rain to submerge this material and high enough temperatures that it begins to rot. The water becomes discoloured and usually oxygen levels drop significantly. Fish can die if oxygen levels get too low. However, this process enables carbon from the decomposing organic matter to enter the food chain, increasing the population of aquatic invertebrates which then provide food for fish. Photo: Scott Nichols



The drying, and wetting, of the lagoon.
January 2009



January 2010



November 2010. Photo sequence source: Colin Green.

Making Connections

Easter rituals on the river

John Douglas grew up fishing in the Murray, but ended up living at Alexandra and working in fisheries research at Snobs Creek Hatchery. Fishing and family have kept him connected to the Murray River. Every Easter the Douglas family – grandparent, kids, cousins, uncles and aunts, all converged on Gunbower for their annual camping getaway. He's been going now for over forty years.

Yeah we camp within Gunbower Forest, near Koondrook. I don't know when we first started doing that; I was pretty young. Although they are getting on in years, my parents still make the pilgrimage. My sons and nieces associate Easter with the Murray River. My nieces have not had an Easter that was not spent on the river. The annual camping event is a chance for the whole family to get together. We chat, sit around a campfire, eat, drink tea, fish – it's a special time.

Yarnin' about fishing

Richard Kennedy is a Ngiyampaa man who grew up at Lake Cargelligo and fished the Lachlan River. He now works for the North East Catchment Management Authority in Albury. He feels that he has a responsibility

for the Koori country he lives in, even though it is not his own country.

I've been employed to get more Aboriginal people involved in landcare. I've engaged a local group of men to look after a block of land on the Murray River. It's 30 acres, it's got the river and a lagoon system with an island. It's got different species there, river red gums, wattle, different types of grasses and sedges growing all around. So that attracts animals. Oh look, there's yellowbelly, redfin and a lot of carp. We'll utilise it for various themes, including cultural activities and getting the young and old fellas out there. We'll sit around and have a yarn, talk about the fishing and talk about the old stuff. Everybody's got a little story. There's so many things with mental health issues today. Just getting out and sitting on the river bank, there's nothing more peaceful, serene. You're listening, birds are singing, you know, that's something that you miss.

Locals looking after the lagoon

David and Colin Green's sister, Marg, remembered it was their mother who understood that some of the newcomers to the area might need the help of the older locals when it came to caring for the lagoon.

Chinese on the Murray

The 1850s gold rush brought many new people to Australia, among them a large contingent of Chinese. They arrived in organised groups and lived together on the gold fields all over Victoria and NSW.

Many of these men returned home, but some stayed on in Australia working as market gardeners. Their descendents still live in today's rural areas and cities, like Richard Ping Kee, of the Moree Recreational Fishers Association.

Chinese gardeners favoured sites close to water supply and townships. They diverted water through a series of trenches and sluices in addition to watering plants from buckets equipped with bamboo nozzles. Nutrients for their vegetables came from a combination of animal by-products, waste and nightsoil.

Produce was often sold door-to-door from carts and barrows.⁶ One of these Chinese market gardens serviced the tent cities that formed through the construction of the Yarrawonga Weir.

Many places called names like 'Chinaman's Lagoon' or 'Chinamen's Creek' can be found throughout the Murray-Darling Basin, echoing these former gardens in rural Australia.



Mum was a quiet achiever and campaigner for the environment, including the Lagoon. Before it became fashionable, she campaigned against the use of DDT. You see we had Italians growing tobacco next door. So that they would understand not to put the DDT and dieldrin drums in the lagoon she arranged for warnings outlining the dangers to be written in Italian and sent to the growers.

Fishing clubs for fish

Once a year the Corowa Angling Club hold a community bowls day to raise money. Ken Strachan, Kelli Cunningham, Merrilyn Strachan, Peter Tidd, and Graham Ellis are keen participants, along with over one hundred other people who come along. The club members sell raffle tickets and last year raised \$5 000. This money is used in the 'dollar for dollar' scheme through NSW Fisheries. They've been buying fingerlings of cod and yellowbelly to release into the river since 1988. Ken believes that restocking is helping to maintain healthy fish numbers in the area:

Since re-stocking has come into its own, we've started to catch yellowbelly in this area, where before you very seldom ever got a yellowbelly, so the re-stocking is really improved the yellowbelly numbers.

Quieter times

Jody Liversidge lives in Shepparton and while she and her husband Harry and their son fish the lower reaches of the Goulburn they also travel to Lake Mulwala chasing cod. She would like to see less speedboats and skiers in the good fishing spots:

We've had friends that have been up there fishing and actually seen massive cod floating, because they must have been hit by a boat. So they are dead, or nearly dead, floating. If they get hit on the head by a speedboat they're not going to survive.

Part of life

Gavin Vale explains the many ways that the river and fishing have always been part of his life:

We holidayed on it, we swam in it, we fished in it, we irrigated from it, we used to graze our cattle in the forest. We just love it, we love what it is. My forefathers were timber millers and I can take you to the original sites of those mills, and that forest has just got something in it. I don't know what it is, it's a heart thing, it's something that you really can't explain.

Fishing for science's sake

Over the twentieth century, trips to camp along the rivers have been a crucial part of the research on native and introduced fish. In 1949-50, J.O. Langtry investigated the biology of native fish.³ His field-work took him to camp-sites along the Murray River to the Hume Reservoir. There he met people like G.E. Clark, a commercial fisher, as well as a variety of poachers who lived off the bounty in the forest.

Langtry understood the importance of local knowledge about fish, where they lived and how to catch them under different river conditions. His science complimented this local knowledge by working out important information about the breeding, diets and life span of the fish.⁴

Native fish researchers John Koehn, John McKenzie, Ray Donald and John Douglas, who were interviewed for this project, have all followed in Langtry's footsteps, camping and fishing alongside recreational fishers while adding to our knowledge about Australian freshwater fish.



A fisheries technician releasing a tagged golden perch.
Photo: NSW DPI.

Visions for the Murray

The fishing people who contributed to this project have all talked about their hopes for the future of the river. Many felt they had seen some improvements but most don't feel the river is as healthy yet as they would like to see it. Each of these fishers suggested ways to help the river and in turn help provide healthy habitats for fish.

Respect

William Cooper (1861-1941), a Yorta Yorta man, fought for land rights at Cummeragunja and had great hope that life along the Murray River would be a matter of respecting the environment.

Our men have been able to succeed in the past and given a chance we are sure that many of them will succeed in the future.⁸

In 2004 the Yorta Yorta signed a joint land management agreement with the Victorian Government regarding the Barmah Millewa Forest areas. When celebrating this agreement Wolithiga Elder Henry Atkinson talked about the importance of fishing within connection to country. Like many landholders, Henry wants people to seek

permission to come onto these river banks to fish:

I personally am looking forward to the day when I can sit on the bank of the mighty Dhungala (Murray River) and fish exclusively on my own land without the need for a piece of paper to say what I can and cannot do and knowing that only my people walk here, sit here and fish here. I'm not saying that I want others excluded from the river system but I just want a little area where everyone who treads here has the same thought in their hearts.⁹

One of the ways Moitheriban people ensured bountiful catches of fish was by limiting the harvest of female fish and respecting them as critical for having fish into the future. Wally Cooper thinks that all recreational fishers could learn these lessons.

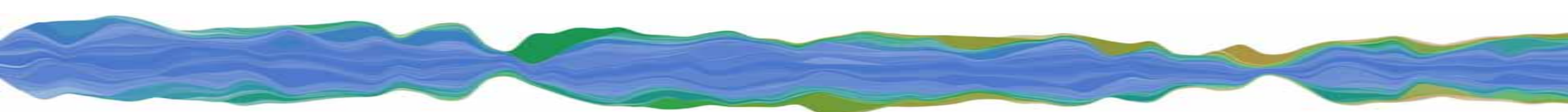
We need to educate them of the importance of breeders. Think about farms with stud bulls, stud rams and stud horses, you don't eat them. And that's the same thing with fish. You've got to get your breeders and keep them in abundance. If you don't keep them then we haven't got a future. And that's what we got to look at, the future of our fish.



Juvenile golden perch – the future of the fishery. Over 50% of juveniles like these can die going through or over a weir. Nearly 100% of adult small-bodied natives can die this way. Photo: Lee Baumgartner.

Richard Kennedy agrees:

You'd take a certain size, you wouldn't take the little ones, you wouldn't take the old ones, the breeders. You'd chuck them back. We need to get those cultural flows back through, to get water back on country, to get the environment right again. I suppose it comes back to wanting to be involved in a particular thing like water. People have got to be confident about the way it's being managed if there are going to be better outcomes in the future.



J.O. Langtry was a biologist who travelled the Murray River in 1949-50 to gather information about native fish. He fished the Murray and talked to commercial and recreational fishers and all other types of people who lived along the river. He thinks that it is important to think about those things we can't see if we want to help the fish:

The maintenance of healthy river flows means it is necessary to concentrate on looking below the landscape's surface – by rehydrating landscapes and recharging aquifers. The sustainable way of doing so is to capture more rainfall in the topsoil and thus recharge the aquifers with a view to restoring their contribution to river flows.¹⁰



Encased in all this concrete is a 'vertical slot fishway' that allows larger migratory fish like Murray cod, trout cod, golden perch and silver perch to migrate past Yarrowonga Weir. Photo: Scott Nichols.

Fish need to move

All native fish need to move between habitat areas at some stage in their life cycle to spawn, seek food or find shelter. Many species need migrations over extended distances to complete their life cycle.^{13,14}

Structures that span the width of the waterway can act as barriers to fish passage by creating:

- a physical blockage: most native fish can't jump more than 10cm, so anything higher than this is a barrier
- a hydrological barrier: the water being forced through a culvert, for example, or over or under a weir is too fast or creates a pressure barrier
- artificial conditions that act as behavioural barriers to fish: for example a long, dark passage will be avoided by fish.

The impact of such barriers on fish passage will vary depending on structure design; the nature of flow, debris and sediment movement in the waterway; and the swimming capabilities of resident fish.

Fishways (also known as fish ladders) are used to help fish get past weirs less than 6m high. They work by providing a series of small hydraulic rises and resting pools that allow fish to 'step' their way up and over the barrier. 'Vertical slot fishways' are the most common type of fishway in the Murray-Darling Basin.

Fishways built as part of the Hume to Sea project on all mainstem Murray weirs include fishways designed for large species (Murray cod, golden perch, silver perch) and a second fishway for smaller species (gudgeons, Australian smelt, rainbowfish).

State of river: 'poor – very poor'

The Sustainable Rivers Audit (SRA) is an ongoing systematic assessment of river health of 23 major river valleys in the Murray-Darling Basin. Environmental indicators (themes) include hydrology, fish and macroinvertebrates, which are monitored and will highlight trends over time.¹⁶

The Central Murray Valley was surveyed in 2005. The Central Murray Valley fish community was considered to be in Poor Condition and Ecosystem Health in Very Poor Condition.

Only 45% of predicted native species were caught from the 'Middle Zone' (near Corowa). Although native fish were relatively abundant, the community had lost much of its native species richness and its biomass was dominated by alien fish (77%).

Abundant Australian smelt, un-specked hardyhead, Murray-Darling rainbowfish, carp gudgeons, and flat-headed gudgeon dominated the native fish. Carp dominated the alien species, while goldfish, Eastern gambusia, and redfin were also caught.



Imagine the fish population in a healthy Murray River! Photo: Scott Nichols.

Bringing back the fish

A number of local projects aim to bring the fish back to the rivers of the Murray-Darling. These compliment large scale programs such as the MDBA's *Native Fish Strategy* and *The Basin Plan* that continue to work with a wide range of stakeholders to ensure positive outcomes for the environment and fish of the Murray-Darling Basin.

a) Lake Hume to Yarrawonga Resnagging Project

Almost 25 000 snags were removed from the Murray River between 1976 and 1986. To reverse this impact, from 2006 to 2009 NSW DPI reinstated 4 450 snags in the river between Hume Dam and Yarrawonga (headwaters of Lake Mulwala).

It is hoped that resnagging will help to secure the long term viability of existing native fish populations such as Murray cod, trout cod and golden perch. These works effectively achieved 75km of habitat, connecting the remaining small isolated patches of fish habitat to create large viable areas of habitat.

For more information contact Cameron Lay on (02) 6738 8520.



One of the snags soon to be providing habitat for Murray cod in the Murray River. Photo NSW DPI.

b) The Sea to Hume Dam program

This project aimed to ensure native fish can migrate from the sea and Coorong estuary right up to Hume Dam at Albury-Wodonga, a distance of 2 225km. The Murray-Darling Basin Authority has begun restoring stream continuity within the Murray by constructing fishways on 14 mainstem structures on the river, including the tidal barrages at the Murray mouth.

A tri-state (NSW, Victoria and SA) research and monitoring program accompanying the works has determined that some small fish like carp gudgeon, Murray rainbowfish and unspeckled hardyhead actually migrate, but couldn't make it past the mainstem barriers. In response, dual fishways have been

developed to allow for the movement of large and smaller species.

For more information contact the Murray-Darling Basin Authority on (02) 6279 0100.

c) Bidja Bila ('Men of the River') Indigenous Landcare Group

This group works on an area near Albury-Wodonga controlling weeds and planting native trees and grasses that will create more habitat for local endangered fauna. The group is supported by the North East CMA (Victoria).

For more information contact Richard Kennedy on 0428 266 786.

d) Community Fish Tagging Program

The Murray CMA (NSW) is developing a community-based fish tagging program for the Murray catchment, trialling it first in the Edward-Wakool system. Fish caught during competitions will be identified, measured, and microchipped, before being released. Fishers will be provided with hand held scanners, so they can identify fish captured and tell researchers about fish movements.

For more information contact John Conallin on (03) 5880 1400.

River resources

- Native Fish Strategy Coordinator, Southern NSW
Charlie Carruthers: (02) 6298 0802
- Murray Catchment Management Authority (NSW):
(03) 5880 1400
- Goulburn Broken Catchment Management
Authority (Victoria): (03) 5820 1100
- North East Catchment Management Authority
(Victoria): (02) 6043 7600
- Murray Lower Darling Rivers Indigenous Nations:
(02) 6051 9948
- Corowa Anglers Club: (02) 6033 3180
- Lake Mulwala Angling Club: (03) 5744 2258
- Corowa District Landcare Group: (02) 6033 0947
- Echuca Landcare Group (includes work on the
banks of the Murray and Campaspe Rivers):
(03) 5482 1560
- Waterwatch (hosted by the Murray CMA):
Anthony Conallin: (02) 6051 2217
- Echuca Historical Society:
(03) 5480 1325 between 11am – 3pm.
- National Library Australia: www.nla.gov.au

Abbreviations

DPI	Department of Primary Industries (NSW)
CMA	Catchment Management Authority
MDBA	Murray-Darling Basin Authority

About the Talking Fish project

The *Talking Fish* project arose from an increasing realisation that many different groups of people, including fishers, Indigenous communities, tourists and landholders have developed unique relationships with the rivers of the Murray-Darling Basin. There is also the growing recognition that the health of the Murray-Darling Basin is at risk. By accessing and recording different people's stories about their experiences of a river, its fish and how both have changed will contribute to our collective knowledge and help shape future management decisions. These stories also have the potential to give people a sense of just what these magnificent rivers and their fish were once like - and could be again with ongoing rehabilitation efforts.

The *Talking Fish* project focussed on 12 reaches within the following rivers: Namoi (NSW), Upper Condamine River (Qld), Katarapko Creek (SA), Upper Murrumbidgee River (NSW / ACT), Culgoa - Balonne Rivers (Qld / NSW), Paroo River (Qld), Goulburn River (Vic), Darling and the Great Anabranch (NSW), Ovens River (Vic), Mainstem Murray River (NSW / Victoria), Darling River (NSW) and The Coorong and Lower Lakes (SA).

The *Talking Fish* project is a starting point to share local knowledge and learned experience with others to improve the health of the Murray-Darling Basin. Project information is available at: www.mdba.gov.au.

Note: The term *Talking Fish* is also being used by the Australian River Restoration Centre as a way of sharing knowledge about people's connection to fish and waterways.

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Some fish of the Murray River

Native
(Not to scale)

Murray cod / Cod



Trout cod / Bluenose cod



Blackfish / Slippery / Slimy / Greasy



Golden perch / Yellowbelly / Callop



Catfish / Eeltail catfish / Jewfish



Yabby / Craybob



Silver perch / Murray bream / Grunter



Macquarie perch / Black bream / White eye



Murray cray / Spiny cray



Introduced
(Not to scale)

European carp / Common carp



Redfin / English perch



Rainbow trout / Brown trout

