

& the Darling Great Anabranch



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 Darling and the Great Anabranh: 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 – Darling and the Great Anabranh

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Source: Scott Nichols.

Source: Wentworth Historical Society (at 'Kalcurrha', donor: Patsy Crozier; 2007-29-1-8).

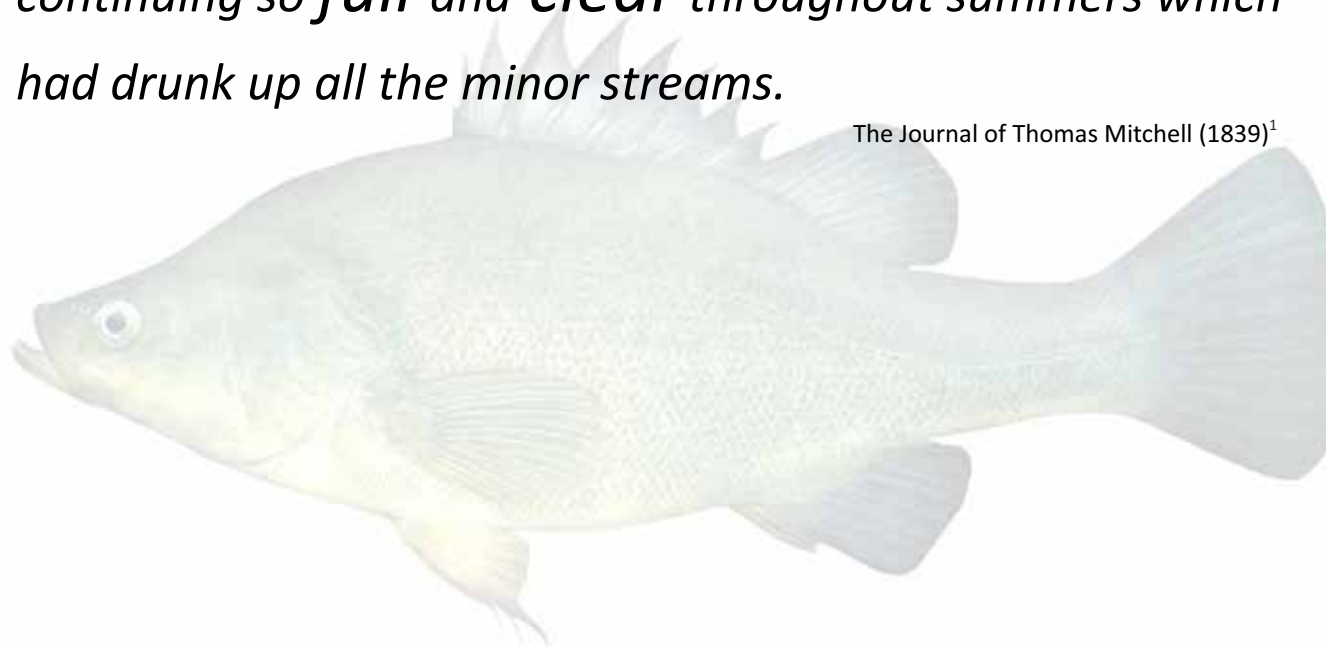
Source: Jodi Frawley.

Back page fish images

All fish images: NSW DPI.

*We ... passed the bank of a **beautiful** piece of water
.... This lake was **brimful**, a novel sight to us; the
shining waters being spread into a horseshoe shape,
and reflecting the images of enormous **gumtrees** on the
banks. It seemed **full of fishes**, and it was
probably of considerable depth, being free from weeds, and
continuing so **full** and **clear** throughout summers which
had drunk up all the minor streams.*

The Journal of Thomas Mitchell (1839)¹



The Lower Darling River and Great Darling Anabranch are located in south-west New South Wales. Muddy waters meander over the grey soil floodplains past red dunes, spiky saltbush and gnarled red gums. These are the traditional lands of the Paakintji people. But the land and the river are no longer what the Paakintji once knew and fished.

11 000 years ago, the Darling River changed its course just south of Menindee Lakes, leaving the Great Anabranch's 460km channel to dry and flow into the Murray only during big floods. Since its discovery by Europeans, the Great Anabranch has been the focus of dreams to use the ancient river channel to deliver water for irrigation. The Darling itself was once a busy transportation route, with paddlesteamers carrying wool and other goods between Bourke and the rest of the colony.

The health of the river and its fish has been shaped by the people who came to live on it and of the industries which brought those people to the area. Grazing, dryland farming, transportation and irrigation all needed different types of workers. Often this brought new people into the area, all of whom brought new needs to the river and new ways to catch its fish. Each changing industry also had different effects on the landscape, shaping the way it looked and how water flowed across it into the river.

These changes 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, catfish, silver perch and yellowbelly. There were no carp and no redfin.

There are still those who love the river and who love to fish the river. Their stories are part of the bigger story of changes to the Darling River and to the Great Anabranch 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 Darling and their visions for a healthy river that is, once again, full of fish.

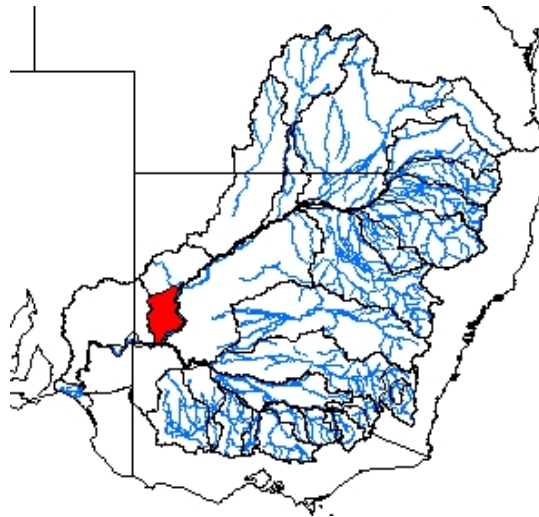
Introducing the river and its people

The heritage of Paakintji fishing

Aboriginal heritage of the Great Anabranch and the Lower Darling dates back at least 36 000 years. Paakintji people have explained that the river system is important to them for its cultural and spiritual expression of their heritage, its many sacred sites and burial grounds and its continuing provision of medicines and foods.²

This long heritage is visible on the banks of Lake Tandou, where wind formed dunes ('lunettes') of fine red sand line the edge of inland lakes. Within these lunettes, Archaeologist Jane Balme uncovered a campfire in the 1980s. In it she found the bones of 357 yellowbelly from a single meal. Radiocarbon dating found they were 25 000 years old.³

To Paakintji people, there is still nothing better than a fish feast from a campfire with family and friends.



The arrival of the Europeans

The Darling River provided a pathway for explorers, overlanders, graziers and bushrangers from the 1830s. In 1853, the first river-boats moved up the Darling and ports were established at Wentworth and Pooncarie. Produce, including fish, was sent to market along this river 'highway'.

Pastoral stations were vast and homesteads and outbuildings were located close to the river to ensure watering points for livestock.



River transport was critical for the survival of early settlements along the Darling. Photo source: Wentworth Historical Society.

The introduction of sheep, cattle and horses gradually changed the river environment, degrading banks, reducing native grasses and saltbushes and adding nutrients to both land and water. These stations employed both Aboriginal and non-Aboriginal people, who all enjoyed fishing for fun and food.

In 1886, George and William Chaffey secured 250 000 acres from the Victorian Government and began the development of irrigation schemes along the Murray and Darling Rivers. In this area, Wentworth, Pomona, Comealla and Dareton all started irrigating from the early 20th Century.

Vine and stone fruits were grown for the dried fruit market, and wineries eventually joined fruit and vegetable gardening. Irrigation kicked off the annual rhythm of seasonal workers who often lived along the river while they picked fruit and worked in the factories.

The arrival of soldier settlers after each world war meant smaller blocks and more permanent people in the area.



Surveyors, possibly looking at divisions for Soldier Settlement Schemes – one of the significant land development activities that affected the rivers of the Murray-Darling. Photo source: Wentworth Historical Society.



William Riley is a Paakintji man who was taught to fish by his Granny Quayle and his aunties. He fondly remembers the family fishing gatherings.

Photo: Jodi Frawley.



Bill Lever lives at Wentworth and is a commercial fisher who has worked the Murray, Darling and Great Darling Anabranch since the 1960s. Photo: Jodi Frawley.

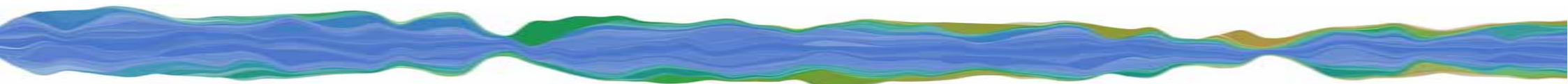


Rod Stone has been on the Wentworth Angling Club's committee for over twenty years and is currently serving as the president. Their home base is at Fort Courage where they have 100 acres right on the Murray River. They welcome travelling fishers to their camp and caravan park on the grounds.

Photo source: Rod Stone.



Jenny Whyman is a Paakintji woman and representative on the Northern Basin Aboriginal Nations Committee (NBAN). Jenny believes the river needs to be looked after when its dry so that fish get the best chance to survive when there is plenty of water. Photo: Jodi Frawley.



William Riley - *I'm trying to get our people to rally now*



In 1934, William Riley, a Paakintji man, was born in White Cliffs, a tiny opal mining town in the far west of New South Wales. His father worked as a drover, pushing sheep from station to market along the rivers.

The River!

William didn't see the river in the first few years of his life, but boy when he did!

Well, I was amazed when I saw the Darling River. I was about 6 year old when I first crossed the Darling River bridge in Wilcannia. My niece was a bit younger than me and she was frightened to cross the bridge – because the old bridge across the Darling had cracks in the boards - and she could have fallen through.



Darling River channel in flow. Photo: William Riley.

Fishing with Granny

When William was in his early teens, his father first sent him to an Afghan family in Broken Hill. From there he went to live with his Granny Quayle at Wilcannia. On the Darling River he learnt to fish with Granny and a couple of aunties.

I'd be running bait for them, keep an eye on the shrimp bucket, digging for worms. I was about eight years old before they let me touch a fishing line. They taught me to fish on a hand line. A lot of kids didn't know how to twirl a line and would get it hooked in their ear or in the back of their neck. Danger for a small kid, really.

In the right conditions, big groups would go down to the river in the evening for special night fishing.

When the river was really running low, it was clear as crystal and they used to get down there with hurricane lights. Sometimes we'd make fat lamps – 'slash lamp' we used to call them. We'd get hessian, roll it up and pour mutton fat around – melt it and fill it up with sand while the fat was still hot and you'd light the hessian and it would throw a good light. The light used to attract the fish, and that's how they'd catch them.

The ancient Darling

The main channel of the ancient Darling River once ran down the course of what we now call the Great Anabranche. The threaded nature of this whole web of channels has always consisted of lakes, channels, anabranches and a river channel that interlace across the dry arid landscape. Sometimes it dries down to a series of pools and other times water flows across the plains, linking all the waterways together.

Fish evolved in this pulse and response environment – sedentary when it is dry, moving and breeding when it is wet. It is thought the main channel moved from the Great Anabranche to its current position around 11 000 years ago.

At the time of European contact, when the Darling was in full flow, the Paakintji used cooperative fishing techniques such as nets to feed the large groups of people who had gathered to take advantage of this time of plenty. As the waters receded, weirs were constructed across channels and wetland inlets to contain and capture fish. As the waters slowly subsided the Paakintji would disperse, and smaller groups would work the smaller pools with spears and poison.⁷

The Darling is a dynamic river system that has always moved across the broader floodplain – and its people, the Paakintji and those of European descent, continue to learn how to respond to these changes.

The women fishers in his family were able to take fish home for people who didn't make it down to the river.

Yellowbelly, bream, there was never any carp in the river in those days. They'd feed their own families. And they shared them with the other families. It's a great sport and it kept everyone out of trouble. There wasn't any drugs around in those days and not much alcohol.



Trish Johnson, Paakintji woman, with two cod she caught from the Darling River near her home at Pooncarie. Photo source: Trish Johnson.

Lake fish

As William got older he would camp at Kinchega National Park with his family and friends. They would enjoy the Menindee Lakes, as time out from their day-to-day lives. They caught all sorts of fish in the lakes.

What they call the black bream has got a very small scale and more scales than the perch. And of course, they're harder to fillet too. They're very bony. A lot of thin bones.

A young man's mistake

As a young man, William took on all sorts of work for the station owners in the western district. He worked with cattle, horses and sheep. As farming became mechanised, he got a license and tackled the modern equipment.

Planting crops on farms and big properties, erecting windmills, making corrugated iron tanks and troughs, setting up all watering points and things like that. My dad was pretty proud of me taking on heavy machinery, until I woke up to myself.

William's attitudes to the farming that was going on along the river were changed one lonely nightshift out on the plains.

This Chinaman gave me a big area to myself to plant, to sow my crop and it had been worked before, and I didn't know. There was a nearby creek going past. I was on night shift, I thought the dust was changing colour; but then I realized, it was a burial site! And just on daybreak, I've unhooked the tractor off the combine, raced off the corner to prepare the machine for the next shift, and I came across a disturbed grave, where I'd

Bony bream

(*Nematolosa erebi* – bony herring, pyberry, hairback herring, melon fish, thukari)



Photo: Gunther Schmida.

- Medium sized fish to 47cm, but commonly 12-20cm
- Widespread and abundant throughout the Basin, mostly in lowland rivers
- Hardy fish tolerating high temperatures, high turbidity, high salinity and low dissolved oxygen, but don't like cold water temperatures
- Spawn from October-February in shallow, sandy bays and lake edges
- Migrate upstream when as small as 2.2cm
- Eat algae, detritus, microalgae and microcrustaceans
- Important food source for large fish (cod, golden perch) as well as birds (pelicans and cormorants)
- Threats include cold water pollution and barriers to fish passage

been ploughing over these burials. I prepared the tractor, left a note and jumped in the ute, got outta there – I felt haunted, you know. The guilt I carry, and the damage that's been done to all of our rivers and our Country in general, that's why I'm trying to get our people to rally now.

Burials were once common along the river corridors, because of the softer soils. These same spots were favoured for ploughing and irrigation by the non-Aboriginal settlers.



Properties like Dunlop Station on the Darling River, pictured in 1886, employed a variety of people to work the land and in the homestead. Photo source: National Library of Australia (PIC/9228/16 LOC PIC Album 76).

I feel sorry for the old cod

Whether out camping, or travelling along the Darling for work, William and his family would see commercial and recreational fishers taking advantage of the wide open spaces – which also meant hardly any fishing inspectors.

I feel sorry for the old cod – everybody goes for the cod, and they're just about extinct. I was against the Victorians coming up to Menindee and they'd have camps set up all over the place. They were licensed fishermen, of course, but instead of Fisheries putting a quota on what they were allowed to take, they just let them go and they just hogged everything. Just too greedy. They used to come right up as far as Tilpa. Up the Darling. Set up big camps. Boats. Spinners and all their fancy lures. And some of them even carried gillnets with them, which are illegal. And they just got too greedy. And, even now, they still get away with a lot.

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, crustaceans, 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.

Bill Lever – Fishing for a living



Bill was born in 1926 in Albury where his Dad worked on the Hume Dam and his grandparents were the weir caretakers. During the depression, lack of local work

forced his parents into the drift to Melbourne. He served a plumber's apprenticeship but quit the day he finished because, as he said, he wanted to go back to the bush again.

Fishing for a living

He got a commercial fishing licence in 1953, just after he was married to Judy.

When I got my licence and we were living at Numurkah I used to fish the Murray around Cobram. I'd go up the Edwards around Denny and the Billabong Creek and used to drive over to Euston, Lake Benanee. Fished it all from Numurkah. I put in about five days and go home and pack the fish and send it down to Melbourne. Echuca can be pretty good for reddies. I'd sell them at Echuca on the way home. Shepparton was always good sale for cod. They didn't want reddies or yellowbelly, just cod.

In the 1960s Bill came to live at Wentworth and started heading north up the Anabranch and the Lower Darling to the Menindee lakes for his catch. Bill almost always fished on his own, working from his 18ft boat, setting nets to catch native fish for market.

But you know, the drum netting was the best living though, I liked drum netting. Plenty of exercise up and down the boat. It kept me pretty fit. If you've got 20 drum nets in - I'd shut the motor off, walk up the nose of the boat with the net, and jump back and set the net again. Get half way back pulling the oars, all depends on the current. I'd be walking over a mile a day just up and down the boat.



Drum nets like this one being set in Victoria were used throughout the Murray-Darling Basin.
Photo source: State Library Victoria (H84.488/135).

While mostly Bill fished on his own, sometimes he would meet up with other commercial fishers along the river.

I'd meet up with my mate Roy Wilson when the river was running. He'd be fishing upstream and I'd be fishing downstream. We'd camp nearby or together. Just sit there of a night-time, knitting up drum nets. We'd have our ice-boxes with us. There used to be a bloke who'd bring ice up for us from Wentworth once a week. And we'd have a tonne and a half of fish for him every week.

A seasonal catch

The bounty from commercial fishing in the Darling was seasonal – entirely dependent on the flow of water from upstream.

We'd be sweating on rain. Sometimes we used to get February rains then you'd get a bit of a flush for Easter. Then we used to start getting a good river, from the rains in March and April. She'd be rising around July. Every day from then on, the fish were getting up steam all the time. More and more every day. The last day in August that was always our best lift. That was also the day when you had to pull out.

The NSW regulations closed fishing in September to allow the fish to breed and for numbers to rebuild for the following season. But the water kept moving downstream, crossing over the state border, where the regulations were different.

Used to cry then, used to cry because bloody South Australian blokes, they could catch golden perch all the year around. We'd knock off and they're catching perch left, right and centre.

Rules and regulations

Fishing regulations currently vary between all Murray-Darling Basin states, something which has been a bone of contention for some time.

As early as 1928, during a visit to the River Murray in South Australia, the NSW Inland Fisheries Officer, Mr. H. K. Anderson, recommended a number of actions to the SA Minister for Agriculture, Hon J. Cowan, which would improve conditions for the Basin fishery.

Amongst these were a *schedule of lawful lengths* that would apply to both recreational and professional fishermen, and be in line with those in place in New South Wales and Victoria.

In addition, Mr Anderson recommended regular opening of Lake Victoria's gates to allow fish to move to the river, and fishways on Murray weirs⁸ – something that is only now being implemented.

Golden perch was the best

Cross-border fishing regulations regarding golden perch became more of an issue for Bill in the mid 1990s. In part, this was because one of the favoured fish for Indian, Chinese, Vietnamese and other Asian communities was golden perch. At this time, cooking fish using Asian methods started to become more popular among the broader community too. Bill says:

It really kicked on in the last 15 years when the Asians started getting used to our fish and they reckoned our golden perch was the best thing they'd ever had. They were our best buyers.

The coming of carp

Recreational fisher Rod Stone worries about the biggest change that he has seen to the rivers and to the fishing in the area: the carp.

When they first came here, probably late '70s, '80s, I reckon for the first four years after they hit here you could hardly ever catch a native fish. They just decimated the native fish population in my opinion. Then, after that, native fish started to pick up a bit. We used to catch native fish with carp inside them. You'd go down there and you'd catch

20 fish and 19 of them would be carp, and you might catch one little perch or something, that's about all.

Lagoons and backwaters are traps for the carp, who don't always move into the main channel as the water levels drop. Rod has seen this for himself:

We were driving through Boxer's Island trying to find whether there was any water in the billabong to get a tin of yabbies. We drove up and all you could hear was these fish. We walked back down over the bank and just saw these massive carp. I mean they were three and four foot long. Some of the biggest carp I've ever seen in my life. And they were just packed in this water hole. I reckon there must have been a million carp in there, at least.



Carp are often the last fish left in a drying wetland if it was possible for fish to escape. Photo: Scott Nichols.

Carp FAQs

Carp arrived in large numbers with the floods of the 1970s. These fish are now a major pest in the Basin.



Photo: Milly Hobson.

How many eggs do carp lay?

Carp can lay millions of eggs per year. Carp spawn on vegetation in warm, shallow waters such as found in wetlands and undergo population explosions following flood or high river events.

Can eggs be carried by birds' feet and survive in mud and in the water to be fertilised at any time?

No, carp eggs only survive out of water for a short time and are usually attached to plants. Unfertilised eggs soon die.

Can carp stay alive in mud?

No, carp cannot live in mud.

Do carp undermine river banks?

Carp feed by sifting through mud but there is no evidence that they undermine river banks.

Do carp spread diseases to native fish?

A large number of parasites, diseases and viruses have been associated with carp but there have been no specific reports of deaths of native fish caused by carp-borne diseases in Australia.⁹

Bill has also seen changes since the carp arrived:

Because carp were feeding on the bottom, they ate all the catfish eggs. They just go along sucking everything up. Catfish used to lay eggs in stony nests and you could see a hollow in the bottom of the creek when it went dry. Plus all the little water snails. In the summertime when we were drumming, they'd be just encrusted with snails, we had to run our hands down and knock them off otherwise you'd ruin the boat. I haven't seen a snail since the carp. They tell me there's a few down South Australia, in some of the pipes there. And that was the main food of the catties, plus all the mussel beds, they wiped them out too.



Natural populations of *Notopala* spp. are now thought to be extinct in the Murray-Darling Basin, however small populations are surviving in irrigation pipelines. Source: NSW DPI.

Little things lost?

Historically, the Murray-Darling Basin supported about 18 species of snails, but natural populations of nearly all of these have declined.

Some of these, like *Notopala* spp., were thought to be extinct until rediscovered in the mid 1990s in irrigation pipelines, where numbers are still limited.

Notopala spp. produce 'miniature adult' babies and so require high protein, low carbon diets. River regulation is thought to have encouraged carbon rich algae in stable weir pools, meaning these snails don't get enough of the right food.¹⁰

Len Hippisley observed changes in the Darling River over a 42 year period. He noted the loss of a small aquatic insect.

A change I noticed [around 1953] concerns what I describe as a tiny microscopic water flea, they were always evident in the water especially when furrow irrigating. Water soaking into the earth would be laden with these tiny insects, hardly noticeable except by their absolute mass of numbers enabling them to congregate on the water in billions forming a level line up to an inch thick. They are not seen like this anymore. I believe that they must have been food for small, newly hatched fish and crustaceans, similar to tiny sea plankton of the oceans. I have not been able to identify this insect, and capture exercises carried out by various different bodies have been unsuccessful.¹¹

Len accounted the decline in native fish catches at that time to the disappearance of the water flea.

Rod Stone – Drought rivers and flood rivers



Rod was born in 1955 in Mildura but for a number of years lived at no fixed address with his family. His dad was a rabbit trapper, so they travelled up and down the Darling and the Great Anabranch making a living

on the fringes of the pastoral industry. They lived in a shanty on the river, and Rod's childhood was rich with the experience of the great outdoors.

Oh, I was probably fishing by the time I was about three years old. We used to have a place on the river– they'd call it a shanty now I suppose, but it was probably a fairly good house back then. We used to have all kinds of animals; rabbits, goats, kangaroos as pets. We had a dog, but no cat. We just lived there up 'til I was about five and a half and then we moved into Pomona so that we could go to school.

Fishing – part of life

Fish were part of the staple diet of an early life lived on the riverbanks. And after they moved to town, Rod and his family continued going to the river as much as they

could, joining their Dad on weekends and during the school holidays.

It used to be mainly perch, the odd cod and catfish. We used to get silver perch in the Murray. There used to be a lot of other native fish that you used to see swimming around. At odd times, you'd get a little gudgeon type. Tiny little fish. We used to call them 'minnows'. We wouldn't know what they were. But the odd times, you'd get them.

Gudgeons

(*Hypseleotris* spp., *Philypnodon* spp.)



Western carp gudgeon. Photo: Gunther Schmida.

- Group of small native fish, usually 8cm or less
- Bottom or mid water dwellers that prefer wetlands, or slower waters with aquatic plants
- Food includes microcrustacea, aquatic insects
- Males guard and fan eggs while they develop

Over the long summer holidays it was hot and dry. Christmas Day was always a traditional day at home trimmed with a hot roast lunch. But on Boxing Day, the Stone family celebrated a different tradition.

Oh, they were fun days. Christmas night after tea, we'd start getting everything organised, have it all packed up, ready to go next morning. We'd leave at day break. We used to take all the cold meat and things left over from Christmas Day. And we'd go up the rivers fishing and swimming, play cricket and go out in the bush walking and just having fun. There was a couple of other families used to go with us. Just a fun day out, it happened every Boxing Day, it was just a ritual.



The notice board at Fort Courage, Wentworth Angling Club's home base, is covered in photos of successful fishing trips and get-togethers. Photo: Scott Nichols.

Dry, very dry and drought ...

The western district of New South Wales has a highly variable climate. You get dry, very dry and drought. Rod has seen the Darling River and Anabranch in all these stages – each one with its own special fishing conditions.

I've been up the Darling when it's only been holes; a little trickle between each hole. We used to use lures called 'floppies' back in those days. You'd cast your lure out and let it sink, and you'd actually see five or six feet down into the water 'cause they were all clear, pools. You could actually see the fish come up and strike the lure. That's a fantastic feeling when you see a big fish come up and grab the lure.

... then flood

But Rod has also seen plenty of the other extreme that people of the west experience – the floods that can take months to travel down from all the upstream tributaries. The dry beds and creeks of the Great Anabranch and its floodplain changed dramatically once the water arrived.

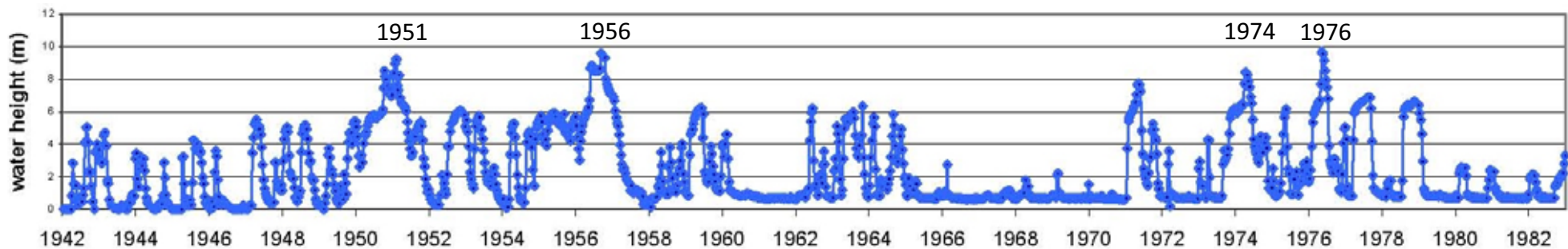
Some of the creeks were like channels and were probably about eight or ten feet deep, so they weren't shallow. There were five or six of them together in this little spot on the Anabranch. One of the main ones that used to run off the main channel and it would nearly do a loop, and then it went back into the delta. It used to roar down that one. You couldn't stand in it when it was running real hard. It used to knock you over. We used to get a few fish but it was good for yabbing!



The Darling River in 2007 during the recent drought.
Photo: William Riley.



Darling River channel in 2010 in flow.
Photo: William Riley.



Len Hippiisley meticulously measured and recorded water heights at Burtundy Weir on the Darling three times a month from 1942-1982. The graph shows just how variable the river height can be and reveals that the 1951 flood peak was almost as high as the memorable 1956 and 1976 floods and was higher than the flood of 1974. Data source: Len Hippiisley.

1956 at the confluence

After WW2 the irrigation areas around Mildura were cut into smaller blocks for soldier settlers. Each pair of blocks was supplied with a Bedford truck and a TE20 Ferguson tractor.

In 1956, flood waters threatened Wentworth from both the Murray and the Darling systems. The 'little grey Fergies' were brought in to build levee banks while the water was still far away. A fleet of these light little tractors, with earth scoops on the front and trailers at the rear, successfully sandbagged Wentworth, which sits at the confluence of the two rivers.

Locals knew that the light red sand that filled the bags would not be enough. So they fortified levees with a layer of red river clay that baked solid in the sun. Levee banks protected the hospital, pump houses, power station and most of the main town.⁴ Mildura, just over the Murray River, was not so lucky, experiencing some of the most devastating flooding in 1956.



Fergies at work in the 1956 flood, Wentworth.
Photo source: Wentworth Historical Society.

Clayton Sharpe is a fish ecologist who works for the Murray-Darling Freshwater Research Centre in Mildura. He grew up in Mildura angling and yabbing in the irrigation channels, rivers, backwaters and the Great Anabranch. He too remembers arrival of flood water from rain events upstream and its effects on fishing:

They were slow in that it seemed slow, but really, in two days the river would change. It would go from a slow river to a really happening, fast flowing system and then the full front would hit, sometimes it seemed, in less than a week. It was slow in terms of how far it was inundating but it was just roaring. Even on the flood plain there were current lines and it was just beautiful to see.



The 1956 flood – well and truly covering the floodplain. Photo source: Wentworth Historical Society.

Floods, droughts... and fish

Flow in the Murray was, and still is, much less variable than in the Darling which is dependent on the less reliable rainfall brought by tropical monsoonal winds in summer and autumn.

The largest flood in the upper Murray was in 1870 and the largest in the Darling was 1864. The largest in the lower Murray was in 1956 when smaller floods in the Murray and Darling Rivers combined.¹²

Prior to river regulation, droughts have at times reduced both rivers to a series of saline pools. In the Darling this still occurs, and was observed in the recent drought.

Native fish have adapted to these extremes in flow and use water levels and water temperature rises as breeding cues for 'the good times ahead'.

The recent floods in the Darling and the Great Anabranch have allowed fish to breed and access floodplain habitats that were unavailable at low flow. Monitoring of the Great Anabranch in late 2010 recorded 16 433 fish from 11 species. Golden perch and carp gudgeons, and introduced carp and Eastern gambusia, were the most common.

'Young of the year' golden perch (fish born that year) were caught prior to the Darling flowing into the Anabranch, indicating these fish probably took advantage of the filled Lake Cawndilla and bred there. Similarly, the majority of the baby carp collected was also thought to have come from this lake. Baby bony bream were thought to have originated from both Lake Cawndilla and the lower Darling River.¹³

Jenny Whyman – Wiimpatja women fishing



Jenny was born in 1956 and first lived in a river camp on the Darling at Menindee. Her family lived with a mob of other Paakintji families on one side of the river and

regularly visited the other side. There her aunty lived with Vince Etrich, a Yugoslav man and they could visit Uncle Jack Kelly a Mutthi Mutthi man and Aunty Lou Reeks, a Parappa Parappa woman.

Family, river, fish

Jenny explains why they were all in Menindee:

They worked at all the stations along the rivers. That's how we all got together there. And my mum and dad worked in Menindee, picking fruit, like watermelon, rockmelon, topping onions, picking tomatoes and all that sort of work, and when the work ran out, my mum and dad decided to move to Dareton.

Jenny remembers how everyone would congregate on the riverbank in the afternoons and weekends:

There was a few families and we all got together every afternoon, after school, and particularly on the weekend, we all loved the river, and we'd all go down and catch some fish, some yabby, and some look under the leaves in the river, in the bark, we'd get the yabbies out of there. Some make their own little line out of cotton, and meat; tie the meat on the cotton and get the yabbies. We didn't sit on the river bank, we'd sit on the logs. On the broken branches that sat out in the river. When we got in the water, we'd all just dive underneath and we could catch the fish that way as well.

With the Menindee Lakes nearby, and the river on their doorsteps, Jenny's families were never short of fish to eat.

When we were kids growing up, my main fish was catfish. Oh, I could eat catfish all day. But we can't get the catfish now. We also used to eat yellowbelly, perch and black bream. That's the main three fish. I didn't eat cod. But I ate all the other sort of fish if I couldn't catch catfish.

Catfish

(*Tandanus tandanus* – eel-tailed catfish, jewie)



Photo: Gunther Schmida.

- Medium sized fish, usually 50cm or less
- Bottom dwellers that prefer slow moving waters of rivers or creeks
- Eat aquatic insects, yabbies, molluscs and small fish
- Eggs laid in a circular gravel nest which the male guards until the eggs hatch
- Listed as 'Endangered' in Victoria, 'Endangered population' in NSW and protected in SA



A catfish guarding its nest.

Photo: NSW DPI.

They lived together, played together, worked together and learnt about the river and surrounding countryside together.

We were all one big family and we all shared. When we went out and got the wild food, we all had a bit of that. We were all really close. There was other members of the family on the other side of the river. My mum's sister and her husband, they owned a big block – we just swam across the river to get our veggies and fruit.

Jenny was also lucky enough to enjoy a special fish recipe that her Uncle Vince brought with him from Yugoslavia.

He used to catch the carp and we used to catch the carp for him. And people say 'Oh, how do you eat carp?' and I'd say 'Well...like this'. Before he cooked the carp for us, he used to soak it in big jars with vinegar with some other ingredients. He'd cut the head off, then he'd cut it up in all little pieces and then he'd put it in this big jar, and then, I think he left the fish in there for a week, and when it's all ready, then he'd get it out and cook it for us. It was really lovely.

All the fish were dead

In the drought years from 1985 onwards, the upper Darling declined in flow severely until, in 1991, most of the river from Mungindi to Menindee turned bright green. This was an extended blue-green algae bloom that ran for one thousand miles.

Jenny remembers:

No fish. In the river at Pooncarie, all the fish were dead. I don't know what happened there. They found the fish floating. In Menindee the water was so green, no one could get in it.



Algal bloom on the Great Anabranh in August 2000.
Photo: Bill and Elaine Grace.

Blue-green algae

During the 1990s, blue-green algae bloomed all along the Darling River and tributaries. There was widespread popular belief that the bloom was caused by toxic chemicals running off from intensive agriculture upstream as far as Queensland.

The scientific assessment, after careful study found that two things caused the bloom. Firstly, excessive pumping from rivers with low flows. This was made worse by long periods of sunny days. Combined, these factors created a still and warm water column perfect for blooms of algae.

Secondly, high nutrient levels in the water caused by fertilizer, not toxic chemicals, running off from a range of agricultural enterprises. Animal manure from pastoral properties and human solid waste from ineffectively sewered towns along the river also contributed to high nutrient levels required for algal blooms.⁵ However, it remained easier, and certainly more popular, to blame the cotton industry!



Blue-green algae in the Great Anabranh in 2003.
Photo: Bill and Elaine Grace.

Great Anabranh pipeline

For the last 10 000 years the Great Anabranh was wet or dry depending on seasonal rainfall. Mostly it was dry.

Over the years Anabranh landholders built a series of blockbanks, retaining water when present but hampering fish passage. Initially, the water was good for cattle, sheep and fish that lived in the semi-permanent pools. The Anabranh was also used for recreational fishing, swimming and picnicking. Over time the water became salty.

For twenty years, fish scientists and water managers negotiated with graziers for a return of the Anabranh to a more ephemeral state. By 2006 a pipeline was built from Lake Cawndilla to supply water to these stations, and by 2009 all the built structures were removed. During the recent drought water security for livestock and people who live there was guaranteed.

In 2010, water once again flowed down the Anabranh and met the Murray, allowing native fish to use the Anabranh and move for breeding.



Pipeline being laid to Bill and Elaine Grace's property on the Great Anabranh. Photo: Bill and Elaine Grace.

Our river is dry

Bill Lever worries about the lack of flow in the river. While this area always feels the effects of Australian droughts, Bill believes it is the water extraction that has increasingly caused problems for fishers over his lifetime:

There was no irrigation going on back in the '50s really. There was no irrigation water coming back in – it was good natural water. Sometimes there might have been a little bit of rice growing, but not to the extent that they do now. And when those cotton blokes came, they took all the water. Back in the '50s there was none of that, just natural river all the way, practically nothing growing on the side, there was no spraying. Just good water. Once they got a bit of fresh water coming in, especially the Murray, if it went over Hume Weir, off they go. That's the same if you could get good water out of the Bulloo River and country around Tibooburra. The fish just went boom – population explosion then. Fish everywhere.

In the last two years Jenny has joined other Aboriginal representatives from the Murray-Darling region on the Northern Basin Aboriginal Nations Committee. She has travelled to other parts of the Basin and started to see new things about the river.

When I went away for the first NBAN meeting in Moree, I saw the big irrigation channels. I saw the cotton growing, and I was really upset. I was thinking 'our river is dry'. We'd had green algae in Menindee, and we couldn't swim in there. But when I went up there and saw that, it really hurt me. And then I went to another NBAN meeting up in Roma in Queensland; I saw all the cotton in St George, and it hit me again. To see that river dry like that, I was really hurt because those people are holding that water up there. That water should be allowed to flow a natural flow. It has stopped us from getting our fish, our turtles. I still eat turtle, still eat fish, witchetty grubs; all my wild food. Without that, I wouldn't live here. Fish, to me, out of the river, is our main thing.



Irrigation offtake Tandou Creek. Photo: Scott Nichols.

Making connections

Getting their hands dirty

When the drought struck the Darling hard in the last decade, Jenny Whyman and her aunties made a special effort to keep going to the river. Jenny reflects that the river was never that dry during her childhood – but as an adult, the dry was a time when they could do their bit for the river:

And when the river was dry, my auntie and I used to go and walk in the river bed. Because what else could we do? Couldn't go fishing. And my auntie used to say to me; 'Look, what are all those sticks in the river? All those broken bottles. They should be all pulled out when the river's dry you know, 'cause when the water's in there, people can get cut, and stick into people when they dive in and swim around.'

Carmel Chapman works at the Wentworth Information Centre. Born in 1941 and raised in Merbein, she has lived in the area all of her life. She thinks that we should listen to a range of knowledgeable people about the rivers:

Aren't we dumb? We don't even listen to what Aboriginal people say and it's in their soul. The Anabranh is the original course of

the Darling River. The scientists say that 10 000 years ago the Darling forced this new course down to Wentworth. But still to me, the Anabranh is highly important. And I don't think you interfere with an original source of a river. Especially the Darling. Patience is what we require. Patience. And a bit of thought about what we are actually doing with this water.



The dry river below Wilcannia, in August 2007.
Photo source: William Riley.

William Riley has been out talking to everyone who will listen about the state of the rivers, at local forums, like the Northern Basin Aboriginal Nations meetings and at global forums.

November 2005, I was chosen to go over to Uganda for a world convention on protection of rivers and wetlands. I talked from the heart. I threw the sheet of paper aside, and let it go from the heart and I got a good reception from the audience. I'm trying to tell people. They've got to get off their bottoms. Get off their butts to help the rivers.

Anger and joy came with the rain

Rod Stone is gravely concerned about the management of water and the blackwater events that came with the rains in 2010. In October of that year there were widely publicised fish kills at the Wakool River. Rod says that it was the third in eighteen months:

The angling club sent a letter to the New South Wales government condemning what they've done, through our local MP, John Williams. They've actually been filling wetlands and forest areas like the Barmah Forest for a fortnight, and then leaving them, and then draining the black water back into the Murray and that's what's caused the death of so many fish. In my opinion, there's been enough flow. They should have just let it run through naturally, and as it runs

through naturally, it would have cleared itself. There would have been more fresh water and it wouldn't have depleted all the oxygen, it wouldn't have become as black as it did.

In 2010, heavy rains in the northern catchments flowed down the river, filling the lagoons, lakes and creeks along the way. For the first time in a decade the Great Anabranh of the Darling River flowed down to meet the Murray. Jenny Whyman describes the euphoria that came with the water:

We were going to Broken Hill for a meeting. And I said to my husband 'I hope there's water in this Anabranh'. We went over the bridge, and all of a sudden, I was going mad, and I said 'C'mon, stop, stop, stop!' So we made our own track down to the water and I just took my jumper off, took my shoes off, rolled my trouser legs up and I was in there. Ohhhh, I was in there. And it was really lucky. It had just started coming down. Must have been the second or third day. And I went in and I was getting all the leaves, I was chucking them all out, to see if I could see any yabbies or shrimps. Yeah, I went mad when I saw it 'cause it was dry for a long, long time.

Blackwater

- Blackwater events occur naturally
- They occur 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
- Blackwater events can harm aquatic animals such as fish. Some animals, such as crayfish, have been seen escaping the water during such events
- There can be long-term benefits. Carbon from the decomposing organic matter enters the food chain, increasing the population of aquatic invertebrates which then provide food for fish
- The impact of an event can sometimes be reduced by water releases to dilute flow. However, this is not always possible and can actually cause the blackwater to spread downstream with the pulse of deoxygenated water



The flows down the Great Anabranh in 2010 saw blackwater produced as leaf litter and other plant matter began to rot. Not every blackwater event causes a fish kill and in 2010 no major fish kill was recorded in the Anabranh. Photo: Scott Nichols.



A dry Lake Menindee in 2007. Photo: William Riley.



A wet Lake Menindee in 2010. Photo: Scott Nichols.

Visions for the Darling and the Great Anabranch

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.

As the president of the local fishing club at Fort Courage, Rod Stone is keen to support ways to bring back the fish. A Lower Murray Darling CMA led initiative to remove willows from the waterways in his area has caught his attention.

Apparently, they're supposed to be coming to do that over the next five years so there'll be no willow trees left in the river here. It will take away some fishing habitat but willows can be very invasive. I've seen pictures of them in streams further east of here where they look like they've actually clogged the whole river up. They just about touched on either side. Actually, Wentworth used to be a bit like that. Fish will still be around snags elsewhere but they won't be around the willow trees.

Commercial fisher Bill Lever thinks that the future of the river revolves around water quality. He remembers what it was like in the past – especially for yabbing – and would like to be hopeful about a new era of clean water:

Queen's Birthday weekend South Australians used to come up in the thousands, craying. This is going back in the '50s when there was good water. Now, the water's changed and we haven't got the quality of water that we had back in the '50s. So that effect's evident in the numbers of fish and crays. If we could get good water they will breed up again. But I don't think that we'll ever get good water again now. That's the finish of it I think. Then again if they send more water down, buy three-parts of the water back off the irrigators, we might do some good.

Clayton Sharpe is aware that there have been many changes in the river over his father's lifetime and over his. He recognises that what one generation sees as normal might not be the way it always was. Helping the river by caring for fish habitat and river

environments might be a change that will bring more fish for future fishers.

My father and grandfather used to fish a lot in Lake Victoria and they would catch a lot of introduced redfin. By my generation, they were gone. Before my time there were heaps of catfish, apparently. My uncles and my father talk about them being in pest proportions. They used to get annoyed with how many they would catch. I can't actually ever remember angling one. It's hard to believe that in one generation it can change.



Clayton Sharpe (pictured with his son Tully) hopes that by caring for the river and its habitats, native fish will still be around for his kids to see.

Photo source: Clayton Sharpe.

Jenny Whyman hopes that it will come back to the basics for the future of the Darling River.

That's how I grew up in Menindee on the river. And, today, I still go back to that same spot over the river. We can't live without that river and the Nguku in the river. And 'Nguku' means water in the Paakintji language.

State of river: 'moderate'

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.⁶

The Darling Valley was surveyed in 2005. The Darling Valley fish community and Ecosystem Health in the 'Lower Zone' were considered to be in poor condition. A little fewer than half the native species predicted for this zone were collected during surveying (47%) and introduced fish comprised a little over half the biomass (53%).

Bony herring, Australian smelt, golden perch, Murray-Darling rainbowfish were numerous, with carp gudgeon and spangled perch also common. Of the introduced species, Eastern gambusia, and carp were most common. Goldfish were also captured.

Menindee Lakes scheme

The Menindee Lakes Storage Scheme includes Lakes Wetherell, Pamamaroo, Menindee and Cawndilla.

Early newspaper reports indicate the Darling River only flowed 9 out of every 12 months, and the Great Anabranch was 'dry in the middle for eight years out of ten'.^{a,b}

Despite this, it was hopeful that the Anabranch and Lower Darling could provide water for Broken Hill and large scale local irrigation development. By 1914 the Great Anabranch was lowered at its upstream junction with the Darling for a second time to facilitate earlier flows and improve conditions for settlers.^{14,c}

Variable flows in the Darling and the need to find a secure water supply for Broken Hill saw periodic calls for a 'water scheme' to be developed so that the Darling River could be turned into a 'veritable Nile'.^{b,d} The Menindee Lakes were looked to for water storage, although the risks associated with high evaporative losses and erratic Darling inflows caused concern.^{d,b}

Debate continued for over 40 years until works finally began in 1949, with an estimated construction time of 6-7 years and cost of £2 300 000.^e

Although project construction took 11 years, with Menindee Main Weir commissioned in 1960, these works provide water security for Broken Hill and at times of high flow can deliver water down the Great Anabranch and onto the lower Murray.

Newspapers.

- a. Barrier Miner (Broken Hill) Monday 11 April 1910, p6
- b. The Sydney Morning Herald (NSW), Thursday 16 February 1933, p8
- c. The Argus (Melbourne), Thursday 20 August 1914, p5
- d. Barrier Miner (Broken Hill), Friday 24 February 1928, p2
- e. The Sydney Morning Herald (NSW), Saturday 2 December 1950, p11



Emu tracks in the grey clays surrounding Lake Menindee. 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) The Lower Murray Darling Catchment Management Authority (LMD CMA)

The LMD CMA has been working with the local community to implement a number of activities within the Lower Darling River and the Great Darling Anabranch area:

i) Wetland rehabilitation – Wetlands like Thegoa Lagoon have wetting and drying cycles reinstated. Wetlands that were disconnected now receive water and those that were permanently wet can be given a drying cycle for environmental benefits thanks to improved water delivery control structures.

Other works include resnagging, weed control and a ground and surface water monitoring program.

ii) Fish passage – vertical slot fishways have been installed at Burtundy Weir, Weir 32 and Pooncarie Weir, allowing fish passage within over 512km of the Darling River! Three Fish Habitat Management Plans have been developed and a fish monitoring program has been underway since 2004 with up to 65 sites monitored each year.

iii) Native fish releases – since 2005, the CMA in collaboration with agencies and industry, local schools, community groups, have released Murray cod and golden perch at locations including Fort Courage, Wentworth, Pomona, Burtundy and Pooncarie. In 2011, the LMD CMA also released threatened olive perchlets and southern pygmy perch fingerlings into Thegoa Lagoon.

iv) Habitat improvement - LMD CMA has set up an 'Aquatic Threatened Species Habitat Management Zone' at Karoola Reach on 20km of the Darling River. Best Management Practices for protecting the aquatic environment are being demonstrated to landholders so they can improve 'their' section of river.

To be involved or find out more information about the above projects, contact LMD CMA on (03) 5021 9460.

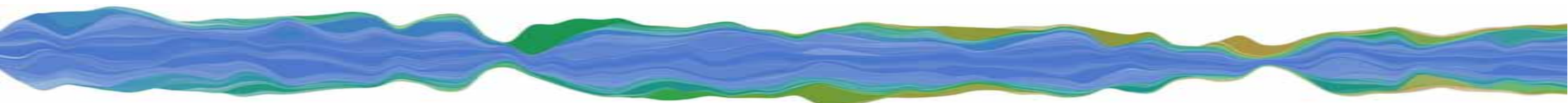
(b) The Murray-Darling Freshwater Research Centre (MDFRC)

The MDFRC has laboratories on the Murray River in Mildura and Albury-Wodonga where they research and monitor a number of aspects of aquatic ecology including environmental flows, water quality, nutrient cycles, algae, fish and invertebrate taxonomy and ecology.

The MDFRC can help community members to identify aquatic flora and fauna and assist with habitat use queries.

As part of some MDFRC projects fish are tagged to determine where they move. Apart from their own sampling, the MDFRC rely on recreational fishers to contact them if they catch a tagged fish so that they know can learn about their movements.

If you find a fish tagged as part of an MDFRC project or you want to find out more information about their work phone (03) 5051 4050 (Mildura) or (02) 6024 9650 (Albury-Wodonga) or visit www.mdfrc.org.au



River resources

- Native Fish Strategy Coordinator, Southern NSW Charlie Carruthers: (02) 6298 0802
- Lower Murray Darling Catchment Management Authority: (03) 5021 9460 or www.lmd.cma.nsw.gov.au
- Wentworth Angling Club, Fort Courage: (03) 5027 3097
- Menindee Local Aboriginal Land Council: (08) 8091 4541
- Dareton Local Aboriginal Land Council: (03) 5027 4721
- Northern Basin Aboriginal Nations: (02) 6279 0672
- Murray Lower Darling Rivers Indigenous Nations: (02) 6051 9948
- Wentworth Shire Library and Wentworth Historical Society: (03) 5027 5027
- National Library Australia: www.nla.gov.au

Abbreviations

DPI	Department of Primary Industries (NSW)
MDBA	Murray-Darling Basin Authority
LMD CMA	Lower Murray Darling Catchment Management 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 Darling and Great Anabranch

Native
(Not to scale)

Murray cod / Cod



Catfish / Eeltail catfish / Jewfish



Yabby / Craybob



Golden perch / Yellowbelly / Callop



Spangled perch / Bobby cod



Murray cray / Spiny cray



Silver perch / Murray bream / Grunter



Introduced
(Not to scale)

European carp / Common carp



Redfin / English perch

