Talking fish

Making connections with the rivers of the Murray-Darling Basin

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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.

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

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Abbreviations

DPI	Department of Primary Industries
PIRSA	Primary Industries and Resources SA
DENR	Department for Environment and Natural Resources (SA)
SARDI	SA Research and Development Institute
LAP	Local Action Planning Association
MDBA	Murray-Darling Basin Authority
DSE	Department of Sustainability and Environment (VIC)

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Contents

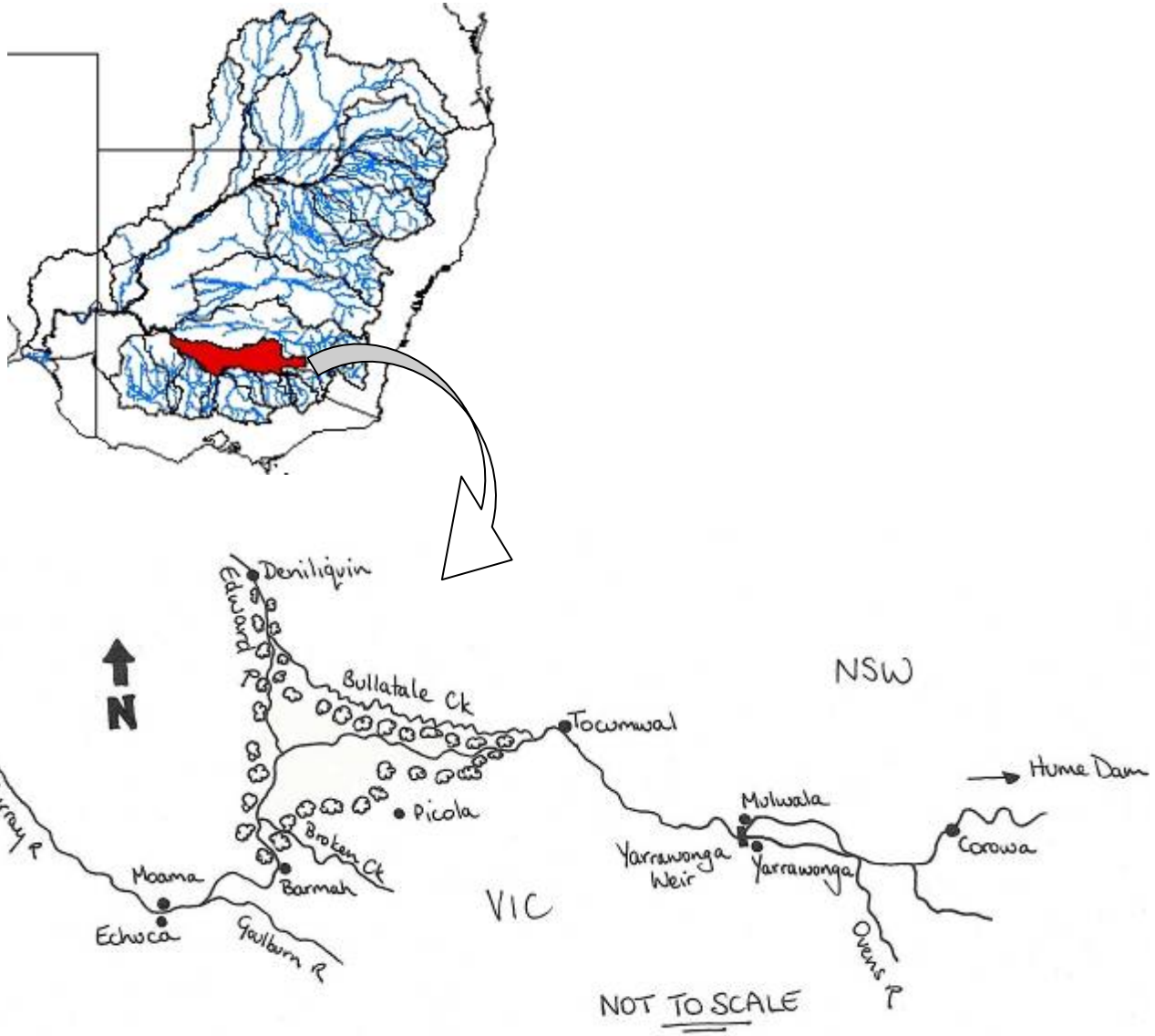
Murray

Source: Corowa Fishing Club.

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: Scott Nichols.



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.

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

Introducing the river and its people

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.

Baiame beginnings

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

> *Baiame created the river by sending his woman down from the high country with her yam stick to journey across the flat and waterless plain. Baiame 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 Baiame 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.

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.

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.

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 has changed.

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.

Yarrawonga weir, viewed from the downstream side, creates Lake Mulwala. Photo: Scott Nichols.

Lake Mulwala's drowned red gum forest. Photo: Scott Nichols.

Lake Mulwala used to be drained for weir maintenance. The snags and woody debris, so loved by Murray cod, are clearly visible. Photo: Dennis Lean.

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]

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.

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, unspecked 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]

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.

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.

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.

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 hair cuts 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.*

Now it's illegal to put a live redfin back into the water.

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*

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.

Low river levels effectively grounded the river boats, slowing or even halting transport of people and goods up and down the rivers. Photo source: Wentworth Historical Society.

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, SLSA: 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.

Removing the snags

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* and the *Victorian Flora and Fauna Guarantee Act 1988.*

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!

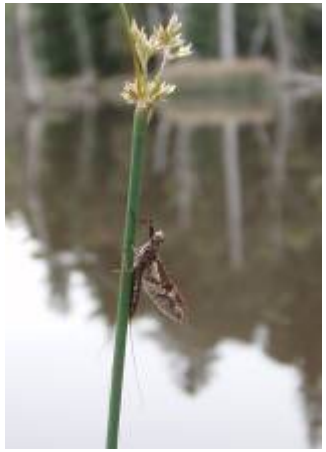
> *I used to watch my grandfather. The snag would be comin' out of the river and the current would be dropping in the water slowly. He'd get in upstream and he'd just float down along like a log, coming down toward the fish and as he came towards the yellow belly or the cod, he'd run his fingers under 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.*

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

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.

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.comviewtopic.phpf=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 bought 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 Cunnigham, 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 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-bodies 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 Yarrawonga 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.

Goulburn

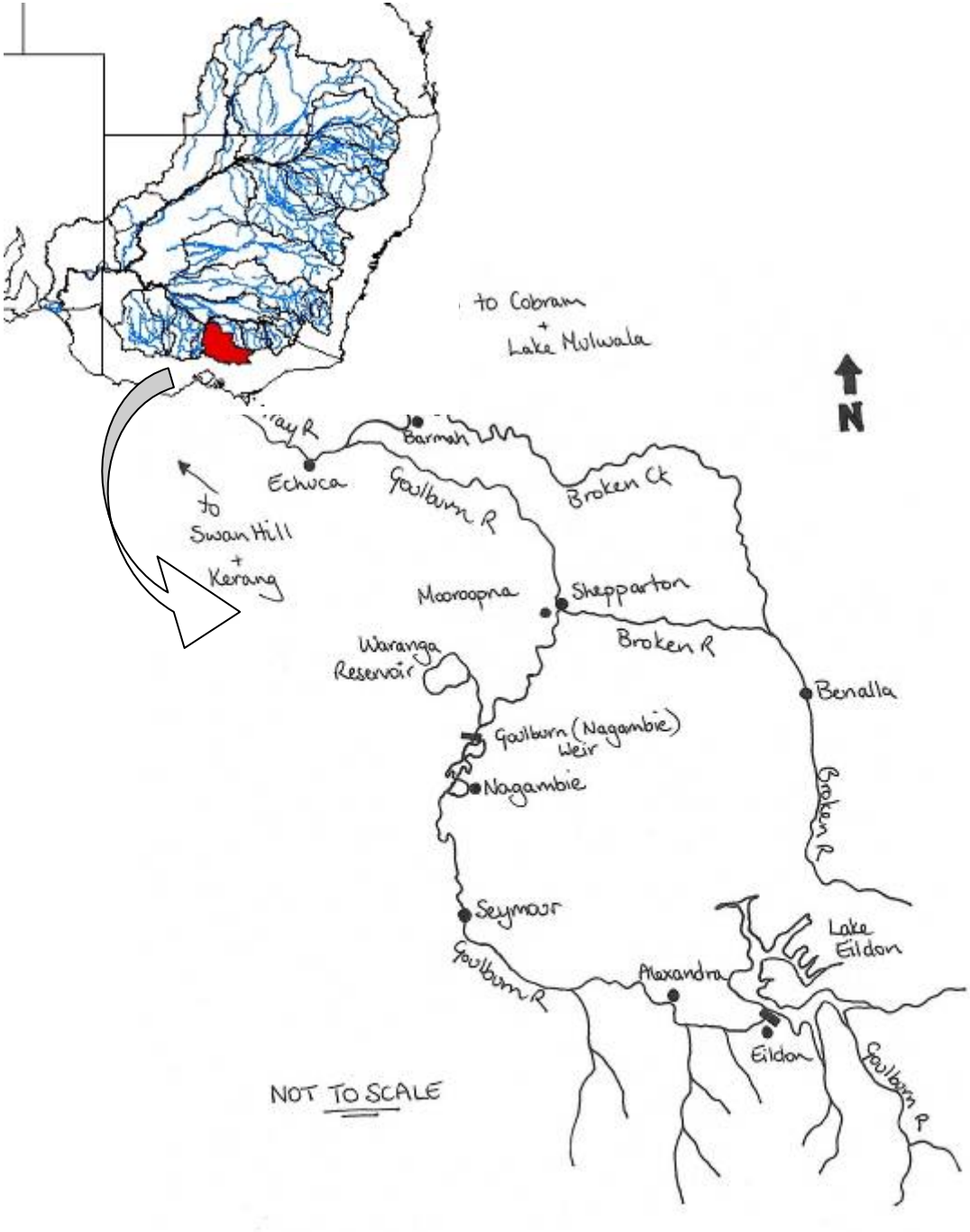
Source: Luke Pearce.

Source: Seymour Anglers.

Source: Seymour Anglers.

Source: Seymour Anglers.

Source: Jodi Frawley.



For nearly 90 years, **Ken Gilmore** has lived by and fished in the Goulburn River. Photo source: Ken Gilmore.

Mick Hall is a passionate and competitive fly fisher. Photo source: Mick Hall.

Donny Richter is teaching his grandson the art of fishing, not just how to fish. Photo: Jody Frawley.

Kaye and **Gary Gibb** are members of the Seymour Angling Club. Photo: Jody Frawley.

... the water was clear; we could see the fish swimming about; the banks of the river were solid with trees. We used to fish beneath its shade.

The Argus (Melbourne, Vic.), Friday 8 October 1937, page 12

Introducing the river and its people

The Goulburn River's cold, clear waters rush westward down from the steep hills and mountains of the Great Dividing Range toward Seymour. The river then turns northward and meanders through hills and plains until the river meets the Murray upstream of Echuca. These are the traditional lands of the Taungurung, Bangerang and Yorta Yorta peoples. However, the Goulburn River today is not the river the Taungurung, Bangerang and Yorta Yorta once knew and fished.

Beginnings

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

> *Baiame created the river by sending his woman down from the high country with her yam stick to journey across the flat and waterless plain. Baiame 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 Baiame 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.*[14]

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 nearby Murray River.
Photo source: State Library of South Australia, PRG422.3.704.

The arrival of the Europeans

Hamilton Hume[1] and William Hovell[2] passed through the Goulburn River area in 1824, seeking a passage from Sydney to Spencer Gulf. The team camped near the present site of Seymour for two days at Christmas so that they:

> *might avail themselves of the fine fish which abound in its waters, as well as refresh the cattle.*[3]

Early British settlement followed the rivers. The first grazing properties were set up on the banks of the Goulburn in the early 1830s.

The gold rushes of the 1850s bought many new people to northern Victoria. The gold rushes and grazing, dryland farming and horticulture all needed different types of workers, bringing new people with new needs to the river and new ways to catch fish. Chinese people joined diggers and Aboriginal people and, by the 1860s, new towns supported the smaller yeoman farms championed by the government.

Boating on the river at Echuca (date unknown).
Image source: Wangaratta Library.

Problems were emerging however from mining activities. The shaft mines that had been sunk in the Upper Goulburn caused heavy metals and silt to be washed into the river.

One old-timer lamented in 1896:

> *When my husband and I came here first the water was clear; we could see the fish swimming about; the banks of the river were solid with trees. We used to fish beneath its shade. The goldmines did this, they cut the timber down for firewood and pit props, and bushfires killed the trees on the mountains, and then the floods came and tore the river banks to pieces; and you see what followed.*[4]

By the 1890s the lower reaches of the river were supporting production of wheat, fruits, wine grapes and a wide variety of fodder crops. Grazing, dairy farms, piggeries and butter factories continued to flourish in the upper reaches.[5] However, the decades of land clearing increased siltation and the altered flow of the river changed the habitat for native fish.

In the twentieth century, carp arrived and the river was regularly stocked with non-native fish, such as trout. Water is now stored in Lake Eildon and controlled by Goulburn Weir at Nagambie. Flows peak in summer to meet irrigation needs and drops off in winter/spring.

The Goulburn became a popular spot for people, including Aboriginal people, to fish for the introduced trout and redfin. It remains one of the most popular inland angling spots for native fish as well, including Murray cod, yellowbelly, Macquarie perch and blackfish.

Catching a large Murray cod is a memorable moment for any fisher, and Jody Liversidge is proud of this beautiful 35kg fish she caught in the Goulburn River in 2006. Photo source: Jody Liversidge.

Ron Bain looking at the old Goulburn Bridge, now part of a local heritage walk. He has seen major changes to the river, the biggest came with the building of the weir. *It used to be a beautiful river*, he says. Photo: Jodi Frawley.

People and towns along the river

Northern Victoria has always been one of the more heavily populated rural areas of Australia. Many of the townships along the river began with an inn and a punt, assisting travellers with livestock and providing services to the gold fields from the 1850s. Alexandra, Seymour, Nagambie, Mooroopna and Shepparton all grew in conjunction with the changes in surrounding industries: grazing, dairying, mining, forestry and agriculture. The river was vital for the growth of these places.

From the 1870s rail links to Melbourne bought many more people. In the 1920s, Shepparton Preserving Company and Ardmona Cannery capitalised on productive local fruit growing and as a result large numbers of seasonal workers came and went from the area.[10]

Trips to the river for picnics and fishing were common for Aboriginal peoples, townies, farmers and itinerant workers alike. Photo source: Jim Hanley.

Ken Gilmore – *True story! I'm not telling you a lie!*

Photo source: Ken Gilmore.

Ken Gilmore was born in 1922. He and his nine brothers and sisters were raised at *Hughendon*, a grazing and dairy farm and the only property left in the district that has a settler's title on it from the 1860s.

Catch all the fish you want

Both the Rubicon and Goulburn rivers border the farm and were close enough to the homestead that the family fished regularly along its banks.

> *We used to swim in the river every day during the summertime. And we'd all go fishing, especially if there was a thunder storm approaching. We used to go down armed with worms and so forth and we'd get onto a shoal of bream. We'd fill a sugar bag in about half an hour and what we couldn't eat we used to let go because we didn't have any refrigeration back in those days. Therefore we weren't greedy, but you could catch all the fish you wanted*.

'Bream' were what Ken's family called Macquarie perch. Others knew them as black bream, Murray bream, white eye or blackfish. They were plentiful in the Goulburn River when Ken was growing up. They have since become very rare. Another local fisher, Jim Hanley, also remembers catching them.

> *The Macquarie perch have been gone for many years. I've never seen one come out of the river upstream from Nagambie Weir. But my father used to catch them and Macquarie perch are still locally living in the Hughes Creeks*.

Kids going fishing

With a big family of cousins all living locally, the Gilmore kids would often hang out amongst the shady trees lining the rivers.

When they were sent to go rabbiting, they would take their rods along. And a game of cricket on the flat for some of the kids meant that others could throw a line in while they waited for their turn at the bat. Ken recalls the fish they caught:

> *There were all types: not many yellowbelly, compared with the cod and the bream. They were the main ones. But there were the odd yellowbelly. Blackfish too. We used to like that then, little 'greasys' we used to call them. They were very sweet. Nice little fish to eat*.

Ken remembers that other fish had to be hunted in the off-river areas.

> *They used to get catfish in the old days. In the lagoons mainly. They weren't in the river. We weren't very fond of them, though. Some people like them. I didn't like the look of them. They're horrible, horrible looking things.*

Melbourne railway workers used to regularly come to Hughendon for week long spells of camping and fishing. Ken remembers: *We got a lot of people from Melbourne, year after year. Some came every year for 50 years. They used to pitch their tents on the Goulburn, and then they bought their caravans.*
Photo source: Ken Gilmore.

Macquarie perch

(Macquaria australasica - macca, Murray bream, black bream, mountain perch, white eye, blackfish)

Photo: Luke Pearce.

- Medium sized fish: can reach 46cm, but usually less than 35cm and 1kg
- Found in the cool water in the upper reaches of the Murray-Darling in Victoria, NSW and the ACT
- Spawn in October-December when adults move into tributaries and spawn at the foot of pools
- Eat shrimp and small, bottom dwelling aquatic insects
- Potential threats include interactions with trout and redfin, sedimentation, removal of riparian vegetation, barriers to migration and cold water pollution
- Listed as 'Threatened' in Victoria, and as 'Endangered' by the Commonwealth

Catching fish?

Like many people along the Goulburn River, Ken saw all sorts of ways to fish: rods and reels, handlines, gill nets, drum nets, wire netting and set lines.

My uncle used to have a property up here and he had a set line. He was pretty old and he used to like a fish and one day he left his line in with a worm on it, and he went back the next day and there was no sign of a line. He said 'Where the hell has that line got to?' Anyway, he had a look around, he found the line, he gave it a pull, the next thing a wild duck flew up, out of the blackberry and he'd caught a wild duck on the hook with a worm. True story! I'm not telling you a lie!

Ken remembers the fun he used to have with his friends when they would go fishing.

A Yugoslav friend gave me some lines and they had little bells on the top of them. I was a bit of a devil. I used to ring these bells myself and they used to come racing up to see what I had on my line. Next thing, they were all sitting beside me because I was getting all the bites and it was only me ringing the bells!

The coming of the cold water

The original weir on the Goulburn River, Sugarloaf Reservoir, was built between 1915 and 1929. During construction the weir had to be drained on at least two occasions, generating 'blackwater' events and leading to massive fish kills.

After being modified in 1935, it was enlarged in 1955 and renamed Lake Eildon. It filled in one year with the 1956 floods. This new dam serviced the Goulburn Valley irrigators. It also kept the river levels constant with water from the cold depths of the lake.

Ninety two year old Ron Bain remembers these changes.

Terrific changes! The biggest change was when they built the weir. See they had a small wall, and it operated for quite a few years and then when they built the bigger one, it lowered the flow of water down the river considerably. And then of course it lowered the temperature of the water; and the cod didn't like that. It used to be a beautiful river, you know. It used to get a bit of a flood every two or three years. And of course it left lagoons, so there would be nice fish in the lagoons as well. But all that's gone, there's none of that now.

A river of weirs

In 1884, MLA Alfred Deakin led a 'Royal Commission into Irrigation' and travelled to California and India to investigate infrastructure and schemes. Australia's first major structure was built on the Goulburn River in 1887. This weir formed Lake Nagambie, which became a famous fishing spot for introduced redfin as well as for native fish. By 1893 the weir's channel linked up 400 miles of gravity fed reticulation on the western side of the river.[5]

Sugarloaf Reservoir was built between 1915 and 1929, to increase the storage capacity for the area. Bigger changes were afoot in the 1950s when large dams were engineered to mitigate the impact of flooding and protect communities against drought. In 1955 the new dam - Lake Eildon - was opened, replacing the reservoir.

Unlike towns further downstream, the dam helped the Goulburn River district to escape the worst of the huge flood of 1956.

An old postcard of the Goulburn Weir (date unknown). Image source: Wangaratta Library.

Lake Eildon changed the river of Ken's youth. He was used to swimming in the river but once the weir went in, it was too cold. Ken also remembers how the weir changed the way the river flooded.

> *As soon as the weir was put in, the water went down to about 10 degrees. You couldn't swim in it. You'd freeze to death if you jumped in. You'd soon jump out again. In the old days, the floods would be up and gone in a couple of days but when they filled the weir up in '56, when we had floods here - they would last about a month. Well, it probably did affect a lot of fish. It happened after they built the weir.*

Don Collihole agrees with Ken that the cold water changed the habitat for the native fish.

> *Pre '56, they used to catch heaps of cod down here. And then they finished Eildon, the water got that cold coming from down the bottom, the cod just couldn't breed.*

Don's mate Geoff Vernon, born in 1950, represents a generation of fishers that has never known the Goulburn in its natural state. He caught the introduced trout, rather than the native cod, Macquarie perch or yellowbelly. He remembers:

> *Mostly trout, 'cause in those days, it was a pretty cold river and that's about all there was around.*

Cold water pollution

- Lake Eildon is a large impoundment (3 334GL)
- In such large, deep impoundments the water column can form distinct layers ('thermal stratification') with a layer of cold water forming at the bottom of the dam
- The water is released from the deep parts of the dam, which means the water that flows downstream is colder than would occur naturally
- This is known as 'cold water pollution' (CWP). The impacts of the cold water extend at least 100km downstream[11] and this stretch of river is dominated by cold water species such as trout
- CWP can change the types of plants and animals that will live in the affected areas of the river. It can also reduce growth rates in fish and delay or prevent their successful spawning or recruitment. This can lead to increased vulnerability and reduced survival[9]

Lake Eildon. Photo: Fern Hames.

Mick Hall – *Fly flicker extraordinaire*

Photo source: Mick Hall.

Mick Hall was the first Australian to receive the prestigious Sportsmanship Award at the 'One Fly' event in Jackson's Hole, Wyoming, USA, in 1996.

That's a long journey from Relubbus on the River Hayle in England where he was born in 1941.

Fishing got hold of me

He got an early start with trout fishing by exploring the river that ran alongside the family cottage. He was four! He came to Australia in 1949 and as a teenager reacquainted himself with trout in the rivers near Melbourne. At fourteen, he says, he was hooked:

> *That's when it got hold of me. You know, that disease – it's lasted all my life. I've played around with other stuff but trout fishing's been my love.*

As a young man Mick lived on the outskirts of Melbourne, so he and his mates could head up to the river at a moment's notice. They even took mid-week jaunts by skipping out of work early some days and driving the hour and half to the Goulburn. They would fish for a few hours and be back on the road by 9.00pm. At the weekends they'd camp.

> *I first started coming up in the '50s as a teenager. I had a car and couple of mates and we'd do the typical thing. Camp on the river, drink too much, fish too much, stay up all night, drive back home the next day, go to a disco or something, then off to work on the Monday morning. But every weekend we used to come away fishing.*

Fishing in the Goulburn River in the early days meant chasing whatever was in the water. But Mick decided early on that it was fly-fishing that was worth pursuing.

> *And I always wanted to learn to fly fish. I could see there was a lot of merit because there were so many challenges in it. We were at the Thornton Bridge and we'd had a big day fishing since very early in the morning. This guy came up the river and he's flicking a fly line around. I said 'there's some the other side. I've been watching them rising'. And he goes and he catches them. My jaw just went ba-boom; 'I gotta do this. I just gotta do this!' I've been a 'fly flicker' every since.*

Bill Austin giving would-be fly fishers a distance casting demonstration at Eildon in 1945. He is handling 30 yards of line with an Australian-made cane rod. Photo source: Mick Hall.

Reading the river

Trout fishing in the Goulburn River area and in Lake Eildon is mostly done off the banks, rather than from in boats. For Mick, finding the perfect little stream where trout lived was a matter of tramping around the upper reaches of the river and learning as much about trout habitat as he could.

Mick remembers that in the 1960s, as it is today, it was the colour of the water that was an important indicator.

You could read the rivers by the colours. In the smaller mountain streams, you'd see various colours of khaki that reflected back off the bottom and the deeper the colour, the darker the water, the deeper the water and that's where you'd find the fish. Especially if it had surface movement on it like bubble lines or where the water was tumbling a little bit. Because that gave protection for the fish. They couldn't be seen from above by the birds. When you got good at it, you really did get the results. But it took time.

The lure of the fly

Fly fishing depends on the artificial fly looking tasty to a fish: the best ones look like the insects the fish eat. Mick has spent many hours with feathers, yarn, twine and hessian threads copying what he has seen in the river.

Through the spring and summer months we always get a lot of insect hatches, a lot of terrestrial stuff; from beetles through to grasshoppers, ants, this sort of thing that were on the water all the time, as well as our aquatic sources; be they stone flies, be they caddis, midge or mayfly. It's all there, and we've seen their major occurrences, and then the fish feeding on them. And from this we've learnt more about the bugs and their habits and what they needed. And just how vulnerable they are to changes in the system.

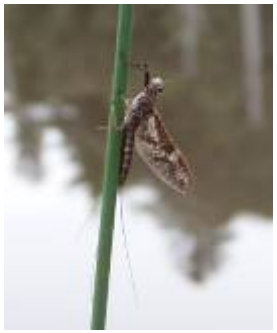
Aboriginal Fishing gear

Over the nineteenth century Aboriginal people continued to live along the Goulburn River. Women carried fish hooks made from mussel shells and used kidney fat for attracting the fish. Hooks were attached to coil made from river reed and cast into the river or trolled behind boats around deeper holes in the river. Short spears were used for diving and longer spears were used from canoes.

Aboriginal men also used a spear set aside entirely for killing fish. At five feet long and an inch thick the spear was not thrown, but used as a lance. Peter Beveridge, observing fishing in Victoria and the Riverina in the 1880s, noted: … *they select a stretch of shallow water, full of reeds and other aquatic plants, over which the wary fisherman propels his canoe …. Every now and then he thrusts the plain end of the stick sharply to the bottom, thereby disturbing the feeding fish. As a matter of course they rush away from the disturbance shaking the plants in their hurry, which at once tells the keen-eyed fisherman the position of his prey*'.[6]

Different sorts of nets were used for different creatures from the river: some for Murray crays and others for catching birds, including ducks. Nets ninety metres long and one and a half metres wide were weighted on the bottom with clay and had floats made from reeds.

These nets were drawn through the water by the men, and the women and children sorted and picked the catch of cod, silver and golden perch, catfish, blackfish and turtles.



The 'red tag' (left) is a classic fly used to catch trout. Flies are designed to mimic the food that each fish species chases. Mayflies- like the Aussie March Brown (*Atalophlebia australis*), *right,* are favourites of both trout and native fish. Photos: Luke Pearce.

Native fish, such as Murray cod, can also be caught on a fly. The flies that attract native fish are different to those that attract trout. Photo: Luke Pearce.

Cod visit when its warm enough

While he might have chased trout throughout his life, Mick was also on the lookout for native fish and how they interacted with the introduced species.

By the time Mick had started fishing here the cooling of the Goulburn River had already changed the habitat for native fish.

Little natives in mountain streams

Several species of smaller native fish occur in colder mountain streams, including recreational species such as blackfish (slipperies, muddies) and others, such as galaxias (several species of *Galaxias*, also known as jollytail).[13]

Barred galaxias. Photo: Gunther Schmida (Photo source: MDBA).

- Several species of *Galaxias*, with a maximum size of between 15 - 20cm but more likely around 8 - 10cm
- Barred galaxias (pictured) are only found in the headwaters of the Goulburn River. They were severely affected by the Victorian Black Saturday fires. Remaining populations were kept in aquaria until vegetation in the catchment grew back, then they were released back into the wild
- Barred galaxias are a relatively long lived fish – up to 13 years old!
- Barred galaxias are listed as 'Threatened' nationally
- Mountain galaxias lay eggs on the underside of stones in the head of pools and riffles. These fish are thought not to migrate, and have a small home range of about 19m
- Mountain galaxias are the only native fish found in the alpine zone above the snowline during winter

We don't get a lot of the cod and yellowbelly right up in the Upper Goulburn to Lake Eildon. They may come up and visit, during the summer months when the water's warm enough for them. As a matter of fact, the little blackfish that we've got around here are in absolute abundance. There's lots of them. And so, we found there's very little conflict there 'cause the high mountain streams are the ones that the trout really do prefer but sometimes they'll move down to where the cod are.

Mick points to the use of heavy machinery and farm chemicals as being a concern for fish. As well as removing snags, machinery is also being used to remove invasive weeds like willows from some areas along the river bank. Mick agrees that governments are now doing a better job than before, but thinks authorities still need to be vigilant about other animals that may be affected.

This is a little bit controversial, because up on the Rubicon where they're doing the removal of willows, I found two dead platypus. One was badly decayed and the other one wasn't; it was a young animal. I don't know if it was because they'd been dislodged, or if it was the poisons they were using, whether it was contractor doing it, I don't know. Maybe the deaths of platypus are not related to these works, but I mean, they just go in and blast away at everything.

Willow woes

Willows being removed – one control option.
Photo: Helen Shimitras.

- Willows are invasive and are spread both by seed and as fragments which travel downstream
- Although some fish will shelter under willows, willows can dominate riparian areas, displacing native species. They create dense shade and produce significant leaf fall in autumn, which depletes dissolved oxygen levels and changes the food supply within the aquatic ecosystem
- Willows can also modify channel shape and capacity, divert flow, accumulate fine silt and contribute to erosion
- If willows are being removed, it is important to ensure they are replaced progressively with native trees. The complete removal of all trees overhanging the river will result in water temperatures that are higher in summer and lower in winter and also increase native fish exposure to predators

Donny Richter – *Changing habits*

Donny was born in 1948 and raised in Melbourne. He was apprenticed as a painter and decorator and as a young man moved around northern Victoria. He lived in Boort in the Mallee and then at Barmah on the Murray River. After a stint in Geelong, he returned to Shepparton, finally putting, as he says, 'a big taproot down' in 1983 at Murchison. His three acre block sits high on the bank of the Goulburn – plenty of room for a big shed that houses his boats, caravan, multiple fishing rods, hundreds of lures and half a dozen cod trophies.

Donny's workshop. Photo: Jodi Frawley.

A cod would live there

His love of fishing started out small, learning to fish with his family.

> *My father was a builder and he was always working, and only during holiday times would he take me and my younger brothers fishing. As life went on, I went out on my own - 16, 17, 20 - fishing, and bought my first boat. It cost me $290. Little six horse power Chrysler motor, and from there it's just grown, mate. Bigger and better.*

As a young man, Donny and his mates would head out on camping trips on the river. Finding the right spot was crucial to making it a good fishing weekend.

> *Well, first, we'd like plenty of shade. And we'd set the camp up there, but then, when we go down the river in the boat, we'd look for spots where we thought 'a cod would live there', like an old, dead tree in the water or a heap of branches laying around, or a bit of a swirl under a log and a big, hard clay bank – we'd always look them out.*

We'd just catch them all

In these early days Donny and his mates would catch as many fish as they could.

> *But back in the old days we'd do everything wrong. We'd put in cross lines and springers and set lines that we would leave overnight. We could have up to 40 springers in and catch 10 fish. A couple of cross lines and you could get up to 20 cod at a time.*

Big catches of fish meant big stories at the pub.

> *We'd just catch them and had to bring them home and get in the pub and brag. 'Oh, we caught this many fish'. What we did it for: I don't know. You'd give them away or they'd go rotten.*

How to fish - properly

All this changed in 1977 when, at age 27, Donny met his mate Noel Anderson.

> *Noel taught me a lot about fishing and catching cod and lure fishing. And, yeah, I would like to say 'Thank you, Noel' 'cause he was the one who put me on the straight and narrow, instead of springers and cross lines. He knew all the tricks, he knew where to put lines in, where to fish and all that stuff. He*

was the one that really showed me how to fish – properly.

For twenty years, Donny and Noel went fishing once a month.

Donny intends to teach his six-year-old grandson, Charlie, everything that Noel taught him.

Well, at the moment, I'm taking my six-year-old grandson fishing. I'm not going to teach him the old ways. I want to teach Charlie what I've been taught for the future generation. What he learns from me, it'll help him and maybe he can help someone else later on.

Of crays and carp

Over the road from Donny's place is a steep clay bank that slides down into the waters of the Goulburn: a perfect spot for Murray crayfish. When he's up for a feed, Donny moseys over to the river and drops in a net with a punched tin of dog food for bait.

In front of my place you can put a net in to get the Murray crays. I'll pull that net up, and I'll say 'I'll have you and you', and the rest I tip back into the river. Why be greedy? They're always there. Why take 20, when you only want two.

Carp have been a big problem in the Goulburn River over the years. Donny remembers a time when the river was boiling with them.

I can remember at the Weir, you'd look over, at the bottom of the spillway there would be thousands and thousands of carp. The water was just bubbling with them. Years ago, you'd go up the river and there'd be carp on the river bank. People have caught them and throw 'em up there and they'd stink.

Donny thinks things have changed over the dry years of the drought. He hears different ideas from his fishing mates as to why the carp might not be as plentiful as before.

The carp seem to be gone. I don't know why. There are lots of theories; they reckon the cod are eating them, but then, I don't know if the water might be getting too cold for them and they're heading further north, I don't know.

Murray crays

(*Euastacus armatus* - Spiny cray)

Photo: NSW DPI.

- Reported to grow to 3kg and are the 2nd largest freshwater crayfish in the world
- Confined to River Murray and tributaries, and found only in the main channels
- Prefers cool, strong flowing water, with higher oxygen content
- Active through the coldest months from May to October
- Slow growing: 5-10g in 1st year, may reach 40g after 2-3 yrs
- Breeding weight is 200-250g, which takes about 6-9 years
- Breed late autumn and early winter, carrying eggs ('berried up') until October
- Steady decline in numbers since 1940s
- Continuing reduction in size in NSW since 1960s

Kaye and Gary Gibb - *From the ocean to the river*

Kaye and Gary were both born in the early 1950s, but grew up fishing in completely different parts of Australia. Kaye learnt to fish doggy mackeral off the Queensland coast near Townsville; while Gary took day trips to the Wakool River with his Dad and brothers.

Kaye came to Victoria in 1973, but left fishing aside for most of her life, taking it up again when she met Gary ten years ago.

> *I got tangled up with Gary. He was a keen fisherperson and said if I wanted to go out with him I could go. I said 'Oh, yeah, I used to fish quite a bit at home'. So, we started going out with the Seymour Angling Club once a month.*

Fishing – you never forget how

It was a bit like riding a bike; a skill that Kaye had not forgotten – *It's just a refresher more so than anything else*. Kaye did have to adapt what she knew about ocean fishing, and Gary taught her what to look out for out on the river.

> *It's a different type of fishing to the sea fishing. There are different baits because up North you did mainly lure fishing for the fish we caught. We use different lures and baits down here for the different types of fish. I had to learn where to go, what snags look good.*

Gary and Kaye like to fish in the lakes around the Goulburn River. Fishing from the boat in the stiller waters gives them the opportunity to use berley to attract the fish to where they are. Gary explains:

> *Berley is used more in the lakes because, otherwise, if you're in the river system, it just flows away too quick and you're just feeding the fish or attracting fish further down the river. Unless you've got your own little berley bombs which hang over the side of your boat. We use berley pellets that are like chicken pellets – all ready made-up, ready to go. Sometimes we add our own little ingredients – fish oils or ground up baits. Just to give it that smell and to add as an attractant.*

Kaye and Gary both like catching a big cod when they are out on the river.

> *The ultimate in fishing probably is to catch a cod. They're a very lazy fish to catch though. They're big, like a big log just pulling, or a big snag or something. Very good when you do get a nice one.*

Jim Hanley, another local fisher, likes to fish for cod in Lake Mulwala. Photo source: Jim Hanley.

One of the changes that Kaye and Gary have seen is the ban on trout cod in Victoria. Since this ban was introduced, they, like many other fishers on the Goulburn and other nearby rivers, have seen a return of the trout cod to their regular catches.

We do sometimes catch a few trout cod but because they're a protected species we've got to let them go. You think you've got a lovely fish on, until you bring it up and say 'well, oh, I've got to let this one go'. Beautiful looking fish, but of course, I can understand why they have to let them go.

Fishing weekends away

The Gibbs rarely miss the Seymour Angling Clubs' monthly weekends away. They set out on Friday and set up camp, usually on the riverbank. The competition starts on Saturday morning and finishes on Sunday with a weigh-in for first, second and third prizes. They fish for six to eight hours each day and either use keeper nets or photograph the fish so they can release them.

Different places they visit mean different fish.

There's quite a few silver perch in the Goulburn but we're not allowed to keep them. You can go as far as Yarrawonga or Mulwala, Echuca and back down towards Cobram. When we go to Nagambie, there's quite a few cod. We've got one place, that's a good little Murray cod place, close to Seymour. We get permission off the owners and go down there. Some of our members have caught cod and most of them have been released because they want to keep them in the river here.

Trout cod (background (*Maccullochella macquariensis*) also known as blue nosed cod or blue cod) and Murray cod (foreground (*Maccullochella peeli*) also known as Guduu, Pondee or Pondi) look quite similar and have been known to hybridise. Photo: NSW DPI.

These cod, caught in 2006, were the first cod Jim Hanley and his fishing mates had caught from the Goulburn River in 30 years. Two weighed in at 8 pounds and two at 6 pounds. Photo source: Jim Hanley.

Fishing in the dry

Since Kaye started fishing again, drought and dryer rivers that have been the norm. Kaye has noticed that the fish can adapt to the wide swings in the water levels associated with droughts and floods.

She says:

They don't seem to breed as much in a drought because they know that there's not as much water, there's not as much feed. Since the 2010 floods, there's more feed around, so, of course, they're going to flourish more.

Timber in the river

Kaye has also noticed that the long dry spell followed by the rising waters of the last year has caused many more red gums than usual to topple over.

Just recently, there's been quite a few trees from the bank fallen into the river, and I know that's good for the fish, but, I think, you've still got to clean the rivers out a little bit to let the water flow.

Ken Gilmore is another fisher who thinks that the riverbanks are different than they once were:

> *Black wattle. They used to fall in a lot. One of the engineers in Alexandra, he had the idea he was going to clear the banks to stop the trees falling in the river, but no one agreed to that. There's gum trees whose root systems seem to be weakened and they seem to be falling in more than what they used to. About 15 acres of land went in up here, you could hear it falling in. The water got underneath the banks and, all of a sudden, you'd hear a great 'whoosh' and in the middle of the night about half an acre of soil would fall in the river and go down the river.*

The irony is that more snags in this part of the river may have protected the banks and prevented the undermining of the tree roots.

Nonetheless Gary Gibb worries about desnagging – he can see both sides of the argument:

Not so long ago they were pulling all the trees out to clean the rivers and waterways up. It cost a fortune. Now, they're putting logs back in or letting the trees go in there. It may be a great thing for the fish habitat. It may not be in some ways. It does tend to silt up the rivers, and to stop a lot of flow. Now, depending on what you want: Do you want to clean the rivers out or keep them flowing? Or, do you want to block 'em up? It's good for the fish, perhaps, but it's still got to have a lot of flow. So, it's good and bad. And the other thing is, of course, a lot of snags. Well, it's good for the fishing, but not so good for the boater that wants to go out there and put his boat in there. You gotta try and get around them and all that but in a fast flowing river, like the Goulburn, it can be dangerous. But, fish do need habitats and they need breeding places – and it does slow – but ah, what can you say? That's it. That's the way I feel.

Snag FAQs

Natural snags. Photo: Fern Hames.

Why were snags removed?
Up until 1995 snags were removed to improve navigation and because they were thought to increase erosion and flooding.

Why are snags important?
Snags provide habitat for native fish like Murray cod and trout cod. Snags are used for shelter, territorial markers and as ambush sites. To these species, a snag is home – Murray cod have been recorded migrating 240km upstream and returning to the same snag[16], and we now know that 80% of Murray cod are found within 1m of a snag![17]

Do snags cause erosion?
In certain instances small-scale and short-term erosion may occur, but in many cases snags may reduce erosion and are important for bank stability.

Are snags just thrown in?
No. A great deal of scientific and engineering analysis goes into determining the right position, size, number and type of snag put back into the river. Permission from State agencies is also needed prior to works.

Making connections

Working for fish

Wally Cubbin has fished the Goulburn since 1958. He's the Secretary of the Nagambie Fishing Club and a representative on VRFish, a recreational fisher organisation in Victoria, whose motto is 'Fish for the Future'. Wally sees advocacy as an important way to work toward a healthy river and bring back the fish.

I'd been collecting a lot of data on the fish kills over the years from the different agencies. Dr Paul Sinclair, the Director of Environment Victoria, came to Nagambie and he had a look at it all, he had a look at the pictures and he said, 'Would you be interested in getting the Goulburn Valley Association of Angling Clubs to help with an audit on Goulburn-Murray Water? As to the way that they manage their waterways, ecologically and environmentally?' And I said, 'Yes, we would. We'd like to do that.'

Fly fisher Mick Hall understands the importance of habitat, for both native and introduced game fish. He campaigns for habitat care and is involved with the Native Fish Strategy people to improve the general health of the river for all fish.

John Douglas (centre) wants to share his childhood fishing experiences with his own sons. John is shown here with his brother Ray (front) and Uncle Ian.
Photo: Bruce Douglas.

Mick has been an advocate for the 'Adopt-a-Stream' program, a Victorian DPI Fisheries initiative.

What I envisaged from 'Adopt-a-Stream' was maybe getting projects like those being done in the United States. So many of our scientists just think 'Fish' and nothing else. The bottom line is to consider all the life that's in the river. It's the in-stream habitat that is just so important of the survival of everything. The bird life and water-fowl disappears with willow removal. You don't see them back again 'til there's cover back again. You've got to plant so that you've got shaded areas, you've got what nature gives you in mountain streams. 'Cause that's the way it survives, if you don't, it just chokes itself and dies.

Fathers, brothers and sons

Fishing has been an important way for John Douglas to connect both with nature and with his two sons. John is both a fish scientist and a passionate recreational fisher. Born in 1960 and taught to fish on the Murray River, he has been living in the Alexandra area for most of his adult life. He says:

I always had this thing – I liked going fishing with the old man – so I thought it'd be nice to go fishing with my kids. If they wanted to go, they went. If they didn't, I don't think I forced them. My oldest one is not that keen on it at the minute, but the younger one's pretty keen. But then the older one will come back and he'd be looking at the weather, going, 'Oh, we should sneak down the river.' So it's a social thing, we can catch up and you can stand in the river and have a fish and chat. So it's pretty good.

Ron Bain is 92 years old and remembers how, as a young man, he and his brother, father and brother-in-law would pack up the flat-bottomed punt and head off fishing.

We'd get the local carrier to put our boats on his truck and go up to Alexandra and then we would float all the way down the river. We'd spend over a week and that'd be our annual holidays. We'd sleep on the islands in the days when there were islands on the river. And we'd

float our way down, spinning as we went. There were fast rapids in the river too, you know, and by golly, it was good fun. Coming down there.

Fishing from Dhungala

In 2004 the Yorta Yorta signed a joint land management agreement with the Victorian Government regarding the Barmah Millewa Forest areas. The Yorta Yorta connections to the Goulburn River are deeply felt and 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.[15]

If we look after the river, the river will look after itself

In his social welfare work with the Salvation Army, 49-year-old Daryl Sloan has met many different people who camp along the Goulburn River. These days, the needy and homeless live in the bush around Shepparton. But Daryl points out that there is a long history of riverbank camps – including the 1939 camps of Aboriginal people at Mooroopna, Anglo-Australian seasonal workers and European backpackers of today.

New Australians and old Australians lived on the banks, where there was a promise of seasonal work dependent on irrigation. The bush offered privacy, warmth from a fire and a place for fishing and other food. But the lack of services mean that these camps still pollute the river. We need to use some common sense about the future. If we look after the river, the river will look after itself.

Mooroopna

After the strike against Government interference at Cumeragunja in 1939, a large group of Aboriginal people walked off the mission to settle in riverbank camps along the Goulburn River near Mooroopna.

They built makeshift tents of hessian and tin on 'The Flats', the low-lying land between the river and the highway and later groups moved over the road to Daish's paddock. They worked at the Ardmona factory, the McLennans' Flour Mill and at farms outside of town. Fishing and hunting along the river provided food for survival and a place for the mob to gather.

Beatrice Aitkinson remembers:

'*We had no social services or anything. It was hard but happy times. Everyone shared, whether you were short of an onion or whatever, you could sit down and talk*'.[8]

The 1974 flood was so high it washed away 324 houses in Mooroopna. The camp was also inundated and people had to move to higher ground; rebuilding once the water receded. This area is now known as Rumbalara.[8]

A postcard showing the Mooroopna Road in flood (no date). Photo source: Wangaratta Library.

Visions for the Goulburn

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.

Ecology and industry

At 26 years old Hayley Purbrick is the fifth generation of the Purbrick family to live at Tahbilk where they have a very successful winery and farming business. She grew up fishing in Lake Nagambie with her brother. In recent years, the family has turned their attention to the Tahbilk wetland that sits in the centre of the family's land. It was once a wet and dry anabranch of the Goulburn River, complete with horseshoe lagoons. The Goulburn Weir changed this. The weir pool kept the water level in the wetland high and the horseshoe lagoons filled permanently.

Hayley and her family are helping to rehabilitate this precious place. A healthy population of threatened freshwater catfish co-exist with the ecotourism ventures that the family have introduced.

A smoking ceremony at Tahbilk welcoming guests to a 2010 Native Fish Awareness Week event, overseen by Taungurung man, Roy Patterson. Photo: Jodi Frawley.

Hayley would like to see more recognition that there has been a generational shift in environmental attitudes, particularly, she says, in relation to river rehabilitation and management.

I'd like to see Nagambie people embrace their waterways and actually utilise them in a positive way. I think I really appreciate that with water, you have to have a balance between ecology and recreation. I would like to see the future of the waterways being shared properly amongst all parties. People underestimate how much water there actually is in Australia and how it can be shared quite easily.

Hayley disagrees with the way the media pits the environment against economic development. Instead she thinks that there is a bright future ahead for our waterways.

It shouldn't be a competition between environments and farming because I think people would find that a lot of young farmers are actually very environmentally aware. They just need to know how much water they're going to get and they'll work around it in an efficient way. I don't think that the government agencies are talking to the right people when it comes to sharing water. They're talking to the existing generation and I think the existing generation has done a great job but that the next generation is quite different in their way of thinking. They are environmentally aware, and they don't want to see the waterways lost because they use them for fishing and skiing and boating as well as for irrigation.

Tahbilk Lagoon. Photo: Fern Hames.

State of the river – 'extremely 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.[7]

The Goulburn Valley was surveyed in 2005. The Goulburn Valley fish community was rated as being in 'Extremely Poor Condition'.

Alien species were 63% of the total biomass and 58% of total abundance. The fish community had lost most of its native species richness and was dominated by alien species, mainly trout.

The Goulburn River, with snags and overhanging riparian vegetation – ideal for fish where they can find it. Photo: Jodi Frawley.

Trout FAQs

(*Salmo trutta* - brown trout, *Oncorhynchus mykiss* - rainbow trout)

Rainbow trout. Photo: Charlie Carruthers.

Are trout native anywhere in Australia?
No. Trout were introduced into Australian waters in the late 1800s. Brown trout are native to Europe and western Asia. Rainbow trout are native to North America.

Do trout breed or are they all stocked fish?
Both. Trout breed very successfully in our waterways and have established self-sustaining populations in many rivers. They are also heavily stocked. There is significant level of investment in trout stocking in both NSW and Victoria.

A fly's life

The mighty 'Red Tag' fly. Photo source: Mick Hall.

The Red Tag above is a copy of the original as first published in the *1888 British Angling Files* by Michael Theakston and edited by Francis M Walbran.

First known as the Worcester Gem, it was actually Walbran who added this pattern to this book. It was used as a fly for grayling rather than trout.

It appeared in Australia very early and by the 1920s had developed a strong reputation in Victoria.

When writing of the Goulburn River at Eildon for *The Hardy's Anglers Guide 1937*, the famous Victorian fly fisherman G. Reg Lyne states:

> *In early morning and evening, about a mile downstream from the outlet there is an excellent dry fly rise, the best killing patterns being Wickham's Fancy, Coachman, Royal Coachman, Whirling Dun, Cocky-Bondhu and Red Tag.*

Text courtesy of Mick Hall.

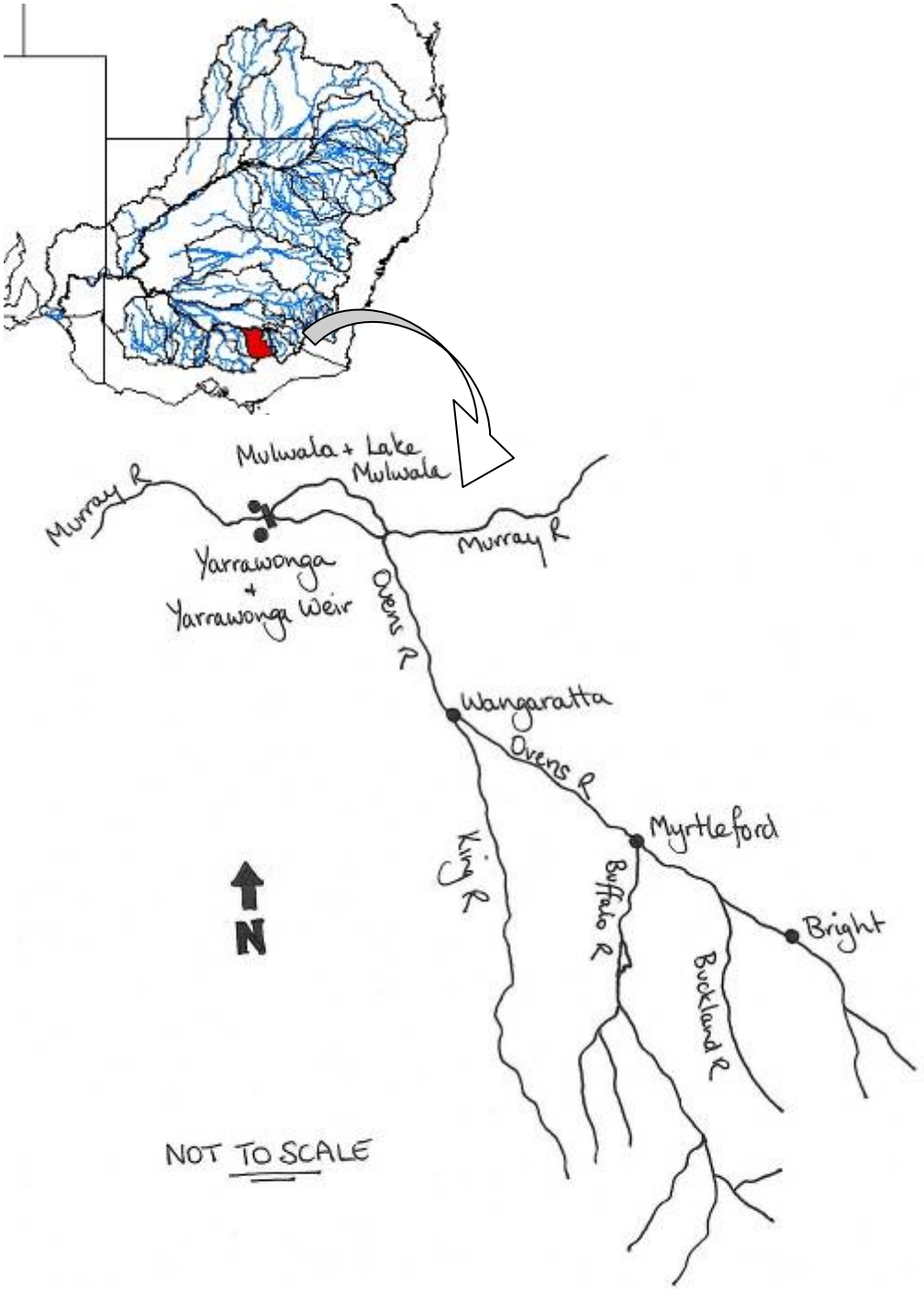
Ovens

Source: Jodi Frawley.

Source of image: National Library of Australia
(Ovens R Valley 1867 Guerard
PIC S7723 LOC1241-B).

Source: Luke Pearce

Source: Scott Nichols.



Tom Cameron, with his grandson Archie Ward. Tom has lived all of his life around the Ovens River and learnt to fish from his Dad in the 'backyard' – the river. Photo: Jodi Frawley.

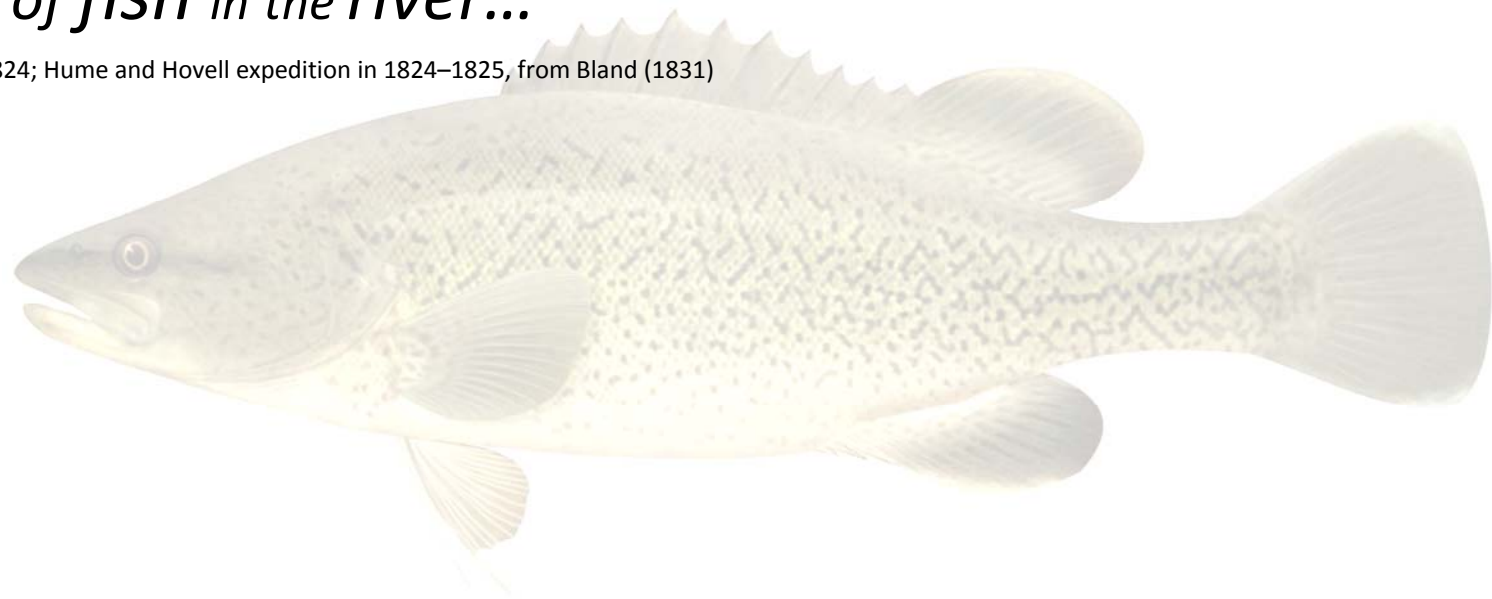
Lyell Hogg and **Ollie Evans** have been mates and fishing buddies for over 50 years. Photo: Jodi Frawley.

Gary Daws recalls that it was fishing for the mighty Murray cod that bought his parents together. And one of the biggest influences on his fishing was a Murray cod called 'Arthur'. Photo: Jodi Frawley.

Keith Snowden is carrying on a family tradition of fishing. He has also changed and adapted what and how he fished as he learnt to 'think like a fish'. Photo: Jodi Frawley.

Just before sunset they cross the ***Ovens*** *and then immediately halt for the night; having travelled about fifteen miles. They caught an* ***abundance*** *of* ***fish*** *in the* ***river…***

31st December 1824; Hume and Hovell expedition in 1824–1825, from Bland (1831)



Introducing the river and its people

The Ovens River rises in the Victorian Alps where it is linked to significant freshwater meadows and marshes. It flows past Harrietville, Bright, Myrtleford and Wangaratta where it is joined by the King River on its way to meet the Murray near the top of Lake Mulwala.

These the traditional lands of the Bangerang people and their neighbours the Taungurung and Yorta Yorta peoples.

Baiame, Wiinya and Toonatpan

Bangerang men Kevin Aitkinson and David Edwards relay the Bangerang creation story, regularly retold while fishing on the riverbanks.

> *Long ago in the Dreaming, the river did not flow through Bangerang Country. So the people asked Baiame (Creator) for help. Baiame decided to send his Wiinya (wife) to help them. He asked his Wiinya to make a mark with her kunna (digging stick) in the earth to Tocumwal and Echuca. After his Wiinya had completed her task Baiame sent the Great Serpent Toonatpan and asked the Great Serpent to follow the mark his Wiinya had made in the earth. Baiame then created a great storm with much thunder, lightening and rain. The river was filled bringing life to the country. The people, the animals and the plants arose out of the country.*[1]

For the Bangerang people, living near the rivers was like living near a supermarket. When the Murray and the Ovens Rivers were in flood, fishing became a communal activity. Large groups of people netted fish and crayfish, speared fish and, as the river began to subside, built weirs to trap fish returning from the swamps to the main channel.[2]

Many dispossessed local Aboriginal people moved to the Maloga Mission from 1874, or later to the Cummeragunja Settlement, both on the Murray River. Those who remained worked and lived along the Ovens River.

An unknown Bangerang man with his canoe and fishing gear featured on an early postcard. Image source: North East Historical Society Collection, Wangaratta Library.

The arrival of the Europeans

Hamilton Hume[3] and William Hovell[4] crossed the Ovens River in 1824, while seeking a passage from Sydney to Spencer Gulf. Cattle and sheep grazing followed, especially along the lower reaches of the river. The population boomed after gold was found at Beechworth in 1852.

The rush bought Americans, English and Chinese to live along the riverbanks. Fishing was an important way to supplement their diets. However, the sand and gravel unsettled by the gold dredging began to fill the river's deep waterholes.

The Chinese made market gardens along the river to supply fruit and vegetables to the goldfields. They were also the first to grow tobacco: 'chop chop' and 'stinky' were two forms of dark leafed tobacco grown in the Ovens and King Valleys. Tobacco remained a key industry in the Valleys over the twentieth century.

Grazing, gold mining, tobacco and plantation forestry all needed different types of workers, bringing new people with new needs to the river and new ways to catch fish.

Plantation forestry and associated milling were important local industries and both used the river for water. Excess poisons and siltation historically associated with the gold mining, tobacco and plantation industries caused devastation for fish and the river at different times.

Early industry had significant impacts on the river. Image source: Wangaratta Library.

A postcard showing children swimming in the Ovens River at Bright. Image source: Wangaratta Library.

Due to its proximity to the Alpine regions the Ovens River has always been a popular spot for visitors. Trout were introduced early and fly fishers along with other fishers, hunters, bushwalkers and, more recently, grey nomads have all enjoyed the distinctive river corridors of these picturesque valleys and plains.

The Ovens River is one of the last largely unregulated rivers in the Murray Darling Basin and is particularly important as a reference against which to assess the state of other lowland rivers in the region. There are areas where the riparian vegetation has been replaced by willows, there have been significant water quality issues and there are far too many pest fish.

A sandy bend on the Ovens. Photo: Fern Hames.

Acclimatisation Societies

As the gold rush dwindled, Victorian governments were left with the challenge of finding ventures that would keep people in the colony. At this time, it was common to transport plants and animals to and from all the continents of the world for economic, medicinal, social and scientific purposes.

What were known as 'Acclimatisation Societies' formed in local communities and brought many animals and plants, including foxes, rabbits, willows and blackberries, to Victoria. Roach, tench and Atlantic salmon all arrived this way.[5]

An acclimatization society formed in Beechworth in the 1860s where a special reserve was set aside to assist in the naturalization of plants and animals.[6]

Many of these plants and animals have had long-term adverse impacts on the Ovens River, and indeed across the Murray-Darling Basin. Plants, such as willows, have altered the riparian areas and had a profound impact of how and when organic matter enters the waterways. Rabbits have caused massive and irreversible erosion and soil loss, which has contributed to sediment loads and the siltation of wetlands and rivers. Fish, like carp and redfin, have different but significant impacts on native fish and managing these impacts – if not actually controlling the spread and number of the fish themselves - remains a high priority in the rehabilitation of the rivers.

Tom Cameron -*110% freedom to use the river*

Tom was born in 1937 and has always lived in the lower Ovens River area.

I grew up on a small farm. One of a family of eight. With none of the conveniences that people suffer today. No electricity, no motor car, only a telephone and a radio. We lived off farm produce. My father being of Scottish descent and knowing how to obtain fish from the river, we had a lot of Murray cod, a lot of wild ducks and a lot of rabbits as well as good cooking.

River for a backyard

Tom's father was born in the area in 1907 and he taught Tom and his brothers how to fish.

My father could tell you where every fish lived in this river. He grew up on it. He could follow the fish all around the river and the lagoons and the creeks. In a raging flood he could go down there and successfully catch cod because he knew the river so well.

Living so close to the river meant that Tom could treat it like one big backyard. He would get home from school and head straight to the river.

As a kid we would run around down there, bare leg and bare footed. No fear of it. Always had a dog with us. I was a bit of a pot hunter. I fished for food. In the war years we had an envious supply of Murray cod and redfin. My mates and I had a big camp down there every Christmas for a few weeks. We had 110% freedom to use the river.

A postcard showing a simple hut by the Ovens River, at Horse Shoe Bend. Proximity to the river in those days meant a plentiful supply of fish, as Tom and his family knew first-hand. Image source: Wangaratta Library.

The Camerons lived close to where the Ovens River meets the Murray. Over Tom's life the waterways have shifted and changed, especially in response both to small and large floods and to droughts.

Tom explains how the river channel, lagoons and wetlands change:

We grew up calling the backwaters 'lagoons' but they are not a lagoon in the true sense. They are old river bends that were cut off by the river changing course and I can show you a spot within half a mile of here where one day it's going to change course again because it's cutting heavily into the bank and it's got a natural course to follow after it does that. So the Ovens River is a moving target. There's several hundred acres in there. If I took you down to Puzzle Bends and left you and you didn't follow the road track out, you would stay there. Every time you crossed a loop you'd think you were looking at where you've been before. It was all so similar.

The shifting banks and watercourse meant that snags were plentiful in Tom's fishing world. And snags meant lots of cod – a specialty of his father's fishing prowess.

I did actually see them catch 91 and 96 pound cod– probably dozens, if not hundreds of 50, 60 pounders. I tell the people that all those Murray red gums leaning over into the river aren't from the floods. It's where my father used to tether his bigger fish! They had them tethered all 'round the river and then he would give them to people. A very generous man.

Snags are a natural and vital feature of a healthy Ovens River. This area of the so-called North Beaches is a reserve where there are large remnant river red gums, as well as young trees, and a natural 'snagging' of the waterway is occurring. Photo: Scott Nichols.

A Murray cod in amongst snags, the place where Tom's Dad knew he would find these fish. Murray cod use snags as territorial marks, ambush and spawning sites and as shelter. The majority of Murray cod will be found within 1m of a snag! Photo: Luke Pearce.

Riparian vegetation
food – and more –for fish

Riparian vegetation refers to the trees, shrubs, herbs, grasses and vines found in the 'riparian zone', the 'land which adjoins, directly influences, or is influenced by a body of water'. This mix of vegetation is important because it:

- is a key source of organic material for the aquatic system. Aquatic invertebrates feed on decaying material and in turn provide food for fish and other invertebrates. Woody material falling into the water provides fish with shelter and forms a substrate for food, such as algae, and for depositing eggs
- is a direct source of food for fish. Insects falling from overhanging vegetation can be a significant part of some fish species' diet during the warmer months
- provides shade which reduces daily and seasonal extremes in water temperature
- stabilises riverbanks, helping to reduce bank erosion
- intercepts and slows surface runoff and filtering or taking up pollutants and nutrients
- contributes to habitat diversity, including woody debris, rock ledges, overhanging vegetation and undercut banks.

The Ovens River has areas of good riparian vegetation. For example, the riparian zone downstream of Wangaratta is rich in perennial native grass and herb communities around billabongs in the river red gum forest-woodland. This is more like the natural state of the river than other areas upstream which are more affected by weeds, such as blackberry and willow, and by so-called 'river improvements' of the past.[11]

The impact of people

Since Tom was young the population around the Ovens River has increased. He has seen the impacts of this increase on the Ovens River and in particular what ends up in the river.

First of all, you get rubbish which is washed down from upstream. I've chased people and had some rather big confrontations for dumping garden prunings down there. There's a bit of briar there that's come down from upstream. A few miles upstream there are blackberries. Just all sorts of weeds. Maybe some of them are native. A great stash for vermin: foxes and other little animals – lots of cats. It's pressure of people.

Small boats are a feature of family fishing. Tom argues it's not these that are a problem so much as the bigger boats. Bigger boats, he says, and more people on the river have not been good for the birdlife in and around the river. Photo source: John Douglas.

However it's not just the number of permanent residents that's increasing. There are also many more tourists and travellers from other areas who bring their boats to the Ovens so they can enjoy going fishing. Tom recalls:

> *Up until about 1970s, early '80s I would take the wife and kids down in the boat to have a look at the bird nests that were in every backwater. On a little sapling that had fallen down that was out in the water, or the top of a tree that was in the water there'd be a nest, just bobbing in the water, but now they're all gone. In my opinion it's not because of any action except too many people on the water. Row boats didn't do any damage. Small boats did very little damage, a bigger boat makes waves. They don't have to be very big to upset a birds nest.*

Ibis nests are typical of bird species that live and breed in and around wetlands and floodplains. Photo: Peter Terrill.

Ovens River Improvement Trust

The Ovens River Improvement Trust was established in 1953. Premier Thomas Hollway argued for the River Improvement Act 1948, saying: *It is a sad commentary on our civilization that since the advent of white settlement our rivers have actually deteriorated*. The trust set about removing obstacles in the river that were thought to impede flow and cause erosion. The decision makers believed they were rehabilitating the rivers by allowing the water to flow away quicker, thus protecting farmers from flood.[10]

This misunderstanding of the role of timber debris ('structure') as habitat for fish and other animals led to continual de-snagging works within the river. As scientific and community understanding of river environments and their wildlife increased, advocacy mounted to reverse these policies.

Many locals began to call the organisation the 'Ovens River Destruction Trust'. The trust was disbanded in 1997. Re-snagging programs are now improving habitat for fish.

Water plants

Watershield, a native water plant that is now uncommon, in the Tahbilk Lagoon, Goulburn River. Photo: Fern Hames.

There are many different types of water plants; some of which float on the surface, while others are submerged and attached to the gravel, mud or rock of the riverbed.

Water plants provide habitat, food, refuge, spawning and nursery sites for fish and invertebrates. They also stabilise sediments, act as a physical filter and influence physical and chemical components of water.

While there are many native water plants, there are also introduced species some of which can cause problems, particularly when abundant.

While historical information about many native water plants is limited, there appears to have been a significant decline in the abundance of some native water plants in many inland rivers of the Basin.

Lyell Hogg and Ollie Evans – *Myrtleford mates*

Lyell was born in Merbien, west of Mildura, in 1929. He had older brothers and sisters, lots of aunts and uncles and a whole bunch of cousins who lived around that part of the Murray. But Lyell was the only one who was born in Australia; everybody else migrated from Scotland.

Getting to know the river

Lyell moved to Myrtleford in 1953 to be closer to his wife Pat's family, working in the district as a carpenter. He had to learn to adapt to a very different river than he was used to in his childhood.

Up there, in the Murray, we used heavy gear most of the time and sometimes a hand line wound around our hands. We could plant it a mile out in the river. I fished on my own most of the time. But it's a different style of fishing in the Ovens. We used the light gear there. Mainly I fished for trout and used a five, six or seven pound line. Light rod. You wouldn't think of using seven pound line in the Murray.

Lyell with some of his collection of fishing gear, including his half-sugar bag used to keep the fish he caught. Photo: Jodi Frawley.

Fishing mates

Ollie, born in 1936, started fishing with Lyell as a young man and they have been fishing companions ever since.

I was living next door to Lyell in 1958. So we've been fishing together a few years. As a matter of fact, I did learn a lot off him – especially spinning in a small creek because he was an expert at it.

One of the things that Lyell and Ollie always took fishing was a hessian keeper bag. Hessian bags were used to pack sugar, wheat and potatoes in different parts of the Murray-Darling Basin. Fishers, like Ollie and Lyell, have adapted them to use as keeper nets, cushions for long spells on the river, and as tackle bags. Lyell explains how he and Ollie used them to keep what they caught:

We always had about three of them – a bit over half sugar bag each. You'd catch a fish, and put it in the bag after you'd dipped it in the water and you would hang it on your back. You were wading in the water anyway and we would put a few gum leaves in among the fish and they'd keep all day. The leaves more or less just kept them separated.

Poisons in the river

From the 1960s until 2006, tobacco was one of the main crops grown in the Myrtleford area. Ollie remembers how dangerous poisons were commonly used in the early days in this industry and the effects this had on the fish:

About 1968, I took the kids over the Ovens River and I was going to fish the Buffalo Creek and the Junction up at Maloney's Bridge. I went up a hundred yards, and there was a couple of dead fish and I thought 'now that's very strange.' I went up a bit further and there was a log across the creek and I went to step over it and I'm not telling lies, there would have been thirty or forty greasies (blackfish) and trout backed up against the log and they were dead. They sprayed for the tobacco with the aeroplanes, and that was high up at Buffalo Creek. And about seven mile of that creek was completely buggered because the poison got in.

The river blackfish (*Gadopsis marmoratus*). This and the two-spined blackfish are both found in the Ovens River. Photo: Gunther Schmida.

Two-spined blackfish

(*Gadopsis bispinosus* - slippery, slimy, greasy)

Image: Gunther Schmida.

- Small to medium sized fish, reaching 35cm but usually less than 20cm
- Pair of fine, white, soft rays located under the throat and body has very fine scales and thick mucous coating
- Nocturnal fish restricted to larger, deeper, cool, clear upland or montane streams with abundant instream cover – usually boulders and cobbles. Very small home range of about 15 metres
- Spawn in November-December, laying adhesive eggs in rocky areas. Males guard and fan the eggs
- Eat aquatic insect larvae and occasionally other fish and crayfish
- Threats include cold water pollution, smothering of eggs and spawning sites by sediment, and predation by pest species, particularly redfin and trout
- Listed as 'Vulnerable' in the ACT

Tobacco farming

Tobacco was initially grown in the Chinese market gardens of the gold rush. An export market emerged when tobacco cropping was interrupted during the American Civil War. By 1929, tobacco crops took up half the cultivated land along the Ovens River. The post war era added many new migrants, mainly Italian, to the tobacco farming mix.

In 1952 a Tobacco Research Station at Merriang employed extension officers to provide up-to-date information about fertilizers, insecticides and improved varieties.[7] In line with advice of the time, DDT and Dieldrin were commonly applied, in some cases by aerial spraying. These poisons drifted into riparian zones and had terrible consequences for fish and other animals in the river. As the impact of these poisons was better understood, agricultural practices changed.[8]

By 2006, due to changing market demands, tobacco was replaced by other crops.

A tobacco farm at Myrtleford. Image source: http://en.wikipedia.org/wiki/Ovens_River.

Community awareness and concern helped to change these practices. Improved pest control techniques also reduced the impacts to the river. Ron Dawson, who lives downstream from Ollie and Lyell at Everton, recalls how people make a connection between the changes in chemical use and the changes in the fishery:

Anecdotally people associate the improved cod fishery with the demise of the tobacco industry. Old timers here will talk about big unexplained fish kills in years past and they've put that down to chemical spillage. The tobacco industry has now closed down and whether it's coincidental or not the cod, or native fishery, has improved in recent years. So some people, anecdotally, will be saying there's got to be a connection. Whether there is or not, I don't know.

Fire and water

Fires, perhaps surprisingly, can be detrimental to river health. Ollie and Lyell have seen the damage that can follow a fire, particularly when there is heavy rain after it. They recalled a specific incident when fish were affected:

They had a cloud burst in the Buckland. And the river was down to holes and the fish died because there was that much charcoal washed in. They suffocated.

Gary Daws also remembers the effect of the combination of a big fire followed by a heavy rain event:

After the 2006 fires, there was a downpour up in the Buckland Valley and the river at Myrtleford was like liquid chocolate, it would just go 'blop, blop' like boiling mud pools. The interesting thing was, the first things to die were the trout and the carp. After a while, you'd walk down to the edge of the gravel and there'd be a little run of very clean water right against the edge there. And the little blackfish would actually have the top of their heads out of the water just in that bit of clean water. The shrimp were exactly the same. The birds were having a ball!

The aftermath of a large fire can be catastrophic for waterways – and fish. Image source: MDBA.

Photo: Anthony Wilson.

In the Ovens River near Wangaratta snaggy habitat is still present naturally (above) and is being reinstated where it was once removed (below). Both old and new snags act to provide shelter and spawning sites for native fish like Murray cod and trout cod, helping them to survive.

Photo: Fern Hames.

Gary Daws – *Snorkeling for Arthur*

Gary grew up at Gunbower, five kilometres from the mainstem of the Murray River between Cohuna and Torrumbarry. His mother also grew up there but his father was originally from Bendigo.

It was fishing for the mighty Murray cod that brought his parents together.

My father met my mother because he used to regularly go up there fishing. He lived in Eaglehawk, Bendigo, and fished in the Loddon. In his 20s he went further afield cod fishing. Gunbower was the place to go. During the Depression, after two or three days fishing, he used to load the cod up on the running boards of the old car. He'd stop at all the pubs, like Dingley Inn, all the way through on the plains to Bendigo, selling cod.

Exploring the river

In the 1960s Gary moved to Myrtleford and started working a tobbaco block – right next to the Ovens River. He set out exploring the river, on foot and in a boat.

It used to be you'd get in a boat, you'd know what was underneath you without a sounder because we used to swim in there. We'd know that a cod lived there because we would see him. It was the sort of thing you'd do on a hot day and then in the evening. You'd go and throw a lure in because you saw him that afternoon. We used to do a fair bit of that. It was good fun.

Meet Arthur

Then, in the late 1960s, Gary met Arthur.

The fellow over the road and I spent five years trying to catch one particular fish in the pump hole. The fish was called Arthur. Five years we tried to catch him. He was 98 pound and didn't live in a lot of water.

Big cod like Arthur were something to behold.

They're just like pigs. You take them out of the water and put them on the ground, there's just nothing to support their guts, you can sit them upright because their belly just goes out. They just look like an old, fat pig.

Fish traps

The many creeks that run into the Ovens River were perfect for traditional Aboriginal fish traps. These were often thatched with wattle and set across a running channel, catching fish as they moved.

Fishers, both Aboriginal and non-Aboriginal, also used nets that could be dragged through the wider parts of the river. Aboriginal women continued to make nets from reeds, but everyone also used the new European materials. For example, drum nets were sometimes made of knitted mesh, but could also be made with wire and hessian. These nets could also have wings to direct fish into the trap.

In 1948, Inspector Howe caught 1 cod, 5 trout cod, 5 Macquarie perch and 14 redfin in the Ovens River, even though the conditions were not ideal for using a drum net.[9] Shrimps, crays and yabbies were caught with smaller nets called drop nets.

Aquatic ecologists have developed specialist nets, including fyke nets and box traps, for the collection of fish for research purposes.

There are rules about the types and size of nets that can be used which vary from state to state. Photo source: http://new.dpi.vic.gov.au/fisheries/about-fisheries/legislation-and-regulation/illegal-fishing/illegal-fishing-nets-destroyed.

But Arthur was better than the pair of them.

You'd be there in the boat, dragging an aeroplane spinner, then came floppies, so everybody had floppies, they were about the only lure that you used. You'd get him on the line and he grabbed this thing and there'd be just nothing left of it.

Arthur was foiled by a different sort of fisher.

Some young blokes from Melbourne came up spear fishing. They had all the gear. We didn't know they were there until it happened. Arthur ended up getting speared but it wasn't a good thing because he was a bit of a challenge to us.

No, not Arthur, but any large Murray cod is an awe-inspiring fish, especially close up. Photo: Gunther Schmida.

Seeing the river like a fish

This got Gary thinking:

Before that, the only snorkelling I'd ever done was looking for gold. I'd never thought to look out for fish. It's amazing how close you can get to them.

So Gary started to explore underneath the river, adding this knowledge to what he knew from walking around, going swimming and being out on his boat.

You'd sort of climb down through the branches of a snag. It was only about 10 or 12 foot of water. It was sitting right on the bottom and the light was dappled and now I know why Murray cod have got that pattern on them. He was only a small fish, but he was impossible to see, 'til his eyes moved. Marvellous camouflage.

Gary still fishes for a feed whenever he can, but now he has a different outlook, partly thanks to Arthur.

I don't think I'd ever take a fish out of the water that was more than 20 pound now.

Think like a fish...

Where some of us see mess, fish see protection and refuge. In the photo below woody debris will provide protection from predators when water levels rise, as will the scour hole that forms around it.

Photo: Fern Hames.

Where we see beautiful reflections on the dark water, fish will sense low dissolved oxygen levels and will try to avoid these areas.

Photo: Scott Nichols.

Keith Snowden – *Thinking like a fish*

Keith Snowden was born in 1948 and grew up on the Ovens River just upstream from Wangaratta. Keith's father and son are both builders like him, but the fishing gene goes back at least one more generation.

What about a fish?

As a youngster he would fish with his grandfather on the riverbanks right near the house.

> *I'd go up and see Pa - he was a Gallipoli veteran and he'd say 'what about a fish?' I'd be across there probably an hour, and come back with a bag full of redfin. We were always supplying fish to everyone. There was another house up the road, where dad's brother's got an acre of land off the farm as well, so dad would take fish up there.*

He enjoyed many fishing excursions with his family, including his mum, dad, uncles and grandmother. But he has one treasured memory of his grandfather, from when he was twelve years old.

> *I was out there fishing away, using a hog back which is a rotating blade spinner with red wool behind it and all of a sudden, between two holes, where the water runs a bit quickly it went 'bang', took off and I thought 'Jeez, I got a big cod'. I got it out and didn't know what it was. It would have been four or five pound. I was so proud. Something different. I took it straight up to grandad who by that stage was bedridden.*

His grandfather, who always called him 'Doc', made out that he was disappointed not to get a redfin.

But things were not as they seemed.

> *He said 'oh look, don't worry about that Doc', leave it here, I'll get out of bed and cut it up for the cats' I said 'Okay Pa, sorry I didn't get you a redfin' but I thought this would have been alright to eat.' So I left it there and went home. I described it to my father, and he shot up the road in the ute. Anyway, he walked into the bedroom and my grandad was just finishing the tail part of the fish!*

Keith doesn't know what sort of fish it was that he had caught, but he thought it looked like an estuary perch.

It's possible that what Keith had landed, and his Pa had eagerly eaten, was a Macquarie perch.

A Macquarie perch – possibly what Keith caught as a youngster. Photo: Luke Pearce.

Members of the Snowden family with their catch.
Photo source: Keith Snowden.

Snakes – a fisher's friend

Keith may have inherited his grandfather's sense of mischief as well as his love of fishing. He liked to keep his good fishing spots from getting too well known. So Keith and his mates took advantage of the local abundance of snakes. The swampy land around where Keith lived is a haven for little frogs when the rain comes, but this attracts the venomous tiger and brown snakes. Keith used most people's wariness of these creatures to his advantage:

> *We spread the rumours around Wangaratta to all the fishermen: 'You can't go fishing down there, there's too many snakes'. Worked for years.*

Black snakes are also frequent hunters around wetlands and riverbanks. Photo: Alan Lugg.

A snake goes fishing ...

It appears that even early European use of the Ovens River had quite dramatic impacts on local fish populations – and unexpected benefits for some local snakes.

A newspaper report of 1871 describes large numbers of small and large fish being incidentally captured by a water-wheel driven bucket irrigation system:

> *We have heard a good deal … of the extraordinary number of fish taken out of the Ovens River by the baskets of Mr Henley's wheel … which he uses for lifting water for irrigation. … The buckets are rather deep and as the fish endeavour to make their way up the river they get into them as they pass, evidently to escape the force of the down current and are thus lifted and emptied with the water into the [river]. Large and small fish keep constantly turning up, and of all kinds, … within half an hour some two dozen fish, chiefly bream* [silver perch], *weighing from a few ounces to three and four pounds each. The small ones are of course returned to the river, but … at least a hundredweight of saleable fish in 24 hours is the rule and not the exception.*
>
> (The Argus (Melbourne, Vic.), Wednesday 25 January 1871)

The large fish were kept in a enclosure with flowing water and 'caught' for sale whenever needed! The article goes on to note that an observant tiger snake had also identified the ready source of abundant small fish and regularly fished for a meal at the site where the small fish were released from the buckets.

Learning to think like a fish

Keith learnt from his dad about how to get the best results when he was out in other parts of the Ovens River.

> *We didn't just go into the water and fish. As my Dad would say 'think like a fish, and where would you want to stay predominantly in the river'. We would read the water. The river was always changing. We would look for an area where we thought fish would be looking for an easy feed. We knew they were going to get an easy feed in the swift current. Or we would look for where cod would lay in the eddy of the river, in other words in the backwater or still. It was always very predictable where to get a cod.*

Reflecting on the sorts of fish that he has caught over his lifetime, Keith remembers how he adapted his fishing depending on what was abundant at different times. He remembers what the old timers told him about the fishing 'in their day':

> *When I was really young, before I started really fishing, the rivers were full of catfish, yellowbelly, cod, and silver perch. I don't know about Macquarie perch. The old timers of that era say there was no problem to catch yourself a feed.*

When redfin arrived, it changed what fish were available. Keith adapted, then changed again when the redfin population dropped.

Then it went through a period when the redfin took over and they just cleaned all the native fish totally out – they had the river to themselves. Then in my lifetime, we went through an abundance of redfin to nearly zero. The carp came into the system and they cleaned the redfin out. That's when I started changing my fishing methods to go after cod. So it was sort of a thing you did. Switching from one to the other. What I've noticed now is that the King System and the Ovens System are abundant with cod and trout cod. There are still big fish in the system, but I don't know whether there are as many as there used to be. Whether their dying out happened by accident or by nature, I don't know.

Catching redfin was also a feature of John Douglas's childhood fishing experience in this part of the Basin. John (front) pictured here with his brother Ray.
Photo source: John Douglas.

State of the river – '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.[12]

The Ovens Valley fish community was surveyed in 2007. The Ovens Valley fish community and Ecosystem Health were both considered to be in Poor Condition. Only 59% of predicted native species were caught; these were only half of the total catch and a quarter of the biomass. The community had lost much of its native species richness and alien fish were abundant.

Several native species were recorded however, dominated by the two blackfish species, carp gudgeons, flat-headed gudgeon, Australian smelt, trout cod and Murray cod. Of the introduced species, Eastern gambusia were sometimes abundant and there were moderate numbers of carp, redfin and the two trout species.

Australian smelt, one of the more common native fish in the Ovens River. Photo: NSW DPI.

Areas like this, with good riparian vegetation overhanging the river and only a few introduced willows can still be found along the Ovens River.
Photo: Fern Hames.

Making connections

Greg Sharp, is a Fisheries Officer based in Wodonga and his duties take him to many northern Victorian rivers. He is a passionate fisher and can see the value of community involvement in helping the rivers.

There are some people who wish they wouldn't take the willows out because they believe that erosion is a result of the willow removal. But people are definitely more conscious of fish habitat and streamside habitat. There's an area called Tatong just above Benalla. In the early 1990s I was involved with this fishing club through some funding for planting of vegetation and stock exclusion on Hollands Creek and Ryans Creek. Here an angling club could see the benefit of having good vegetation along the sides of the stream.

Adam Pascoe, Gary Daws' son-in-law, is a passionate advocate for catch and release fishing. His interest in both fishing and the environment led to being involved in riparian rehabilitation activities along the Ovens River and its tributaries.

I became involved with the CMA and doing works down here to replant native species around the place and putting logs back in the river. I don't know if it's so much fishing, but it's just an enjoyment of the environment and things like platypus and birds and the sugar gliders.

Fishing – an essential part of life

Keith Snowden enjoys his busy and social life in Wangaratta, but there is nothing he loves more than the chance to go fishing.

I like to go to Rotary on a Monday night. I enjoy that, but I get more enjoyment being on a river system with a mate, or my son, or by myself, it doesn't matter. When you're at home the phone's going in the office or your mobile phone's going for work. It's just the peace.

Recreational fishing is not just a part of life on the weekends or holidays for Gary Daws. At his farm, right on the Ovens at Myrtleford, Gary found a way to make it a part of daily life.

When we were working all the time fishing was my relaxation. I didn't even like people coming with me. I'd go down the river with two or three stubbies and sit on a log, just catch fish and think about things. It was just having a quiet time at the end of the day. It was good. Sometimes I brought fish home, sometimes I wouldn't worry about it. If I thought we needed a feed I'd bring home a fish but most of them went back in the river, which is good. I'm quite happy for the purists never to take a fish and only ever use a lure. Good luck to them. I like to catch a fish to eat.

Lyell Hogg with his fishing gear. Photo: Jodi Frawley.

A love of fishing can build a deep understanding of a river and its fish – as well as provide an enjoyment and satisfaction than spans decades.

John Douglas as a youngster fishing on the lower Darling. Photo source: John Douglas.

Visions for the Ovens

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.

Changes in how we look at things

One of the biggest changes that Lyell Hogg and Ollie Evans have seen is in the way that the younger generation fish. Where once fishers would take everything that they caught, there has been an intergenerational change that will be good for the future of the Ovens River. Ollie says:

> *My grandson does catch and release fishing. If he gets a cod, he'll keep the first one. We went out one morning on the Ovens River a couple of years ago and he got five and he kept one.*

One of the changes that people would like to see for the rivers is the management of introduced species – and not just those in the river.

A growing understanding and celebration of native fish, like Murray cod, are contributing to changing attitudes towards fish and rivers – and what they need to be healthy. The photo above was taken at the Yorta Yorta youth event at Shepparton weir during Native Fish Awareness Week activities in 2010. Photo: Jodi Frawley.

Pat Larkin, who lives near Wangaratta and the Ovens River says:

> *One thing I don't believe we've paid enough attention to is the introduced predators and the introduced plants that are pests in our aquatic systems. We used to see a lot of swans nesting around the edge of Lake Mokoan. Very few actually hatched because foxes were getting the eggs, if not the parent. We also have pigs, not far from here. If you show 'em water they will catch fish. The deer predate on plants I suppose, but they seem to be manageable. Foxes, cats, and pigs, I think, have made a massive difference to our ecology. And to the availability of other species. If you take certain species out, other species dominate. I believe the whole ecology is related.*

Ron Dawson is an environmentalist and a fisher. For a number of years he served as a ministerial appointee on the management board that replaced the Ovens River Improvement Trust. Over the years he has seen a general change in attitude that he believes will help in the future.

> *There has been a hell of a change now in terms of environmental issues people are aware of: issues like fish habitat. It's very different really. I'd love to see the demise of European carp. I think they've really changed the river and environment. Their biomass in the waterways is just horrendous really. I'd just like to see the continued improvement in water quality and increase in breeding of native fish, as well as the promotion of catch and release.*

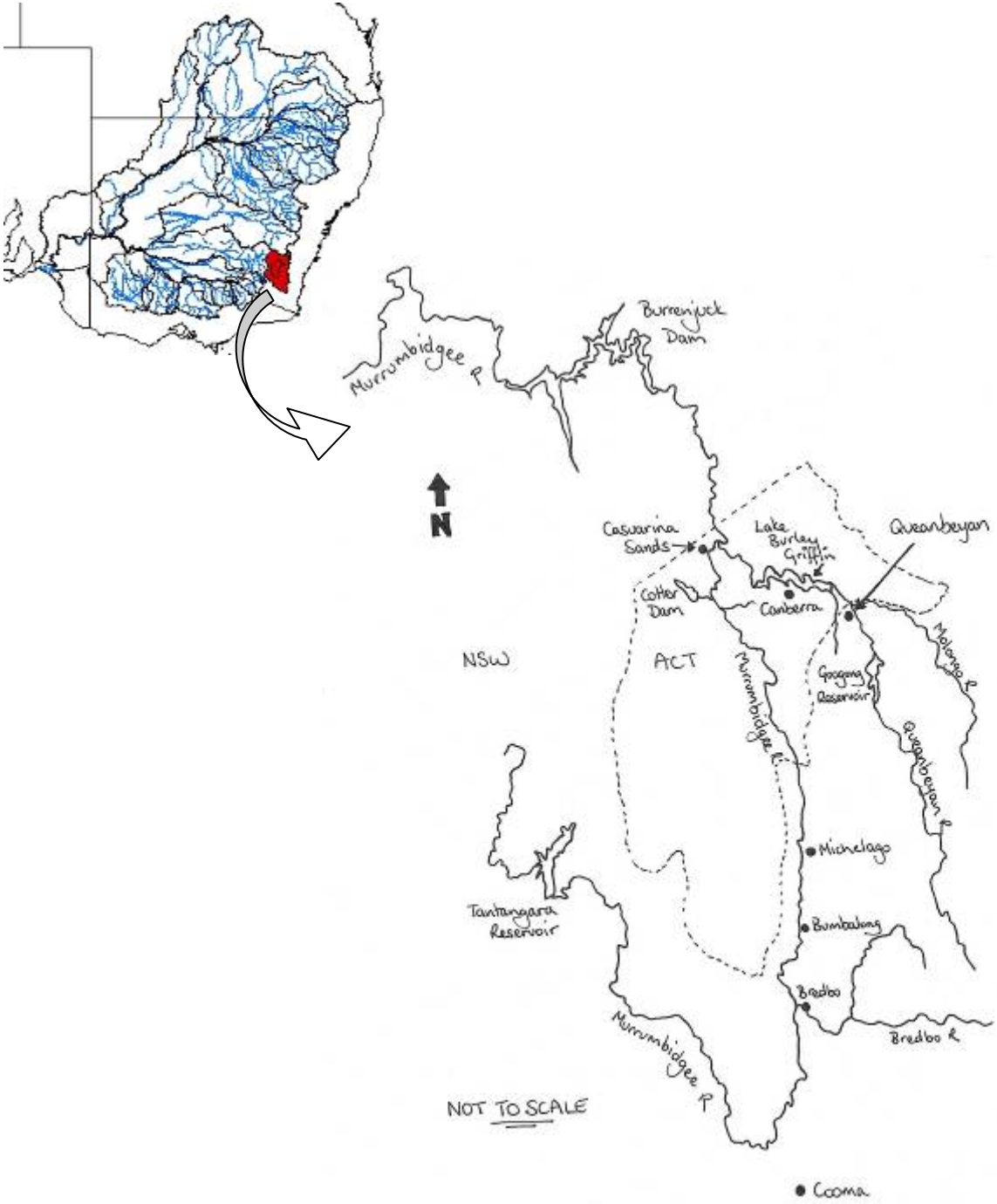
Upper Murrumbidgee

Source: Luke Johnston.

Source: Charlie Carruthers.

Source: National Library of Australia (nla.pic-vn4649970-v).

Source: Scott Nichols.



Bryan Pratt – a scientist and passionate angler who has fished the Murrumbidgee for over 40 years. His two tackle shops in Canberra give him the opportunity to talk with other anglers about the state of the river. Photo source: Bryan Pratt.

Darren Roso has been lucky enough to get his feet wet in the Murrumbidgee with his job. By doing so he has seen many changes – both good and bad. Photo source: Darren Roso.

Dick and **Gay Lawler** (and their dog **Kevin**) enjoy 'Glanroe' – the old sheperd's hut they have lovingly restored on the banks of the Murrumbidgee. Photo: Luke Johnston.

Adrian Brown is a Ngunnawal man and a ranger with ACT Parks and Conservation Service. Adrian wants to honour his ancestors by caring for the river and teaching others to do the same. Photo source: Reconciliation News, Issue 14, April 2009.

Everybody who can hurl a line into a river has caught trout, cod, bream, perch, and gadopsis [blackfish] in the Murrumbidgee, but most do it with a hook baited with white grub, worm, shrimp, frog, and other foods. ….

The Sydney Morning Herald, 1 December 1904, page 11

Introducing the river and its people

The Upper Murrumbidgee cuts its way through the Snowy Mountains in south-eastern New South Wales, snaking its way south, then turning north before dropping into the lowland and heading west to join the Murray downstream of Swan Hill.

The Upper 'Bidgee floodplain is only a couple of hundred metres wide, a stark contrast to the kilometres-wide floodplains in other parts of the Murray-Darling Basin. When the floods come, they come up quickly and roar through the narrow valleys.

These are the traditional lands of the Ngunnawal and Ngarigo peoples.

Aboriginal traditions

For over 20 000 years the Aboriginal people have lived around the Murrumbidgee River. The Ngunnawal people lived mostly in the Canberra area, while the Ngarigo lived further upstream on the lowland plains. The local rivers were used for ceremony and song, hunting and fishing by all Aboriginal people.

The Canberra area was an important meeting place for Aboriginal peoples travelling to the mountains for initiation ceremonies.

Neighbouring language groups, Wiradjuri, Walgalu, Ngarigo, Yuin, Jaimatang and Gundungurra, met at Kamberri over the summer season. The Ngunnawal guided male initiates on the journey to ceremony places through Ngarigo country and along a pathway of the Murrumbidgee.[1]

Kambah Pool. Photo: Scott Nichols.

The arrival of the Europeans

In 1824 the first squatters arrived in the Canberra area, followed by others who favoured land that adjoined the many rivers and streams in the area.[2] Mining for gold and tin bought new people who camped along the river.

As rail arrived, so too did the first naturalists and other early scientific workers.[3]

By the time of Federation, the river and fish habitat had changed. John Gale bemoaned the state of the river in 1903.

> *What a contrast fishing in the Murrumbidgee presents to the days of auld lang syne! Some of us old residents can look back to the period when an evening's fishing in the big river was invariably rewarded with a haul of heavy fish, varying in size from 7lb to 20lb or even more, whose aggregate weight was enough for a pack-horse to carry.*[2]

Children playing in the 'Bidgee, Tuggeranong, circa 1910. Photo copy of original: National Library of Australia – Mrs W.A.S. Dunlop's photograph album PIC_8441_46_LOC_Album 316A.

Many more people came as Australia's capital was built between the Queanbeyan and Murrumbidgee Rivers. The development of Canberra changed the area, particularly by demanding far more water than before for new building, domestic and public use. The artificial Lake Burley Griffin was created, changing the look and feel of the area and how people used it.

But Lake Burley Griffin wasn't the only change made to the Murrumbidgee's flow. Once, river levels would rise with the spring snow melt before falling slowly over the summer. Today the snow melt is collected in Tantangara Dam before being returned to the 'Bidgee below Burrinjuck Dam. Tantangara Dam, completed in 1960 as part of the Snowy Mountains Hydro Electric Scheme, now diverts 99.6% of the headwater flows.

This has impacted on regular flow, flood levels and flood frequency, changing both the habitat for native fish, and opportunities for them to breed. The river between these dams is a shadow of its former self.

In the post war period many southern European migrants arrived to live and work in the area and on the Snowy scheme. Inevitably pressure grew on existing river resources. Fishing for pleasure overtook fishing for food and has become a vital part of recreational activities along the Murrumbidgee corridor.

By the 1930s, grazing country had been cleared right to the water's edge. Photo source: Helen Shimitras.

Grazing the river plains

While stockmen thought the high country was perfect for running cattle and horses, squatters in the mid-range plains of the Murrumbidgee preferred sheep.

Early grazing runs were large and sheep moved across the river plains in the care of shepherds. Rudimentary stone huts were built over the 1840s and 1850s to house the shepherds as they moved the sheep around. These huts were built from local stone and rarely had more than two rooms. They included a stone hearth, a place for wood fires that provided warmth and heat for cooking. On the plains, shepherds lived off birds and small mammals but some huts were built along the river, which meant they could feast on fish, mussels and Murray crays.

The sheep meant more nutrients were washed into the mountain streams. The wood fires, so essential for the shepherds, contributed to the deforestation of the sparsely wooded high country.

The increasing use of the river, for both livestock and the people who looked after them, meant the Ngunnawal and Ngarigo faced fierce competition for river resources.[3]

Dick & Gay Lawler - *'Glanroe' on the bend*

Dick Lawler's childhood home was 'Hilldyke', a grazing property seven kilometres from Michelago. He was born in Sydney in 1939, but has lived in the Murrumbidgee corridor all his life, as did his parents and grandparents.

As young boys, Dick and his brothers loved going to the river.

> *As a child in the 1940s our only access to the river was on horseback. It took quite a bit of pestering my Dad to get us there. We had to saddle the horses, dig worms, prepare fishing gear and get mum to make the sandwiches. We always fished the same hole, about 30 metres from Shallow crossing.*

The Lawler children would fish all day and only then would they be allowed into the water.

> *When we finished fishing the best part of the day began. We would swim the horses and either ride them in the water or hang onto their tails and be pulled along.*

Louis Margules, born a few years earlier in 1931, lived nearby at Cotter and as a child fished with Herb Williamson. Herb was the local bus driver, whose ambition was to catch *more fish than he could give away to eat*. Together they explored the nearby Cotter River.

> *You would fish all the parts of the Cotter. We had names: Dead Man's hole, Perch Strait, the Blue Hole, the Toe Wall, the Gauge. They were all places where you would say you were going fishing. If four of you went fishing, it was unheard of to come back with less than twenty trout and five or six very big black perch.*[11]

Trout but no big fish

The Murrumbidgee River was stocked with trout from the 1880s. By the time that Dick was fishing as a youngster, the native fish were on the wane.

> *We always caught fish: rainbow and brown trout and the occasional Macquarie perch or cod. No big fish.*

Trout FAQs

Brown Trout (*Salmo trutta*), Rainbow Trout (*Oncorhynchus mykiss*)

Rainbow trout. Photo: Charlie Carruthers.

Where are trout found now?
Trout are now widely distributed across cooler upland streams within the Murray-Darling Basin, particularly NSW, ACT and Victoria.

Why are trout a problem?
Predation of native fish by trout has caused significant impacts on some native galaxias and is suspected for other native species.

After Dick married Gay, they took up 100 acres of 'Hilldyke', replete with the ruins of an 1840s shepherds hut. In 1983 they restored the stone building and built a cottage garden to match the building.

'Glanroe' holds many happy memories of fishing in the 'Bidgee for Dick and Gay. Photo: Scott Nichols.

Dick and Gay live in Canberra now, but escape to their weekender, 'Glanroe', to enjoy the peace and quiet of the Murrumbidgee corridor. They both have fond memories of the early days at the hut.

We used to fish and we used to catch trout. We knew we would have a meal of trout every weekend when we came out, without fail. And we used to catch enough to smoke them and give them away as Christmas presents to friends.

Floods and carp

The floods of 1991 bought new pests right to Dick and Gay's front door.

In 1991, the carp appeared on the lawn after a flood. They migrated by using the shallow water around the edges. They won't go out in the middle if there's an easy way around. We used to catch as many trout as we wanted to up until 1991. But they've dropped off a lot since the carp have come in.

Darren Roso has watched the changes in the carp population since he arrived in the area in 1988.

I was here during that unfortunate stage when they invaded. They were up to about Casuarina Sands when I turned up. And in my time they've completed their invasion of all suitable habitat in the ACT, apart from perhaps the lower Cotter. It's been pretty tragic. I've watched silver perch decline, basically because of that. Although Murray cod and trout cod just love carp. Often times you'll catch a cod and as you're removing the lure, you're sort of looking down the throat and there's a carp's tail just beyond the oesophagus.

Managing stock

Stock with unmanaged access to waterways can do a lot of damage to fish habitat. Increasingly, graziers recognise that managing access benefits both their stock and the river. Some of the recommendations for being more fish-friendly in the grazing areas around the 'Bidgee include:[9]

- Maintain groundcover: this layer of grasses, other plants and plant litter slows rainfall run-off, helps retain soil moisture, protects the soil from the impacts of rain and captures nutrients before they can reach waterways
- Feed the pasture, not the creek: by managing soil fertility and only applying the nutrients that are needed in appropriate amounts, nutrients are not applied excessively – saving money and minimising damage to waterways
- Protect the riparian zone: fencing off the waterway and establishing native tree, shrubs and grasses slows run-off, protects riverbanks, minimises erosion and captures nutrients
- Establish off-stream water points: cleaner water for stock and reduced access to the water's edge, greatly reducing damage to riverbanks, pugging and the addition of nutrients to the water

Bryan Pratt – *the best of both worlds*

There were two Bryan Pratts born in 1937. One is an ardent scientist and the other is a passionate angler. The scientist came to Canberra in 1965 to work for the Australian National University; and the angler found the mecca of streams, rivers, lakes and dams for weekend fishing pilgrimages.

Angler and scientist

Bryan moved from university research into public sector conservation work in the 1970s where he found that the two aspects of his life had important crossovers.

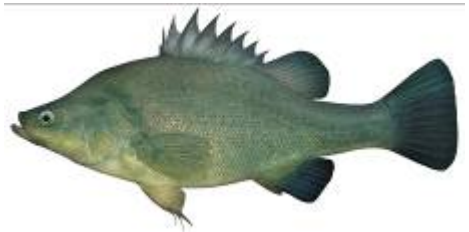
> *The basic thrust of all this is if you can find anglers that are good scientists or scientists who are good anglers, or get a population of both and get them together, you can learn an amazing amount of information about the things that are right under our noses. We don't necessarily recognise the importance until someone puts it altogether. Astute, observant, consistent anglers can provide a lot of basic information without realising just how important it is to do that.*

Round and forked tails

Bringing these two elements together, meant getting out and talking to other fishers in the Murrumbidgee corridor.

> *I found enough old cockies and anglers who knew about perch being in the river back in the 1800s and 1900s, and I kept saying what sort of perch? Did they have a forked tail (silver perch) or a round tail (Macquaries or golden)? And enough of them remembered the round tail to make me believe that golden perch used to also occupy this upper section of the Murrumbidgee River. And curiously enough in about the 1910 to 1920 the reports of what looked to be golden perch stopped. I reasoned that what happened in about 1910, the golden perch population and the silver perch population migrated downstream to warmer waters. And when they decided to come back upstream in the Spring of about 1911-12, low and behold, something was in their way, Burrinjuck Dam which was finished in 1911.*

While golden perch and Macquarie perch are still found in the Upper 'Bidgee, silver perch did decline and have died out above Burrinjuck Dam.



Golden perch

Macquaria ambigua (callop, yellowbelly, Murray perch, white perch)

Macquarie perch

Macquaria australasica (macca, mountain perch, black bream, Murray bream, white eye, blackfish)

Silver perch

Bidyanus bidyanus (grunter, black bream, silver bream, bidyan)

Thinking about stocking

One of the major changes Bryan has seen over his lifetime is the shift in importance of introduced and native fish.

The interesting thing is that for many, many years we gave precedence to the imported species. Trout for example; they were the holy grail. I remember having a conversation with a director of an Australian state fishing authority about Burrinjuck Reservoir. He said, 'Bryan, what's the point. They're only native fish. What are you worried about.'

Slowly this is changing. Native fish have become popular sporting fish in their own right – and the impacts of introduced fish on the rivers are now part of the agenda of river management.

My point is that trout are a superb sporting fish in their place. In other places they represent a danger to other species and we should have a harder think about whether we stock them in those areas. It's heresy to fishers when you say 'you shouldn't be stocking trout', but we should think about endangered frog and fish species and other things too. It's important that before we go ahead and stock we need to think more deeply about what we would have done in the past. We now know more about the implications.

Trout have long been a feature of fishing in the 'Bidgee. This group and their catch were photographed in 1935. Photo source: National Library of Australia (nla.pic-vn4649970-v).

Now more fishers recognise the thrill offered by our native fish. Recent surveys found Murray cod greater than 100cm in the ACT part of the UMDR. Photo source: Kevin Clark.

Desnagging - losing fish habitat

In the twentieth century throughout the Murrumbidgee desnagging works were undertaken to create clean, clear channels. As both a scientist and an angler, Bryan remembers how he advocated for a reverse of this policy.

I kept protesting to the people involved that the channelization of Australian rivers, making them as straight as possible, transferring water from the upper reaches of Point A to Point B at the downstream end, was the quickest way to get rid of the water. They did that by removing obstacles, removing the snags. And removed significant habitat for the very sorts of fish we thought we might be protecting. In those days the community didn't assign value to particular fish species.

Homing in on the snags

Changing the mindset of policy makers meant showing the importance of the ways fishers read the river and understand the habitat of native fish.

Simple things like resnagging a river which was absolute heresy years ago. We knew that snags were important because when you go fishing for Murray cod, you ignore significant sections of the river and home in on the snags. That's where the fish are.

Common sense now says in retrospect we should be putting more snags in the river. If you've got something that can be bred or maintained in the wild naturally or restocked, they do form an interesting and valuable social resource. And also they might have all sorts of other follow on effects that we don't know about yet.

Unlike many parts of the Basin, the river runs fast in the Upper 'Bidgee. Darren Roso explains a different approach used here.

We put in two rock groynes in the river close to Tharwa in about '99. There was about four or five kilometres there where the river was very broad and sandy with no habitat to speak of. Prior to the rock groynes going in, we caught nothing but European carp and gold fish and galaxids. But then two weeks after we did another electro fishing run, and we caught trout cod, Murray cray, plenty of shrimps and a couple of yabbies.

The best of both Bryans

Bryan now owns two tackle shops in Canberra where he continues to talk about the value of scientific and local angler knowledge to everyone. He says:

That's why there were two Bryan Pratts. One was a scientist, one was a fisherman. Put the two together - you get the best of both worlds.

Part of the Upper Murrumbidgee at Tharwa. Photo: Charlie Carruthers.

1909 – a call to stop ringbarking trees

Dr. A. J. Brady, president of the Rod Fishers Society, reported to the Fisheries Board … [that]

The upper river was clear, but about Cooma the river was somewhat discoloured with earth washed in from the banks. He suggested that in order to keep the upper river clear, ringbarking should be prohibited along the river banks. There was too much cleared land about Cooma. The matter was referred to the Lands Department.

(The Sydney Morning Herald, 13 February 1909, page 14)

Urban expansion and development have led to a greater requirement for water – one of the things that impacts fish habitat in the 'Bidgee. Photo: Charlie Carruthers.

The 'Bidgee at Bumbalong. Photo source: Luke Johnston.

Adrian Brown – *Ngunnawal responsibilities*

Adrian Brown was born in 1975 and grew up fishing the Queanbeyan River with his father and his brothers. As a Ngunnawal man, his responsibility for country was learnt on days out on the river.

A lot of my time as a young fella was spent on the Queanbeyan River. Dad was real passionate about the water and always took us up there. We'd walk up and down the river and do lots of fishing. Dad was mad on trout fishing. So it was good fun. Sometimes we would be sitting around or moving from spot to spot. We'd look at things. It wasn't just looking at the water and fishing. We'd go with Dad and he would show you some place and sort of talk about it. It was really good. Yeah, so we learnt country.

Silver perch roaring up the river

Adrian's father remembers a time when silver perch were plentiful around Wee Jasper.

Dad told me a story there when he was working and went out to Wee Jasper. We used to go out there fishing a lot too. All the Yass mob. Back in the old days when they were all still living on the missions. Dad and Uncle Alec used to go out there fishing, and at the right time the silver perch would be just roaring up the river. He said all you had to do was throw the hook in the water and bang they'd just hit the hook. They'd end up with piles and piles of silver perch on the side of the banks. Now you go there you won't get one.

Ngunnawal fishers

Ngunnawal fishers have always lived along the Murrumbidgee, chasing fish that sustained their people. Fishing trips were combined with other ways to honour the knowledge and traditions of Adrian's Ngunnawal Ancestors and elders.

Even trying to get back into practicing our culture. Like that was really important to us too. I remember getting yellow box and making coolamons. So if you walk along that river now, you'll see the scarred trees where we've been. And we used to laugh at that. Archaeologists will come along there one day and say, 'what's going on here?'. We want to throw out that perspective of Aboriginal people having lost contact with country. It shows our continuation. We believed in our country and our country looked after us all that time.

Silver perch

(*Bidyanus bidyanus* - grunter, black bream, silver bream, bidyan)

Photo: Barry Porter.

- Medium to large fish growing to 50cm and 8kg, but usually 35cm and 2kg
- Found in similar habits to Murray cod and golden perch (lowland turgid, slow flowing rivers)
- Spawning can occur without a flood, but these fish seem to benefit from a rise in water level
- Will move through fishways
- Eat aquatic plants, snails, shrimp, and aquatic insect larvae
- Potential threats include river regulation, barriers to migration, altered flow regimes, cold water pollution and interactions with carp and redfin
- Listed as 'Vulnerable' in NSW and the ACT

A pathway for bosses

The Upper Murrumbidgee also has special significance for the Wiradjuri, Yuin, Ngarigo and Walgalu people. It is a ceremony place. And the Ngunnawal have responsibility for caring for the sacred sites for all these different groups. Adrian explains the meaning of Murrumbidgee:

'Murrum' means pathway and it's a men's pathway. And 'bidgee' means boss. So it's pathway for bosses. And it starts up in the mountains and ends all the way out, going down into the Murray. All Aboriginal people, all moving up through that river to do their law. That's how it used to be.

When coastal peoples travelled from the Shoalhaven they would bring gifts for the Ngunnawal and the river became a place to trade.

We know they were bringing a lot of mussels up because of the surveys that we've done along the river. We've got fresh water mussels and you can see the salt water mussels are different. They stand out. They might have been making hooks out of them. They had their dilly bags with them and they were dipping that in the water as they travelled. Not collecting, but bringing that with them. They were keeping the food fresh in the water.

Ngunnawal

The area around the city of Canberra is Ngunnawal Country. This was a staging place for neighbouring communities who travelled from Canberra through Ngarigo land in the highland regions for ceremony.

Adrian Brown's ancestor Murren-gen-illy was a powerful man who could speak many languages. He played an important master–of–ceremony role in facilitating initiation of young men from his own and other nations. The river-camps were part of journeys from the coast and the plains. Men travelled to the high country for ceremony, while women waited together at camps in the lower reaches.[6,12]

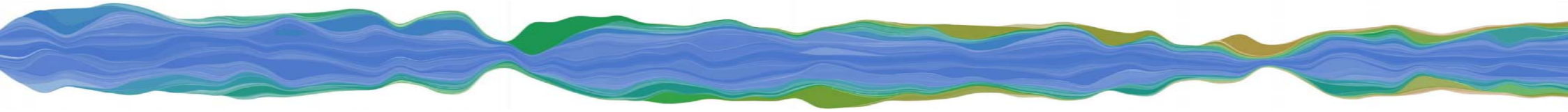
The Ngunnawal nurtured plentiful stocks of fish by monitoring feed and limiting harvest. This helped provide for these seasonal influxes of people into the river corridor. Different groups within the community were responsible for caring for the cod, yellowbelly and perch throughout the year. This bounty could then be shared amongst the locals and visitors.

Blackberries, carp and silt

Adrian has seen many different changes on the river in his lifetime: the impact of exotic fish species, sand quarrying upstream, weeds and encroaching suburban development.

Each of these changes brings challenges for the fish and their habitat in the Upper 'Bidgee.

The biggest thing is housing development. A big thing too is weeds, like the blackberry. The Murrumbidgee is getting full of weeds and you can't even get down and enjoy yourself. You can't sit down at a place because you'll be sitting on a weed that's poking in your back. You can't even get to the water because it's all covered with blackberries. Carp are a big thing too in the Murrumbidgee. You've only got to go up around Kambah Pool in the morning and you'll see hundreds of them just jumping up and down the river.



Kambah Pool has the highest diversity and number of native fish species detected in all monitoring in the Upper Murrumbidgee. Photo: Scott Nichols.

Adrian's colleague in the ACT Parks and Conservation Service, Darren Roso, also worries about the movement of silt and its effect on the fish.

We've got some very sodic soils in our catchment here and so the fine clays remain suspended for weeks, months. And that has a really bad affect on fish larvae in particular. It just coats eggs and they die, be it fish, insects, frogs or other animals.

Dick and Gay Lawler have also seen changes to the water quality in recent years.

I don't swim in the river much anymore, it's been so dirty compared to what it used to be. It used to be crystal clear. I think it's something to do with sand dredging up around Numeralla, because it's crystal clear, just north of Cooma I believe.

Queanbeyan cod

Early settlers also moved native fish from place to place, including into rivers where they would not naturally have been found (this practice is known as 'translocation'). One example of translocating native species is recounted in this story from the mid-1800s.

'….nearly twenty years ago, conveyed in ordinary water-casks, on horse-drays, a few dozens of cod and perch from the Queanbeyan at Yarralumla to the waters of Winderradeen, a distance of nearly forty miles. The perch were never seen after being deposited in their new home. But the cod thrived and multiplied, and by means of subsequent floods were carried in to Lake George, where they have thriven and increased to an innumerable extent.'

(*Braidwood Independent*, 14 September 1867, page 4)

Trout

Trout fishing for sport has a long European heritage, especially in Scotland, a place where many Australians claim heritage. The Campbell and MacQuaide families were amongst the first settlers in the Canberra area. Acclimatisation societies bought many different animals – including fish – to Australia over the 19th Century. Immigrants also bought technical knowledge about keeping brood stock, breeding up fingerlings and release methods. Alpine rivers, such as the Upper 'Bidgee, were thought to be comparable to upland streams in Europe.[4]

John Gale's and J F Campbell's trout releases in 1888 eventually became a government enterprise. Acclimatisation societies sold trout licenses from 1936 to 1957 to fund their own hatcheries.[5]

But not everyone was keen on trout as this newspaper article from 1907 shows:

In some parts of Monaro local people regard the trout with anything but favour. They know that the introduced fish have driven the indigenous edible fish away, and they regret the circumstance, especially as regards the capital edible perch.

(The Sydney Morning Herald, 21 December 1907, page 16)

A rainbow trout. Photo: NSW DPI.

Darren Roso – *Canberra man vs Murrumbidgee wild*

Darren was born in 1965 and moved to Canberra in 1988 to start a job with the ACT Parks and Conservation Service.

He is now a Senior Ranger and has spent 23 years looking after an 80 kilometre section of the Murrumbidgee corridor.

> *Right from the very beginning I got put into an area we call the Murrumbidgee Corridor. Although its primary function is conservation, its primary use is recreation. I have a few degrees, but find the practical experience and knowledge equally useful.*

Aren't your feet wet?

When Darren started in the service, Louis Margules took him under his wing and showed him the ropes, taught him about being a ranger and shared local lore from a lifetime on the river.

> *There was this marvellous bloke called Louis Margules. And he lived along the river all his life. And as soon as I started he was at me a bit and was saying, 'how can you be a ranger along the river and your feet aren't bloody well wet?' You can't argue with that kind of logic. From then on I almost never wore long trousers and I had a couple of spare pairs of shoes, and I would be in the river all the time. I pretty much took on the role of the river ranger. I'll walk along the river and kill willows and swim the river and walk the river and lilo and kayak and canoe and raft and ride. I take the children down there to fish and hunt and canoe and swim.*

Louis had also worked as a ranger for the service. One of the perks of the job was camping out overnight - and fishing after knock off. Job perks that Louis passed on to Darren. Louis remembers:

> *If you were going to stay the night on the river because you wanted to get a job finished first thing in the morning, you'd take a couple of lines.*[10]

Darren has followed Louis' lead with gusto. He is renowned amongst his colleagues for taking off into the Murrumbidgee wild with just a kayak, a swag and a fishing rod, living off the river for days at a time.

Garden suburbs and fish habitat

Canberra is famous as a city planned for spacious homes and motor transport. It was developed from 1913, in a decade when garden suburbs were fashionable, under the supervision of Marion Mahoney and Walter Burley Griffin.

As the city grew these garden suburbs crept closer to the river until the satellite community of Tuggeranong was designed in 1969. Roads with channel and curbing changed the way water flowed. The loss of native vegetation intensified to make way for housing blocks with lawns.

Since the first suburbanites moved into Kambah in 1973, the population of Tuggeranong has grown to over 87 000.

Introduced deciduous trees, including willows, contributed to the vivid and decorative floral cityscape. But the chemicals and fertilisers used to keep these gardens leafy and flourishing added new chemicals and nutrients to the runoff that ended up the river.

The development of Canberra and its gardens changed the conditions in the river for fish. There were also more and more people using local Murrumbidgee reaches for fishing and other forms of recreation.

The trouble with sheep

The area around the Murrumbidgee is sheep country. Grazing has been a part of the region since the 1850s. When the river floods, as it did in the early 1990s, Darren has seen the damage caused by the sheep.

There's not very many backwaters in these mountain stream systems. So you don't catch certain species. Billabongs are inhabited by slightly different critters to the main stream. There aren't as many of them here, so we need to look after them so much more. And unfortunately they have taken the brunt of all the overland flow, all the soil that's come off all our sheep country. So for example, after a big storm you'll see these rafts of sheep manure on top of these little backwaters. And so even if a cod was able to get up in there and spawn, those fingerlings would be doomed. There's just too many nutrients there.

Fish and fires

On January 8, 2003 lightning from an electrical storm lit 160 small fires in the Brindabella and Namadgi Ranges. Over the following week, the fires moved through the dry tinder in the mountain forests all around the Murrumbidgee. When extreme winds whipped up and temperatures soared, the bushfire reached epic proportions, moving down the valleys and into suburban Canberra.

Darren remembers the devastating impact of the bushfires on the fish and fishing.

It did burn out a lot of the country along the Murrumbidgee and it killed a lot of fish and wildlife. It was very emotional for me because we saw it coming.

A fire damaged waterway. Reference and image source: www2.mdbc.gov.au/subs/annual_reports/NFS_Annual_implementation_report2004-05/annexes/vic/vic5.htm.

Fish and fires

The ACT bushfires in 2003 and 2009 and Victorian fires in 2003, 2006-7 and 2009 affected the catchments of the Upper Murrumbidgee, Murray, Goulburn and Ovens Rivers.

Extreme fire events rapidly remove most or all trees, shrubs and grasses from a catchment, immediately heating shallow water and adding large amounts of ash. Once a fire has passed, the lack of shady trees allows the sun to heat the water more quickly and means that ash, soil and debris are washed into the waterway whenever it rains.

Increased sediment and ash loads negatively affect fish by clogging their gills, smothering eggs and water plants and filling in deep refuge holes. Water quality also suffers because the water becomes deoxygenated as organic material decomposes.

These impacts can cause massive fish kills, such as in 2003 from Dingo Creek to Myrtleford on the Ovens River when fish were effectively wiped out for a distance of 150km.

Making Connections

Murray cod and wild duck

In 1925 the romantic novelist Miss Louise Mack struck out of from the city in her motor-car to see the outback. She joined a list of other notable Australian women, Marion Bell, Gladys Stanford and Jean Robertson, in becoming an 'urban automobile adventurer.'[7]

Fish and fishing contribute to the sense of Australian-ness of Miss Mack's journey.

> *Australia has a quality all her own, and the funny thing (or is it pitiful?) is that you don't know it till you go away from Australia and see the world. Coming back, you realise that the word magnificent describes our country. England is like a pocket handkerchief in comparison. Oh, the great plains I have motored over these last 10 days – the great rivers, the Murray, the Murrumbidgee, and the Darling. Oh, the wonderful fish in these rivers-the cod, catfish, perch, lobsters – and the wonderful game that rushes past you everywhere – duck, pigeon, quail, plover, hares, rabbits, to say nothing of millions of parrots of every sort and kind, and all edible to hungry people. How glad one feels that we are not a hungry people, but how proud one feels to know that we could feed vast multitudes if necessary.*
>
> *I never had better fare anywhere in Europe than at some of the little way- back pubs out on the great plains of the Murray - Murray cod and wild duck. What could one ask more?*[8]

Ladies fishing in the Murrumbidgee. Photo source: National Library of Australia nla.pic-vn3995704-v.

Getting wet feet

In the heat of the summer, Gay Lawler would take to the river to cool down.

> *I used to float around on the river on a lilo. But, gee, you'd come face to face with snakes and goodness knows what. The black snakes used to lurk around in the water, in the reeds. The snakes and other water creatures don't seem to take any notice of you when you're in the water. But I've done some back paddling in my time.*

Darren Roso likes to get his feet wet and during the floods and freshes that flow down the 'Bidgee he can feel the changes as they are approaching.

> *The water flow's extremely fast. When you stand on the bank and you plant your feet quite firmly, you feel this ultra low vibration coming up through your feet. And yeah, it's really beautiful actually. And powerful. It just lifts everything. And logs just become chips in no time at all. It's very rocky here. And so logs just get ground up in no time at all.*

A river community

Gay and Dick Lawler appreciate that the long-term health of fish depends upon the care and responsibility for the river and the land around it and they are involved in activities that allow them to contribute to these changes.

They have found that this is a great way to be part of the river community. Some of their best friends and neighbours work along side them to bring back the fish.

> *We're involved in the Upper Murrumbidgee Demonstration Reach. We also work with Landcare. The landcare groups are going to replace willows with eucalypts. Manna gums. And anything else that's native to the riverbank. So that will be a big job. But we all get together for barbeque at lunchtime. It's a very social occasion.*

Adrian Brown was recently appointed as the Aboriginal Liaison Officer for the rangers of the ACT Conservation and Parks Service. He sees an opportunity in the employment of Aboriginal rangers as a way to reinvigorate the Ngunnawal tradition of welcoming people of other nations to build new relationships with the river and fishing.

One of my challenges was to get them to change their opinion on the way I felt about country. It took a long time. So I guess my work now is to try and get all our rangers employed over the next few years and forever on, to make sure that they look after country the way I feel for country. They're all going to come from different places. We're not always going to get Ngunnawal fellas. A lot of Ngunnawal fellas, they might want to go and pursue something else. The thing is now, just trying to get people to respect that you're on somebody else's country. Like that's the big thing now. Protocol will be another part of what I need to do. We need to have it set out and teach people.

Tree planting activities on the banks of the 'Bidgee as part of the Native Fish Awareness Week 2010.
Photo: Charlie Carruthers.

State of the river 'Very poor'

The Sustainable Rivers Audit (SRA) is an ongoing systematic assessment of river health of 23 major river valleys in the MDB. Environmental indicators (themes) include hydrology, fish and macroinvertebrates, which are monitored and will highlight trends over time.[11]

The Murrumbidgee Valley was surveyed in 2007. The Murrumbidgee Valley fish community as a whole was considered in 'Extremely Poor' Condition. In the 'Upland Zone' the fish community was considered to be in 'Extremely Poor' Condition and 'Poor' in the 'Montane Zone'. Ecosystem Health was considered in 'Very Poor' Condition for both zones.

A total of 9 species were caught from the 'Upland Zone; and 8 species from the 'Montane Zone'. The fish community in these regions comprised 17% and 60% native species respectively and alien fish biomass comprised 90% and 76% respectively.

Native fish catch in the 'Upland Zone' was dominated by mountain galaxias, with carp gudgeons the only other natives sampled. In the 'Montane Zone' mountain galaxias again dominated, with two-spined blackfish and Macquarie perch also captured.

Rainbow trout dominated the alien species in both zones.

In the 'Upland Zone' Eastern gambusia, carp and redfin perch also dominated, with oriental weatherloach, goldfish and brown trout also captured. In the 'Montane Zone' goldfish, Eastern gambusia, carp and brown trout were also caught.

Visions for the Upper Murrumbidgee

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.

It'll take time

Understanding the longer term cycles in the river environment has been an important way for Darren Roso to see what the fish need. The ACT Parks and Conservation Service are part of a program that will introduce one million trees into the Murrumbidgee Corridor.

Rebuilding fish habitat does not happen overnight and Darren appreciates that it will take time to change the vegetation on the banks that will eventually become home for the fish.

And you begin to be able to predict stuff too. So that for example in this million trees program now it's still not cemented in policy or anything, but we are doing it. The willow logs and all the older logs and things, that woody debris is not going to last forever.

And so as we speak we're planting a lot of trees down in the flood zone where we fully expect them to collapse into the river eventually.

Over Bryan's lifetime he has never seen catfish thrive in this part of the world. In the past he was instrumental in translocating catfish in an attempt to re-establish populations. Most of these ventures failed. He looks to research and science to contribute to the re-building of catfish numbers so that they can once again become a favoured fish for anglers.

A lot of fish are hard to translocate because they're so fragile and they die. Catfish you can wrap up in a wet newspaper and you can go several hundred kilometres with them and release them and they swim away quite happily. I suspect they can breathe through mucus membranes in the mouth. I suspect the EHN may be involved in their population control here. But having said that there's no specific evidence of that yet. And I'm fascinated by the fact that they won't survive in some of these places that would seem to be amendable locations. Somebody needs to sit down and take a long hard look at catfish.*

(*EHN refers to Epizootic Haematopoietic Necrosis virus, a serious and notifiable fish disease.)

Education is also something that Adrian Brown sees as paramount for the future – for both Aboriginal and non-Aboriginal communities. The challenges are different, but teaching and learning are key to Adrian's vision.

Educating the white fellas is the big thing, because of their ignorance. I don't want to sound bad about them but they've got a way in them where they just don't understand. …. But we've got to educate our own mob too. I guess that knowledge of country gives a sense of pride too. You can put your chest out and say I don't care what you say, because I have responsibility for this here. And I know that this is mine. My father taught me about this and his father and his father.

School children getting to know the basics.
Photo: Charlie Carruthers.