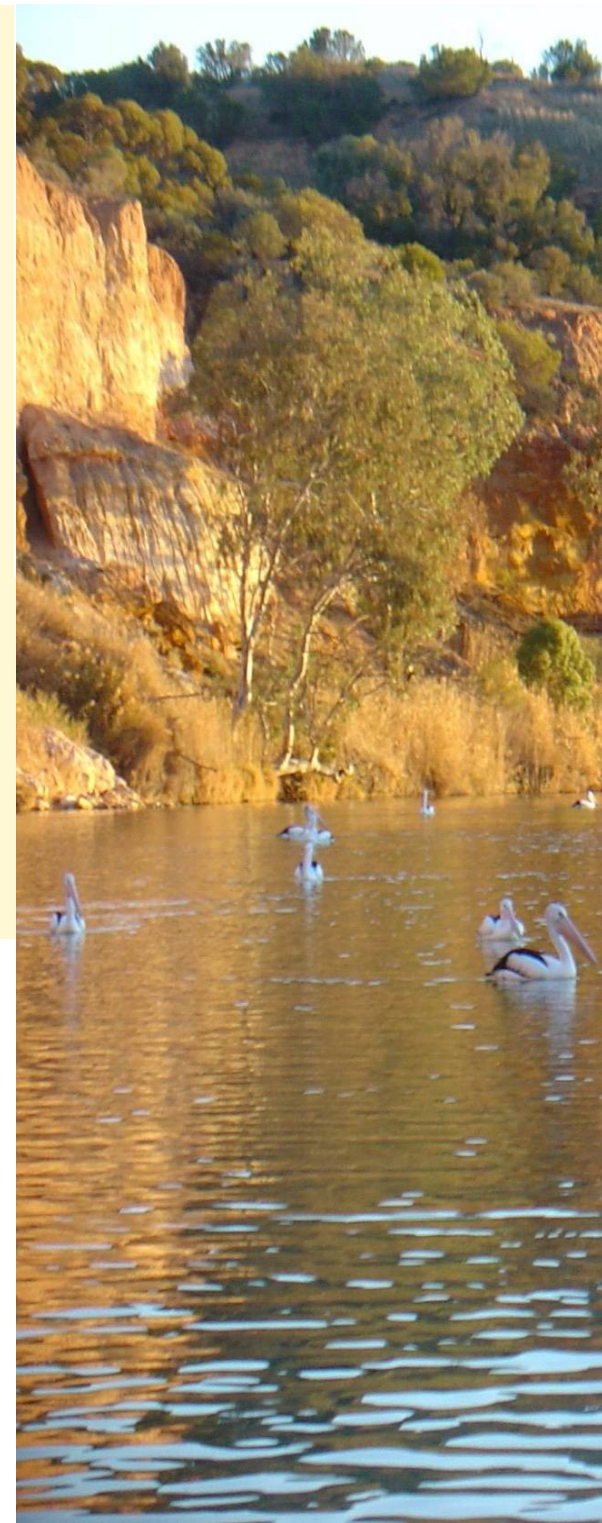


Katarapko



Talking fish

Making connections with the rivers of the Murray-Darling Basin

Authors

Jodi Frawley, Scott Nichols, Heather Goodall and Liz Baker

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Project steering committee

Terry Korodaj (MDBA), Cameron Lay (NSW DPI), Zafer Sarac (Qld DEEDI), Adrian Wells (MDBA Community Stakeholder Taskforce), Peter Jackson (MDBA Native Fish Strategy advisor), Fern Hames (Vic DSE) and Jonathan McPhail (PIRSA).

Project Team

Scott Nichols (NSW DPI), Cameron Lay, Zafer Sarac, Jodi Frawley (UTS), Heather Goodall (UTS), Hamish Sewell (The Story Project), Phil Duncan (Ngnulu Consulting), Liz Baker (NSW DPI), Terry Korodaj, Fern Hames, Jonathan McPhail, Virginia Simpson (PIRSA), Will Trueman (researcher), Pam Clunie (Vic DSE) and Steve Saddler (Vic DSE).

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

The rivers of the Murray-Darling Basin

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

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

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

Acknowledgements - Katarapko

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Front page photographs credits (L-R)

Source: Barry Porter.

Source: Scott Nichols.

Source: Tracy Bye.

Source: John Aston.

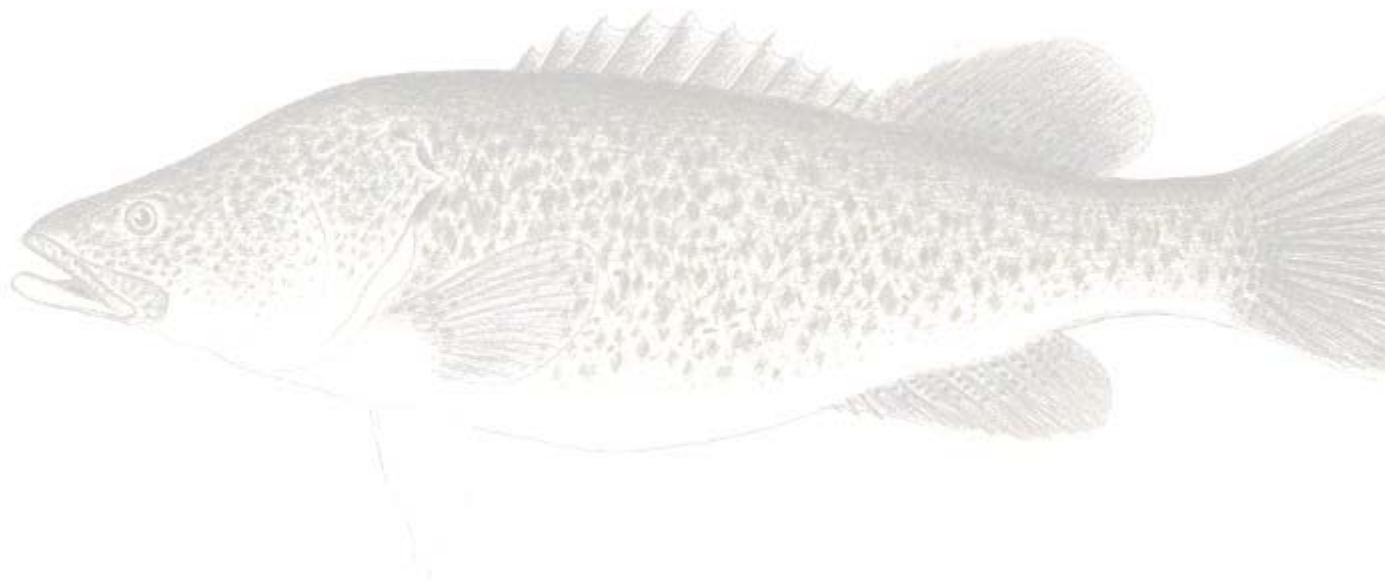
Source: Scott Nichols.

Back page fish images

All fish images: NSW DPI.

... Murray cod ... at Renmark and Loxton this fish was so abundant last season that people used it to feed fowl and pigs!

The Advertiser, Wednesday 11 September 1912



Once known as Crabb's Creek, Katarapko Creek is a small anabranch of the Murray River, located between the towns of Berri and Loxton in the Riverland region of South Australia. Its 9 000 hectare grey clay floodplain is covered with blackbox, saltbush and lignum. The creek's horseshoe lagoons, marshes and islands are the traditional lands of the Meru peoples. They fished the creek and surrounding waterways and hunted the wetlands. The ebb and flow of water guided their travels and featured in their stories. The Meru have seen their land and the river change.

Many people have come to the Riverland as migrants, and fishing has been a way to explore a new place and to put down roots in a different environment to the one they had grown up in. Today, Katarapko's red gum and river coobah-lined waters leave the Murray near Lock and Weir 4, rejoining the river 16km later. Katarapko has seen many changes as its waters were blocked, floodplains grazed, and surrounding irrigation districts flourished. Berri Evaporation Basin and Katarapko Island Disposal Basin have both taken a toll as they collected salty irrigation drainage water.

These changes mean there are a lot less fish than there once were. Before the turn of the twentieth century, there are many stories of catching Murray cod, catfish, callop and crayfish. There were no carp and no redfin.

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

Introducing the river and its people

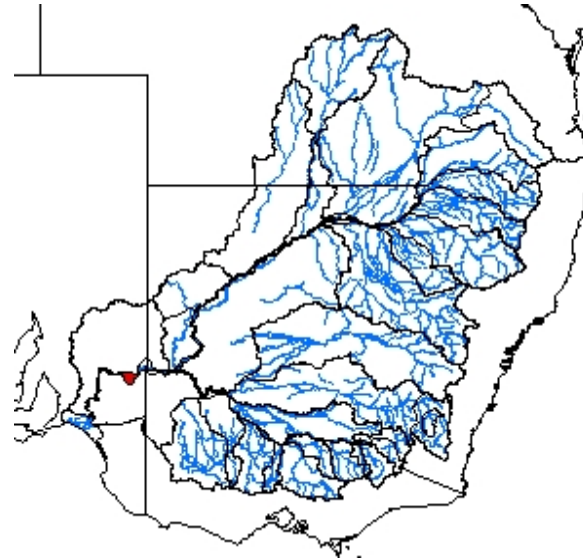
Chasing Pondi

This is Meru country, where the Eriwarung, Moorundi, Barmerara, Maru and Narwijerook groups all lived along what is now known as the Riverland. Large groups lived in semi-permanent camps, hunting fish and birds and collecting mussels from the food-rich wetlands and waterways of the Murray and Katarapko.¹

Today, the First Nations People (Riverland) are part of the Walkandi woni constellation that share creation stories with the Peramangk and Ngarrindjeri of the mid and lower Murray respectively.

Like other Murray groups along the River, the Old Peoples' stories tell of the chase for Pondi – the Murray cod ancestor – across the land. The thrashing of Pondi's tail created the wide channel of the Murray as well as the lagoons, billabongs and creeks like Katarapko.¹

In these places, Aboriginal people see more than a unique waterway – they see the essence, excitement and power of the ancestors.



The Arrival of the Europeans

Since Europeans arrived the health of the river and its fish has been shaped by the people who came to live there and the industries that developed. Grazing, dryland farming, steamboat trade and irrigation all needed different types of workers, bringing new people with new needs to the river and new ways to catch fish.

Commercial fishers were the first industry on the river, viable because of the abundance of native fish in the river.

Enormous grazing runs bordered lengths of the river and led to more permanent settlements. The South Australian Government's Village Settlement Scheme in the 1890s saw up to 400 people arrive *en masse* and grow food crops.

Successive governments encouraged irrigation settlements by building locks, weirs, channels and pumping stations. Many people began by living along the river in tents made from tin and hessian bags. Fishing and hunting were important ways of supplementing their diets. Aboriginal people worked alongside the new immigrants, shifting from stock work to the seasonal fruit industry labour.



Fishing and hunting have been important ways of supplementing diets for a long time. Photo source: Berri Barmera Local History Collection, Berri Library & Information Centre.

By the time the Returned Soldier Settlement schemes started after the first and second World Wars, water certainty allowed the 'Blockers' to grow fruit and grapes. They fished for food and fun, just as Aboriginal people were continuing to do.

fishing for market

Professional fishermen have featured in the history of the river around Katarapko Creek. The fishing industry predated the grazing runs in the 1860s. The depression of the 1890s increased the number of professional fishermen, who regularly fought over fishing rights. Combined with the drought, they saw fish numbers decline drastically. Fish went to market on steamboats and later by rail and road.

In 1923, the government declared licenses for 'reaches' which only gave a right to fish, but no claim on the water, riverbanks or the fish themselves. By 1936 there were 195 reach holders in the Murray River above Lake Alexandrina.

Fishing supplemented incomes when it was combined with working on irrigation blocks. Businesses were family affairs. Some members set nets and hauled catch, while others tarred nets and repaired knots in the mesh. Professional river fishers today can catch only yabbies and non-native species, such as carp.⁷

Men like Gilli Stoneham, John Aston and Malcolm Wilksch have fished the river most of their lives. Their stories, too, are woven into the history presented here.



Howard Hendrick has lived most of his life close to Katarapko Creek. He grew up a 'Blocker' and gained his own block as part of the Returned Soldiers Scheme after World War Two. Photo: Jodi Frawley.



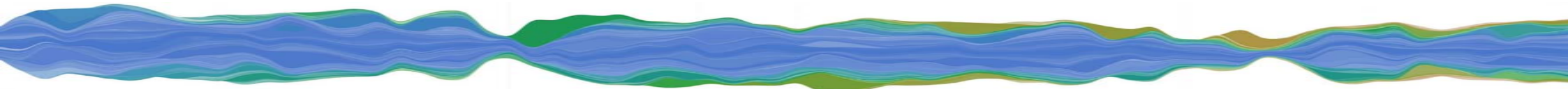
Tracy Bye, pictured with her son, Jack, has fond memories of being taught to fish by her father and long summer holidays camping and fishing by the river. Photo: Jodi Frawley.



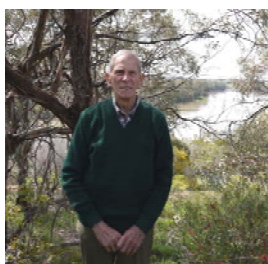
Barry Porter grew up in Berri. He worked on the river barges in the 1970s, travelling from the Murray Mouth to Mildura. It also meant Barry explored, and fished, a lot of the river. Photo source: Barry Porter.



Kingsley Abdulla grew up on the Gerard community. He believes in continuing and building on the relationships his people have had with the river for millennia. Photo: Jodi Frawley.



Howard Hendrick – *Growing up as a Blocker*



Howard's parents came to Renmark after the First World War to settle an irrigation block at Renmark. He was born in 1923 and grew up near Ral Ral Creek.

A favourite stretch of the river

Howard now lives at Pyap, near the mouth of Katarapko Creek. In his youth, his family favoured one stretch of the river, near the house, for swimming, fishing and relaxation. Howard remembers:

Most of the blockers were fairly poor on the whole. We were fairly self-sufficient. We had our own eggs, we had our own milk, we made butter, and we had our own vegetables. That was another good reason that we went fishing, it was a good supplement for us. We went fishing often because we never had any fridges and you couldn't keep the fish very long.

A welcome diversion

Howard's family mainly grew fruit for the dried fruit market – sultanas, raisins and currants.

Howard and his brother had to feed the chooks, pigs and cows before breakfast. And after school they would cut lucerne and collect vegetable scraps for the animals as well as chop wood for the stove. During harvest the boys would take three weeks off school to help out. Fishing and the river were a welcome diversion from life on the block.

And I look at the Ral Ral Creek it looks like a river, so vast and big. There were lots of logs in the river, lots of fallen gum trees over the years and it was a mecca for fish. In those days, cod was equally as plentiful as callop and bream. They were the three main fish. There was a sprinkling of catfish, but I don't remember seeing perch or carp in those early days.

A lovely place to cool off

Howard's father was a very keen fisherman. Fishing, he says, enhanced their social life, because on Sundays they would join the other fruit blockers at the river. Sometimes at the widest stretch of the Ral Ral, dozens of families would gather for picnics and swimming on hot summer days.

Coming to the Riverland

In 1887, the Chaffey brothers came to Renmark hoping to transform the desert into an irrigation settlement.³ The government also encouraged immigration with communal Village Settlements across the Riverland, including at New Residence, Pyap and Loxton's Hut. Although early irrigation schemes failed,² governments continued to believe in engineering solutions for securing water for agriculture and to support the irrigation industry.



Image source: Cobdogla Steam Museum.

Pumping stations initially stored water off-river and gravity fed it through hand-built channels to crops. Large gangs of men were recruited from the city to build the channels. Later, water was pumped directly from the river.

Returned Solider Settlement schemes were introduced after both World Wars, and the smaller blocks associated with these schemes brought more people to the area.⁴ The schemes required land clearing, which increased the areas available for planting crops but also changed the water tables around Katarapko Creek. This contributed to developing salt problems.

As young children we'd go down to the river and it was lovely place to cool off. In fact the place had lovely shady trees, had nice green grass on the bank and it was a nice place to put a rug out and sit and have a picnic. Meantime I had three or four lines in. In those days, I don't remember anybody having a boat like today, everybody's got a tinny boat, including me. So you never went up and down the river. You just went to one place and there you stayed.

'Lock the river, unlock the land'

After the final year of the Federation drought in 1902, dreams of drought proofing the land saw calls to 'lock the rivers and unlock the land'. The River Murray Waters Agreement was approved in 1915, with an initial proposal for 26 weirs from Blanchetown to Echuca.

In 1929 Lock and Weir 4 was completed. It spanned the Murray between where Katarapko Creek left the river and where it rejoined. The new weir meant that water was continually pushed down the creek from the higher upstream pool. The weir also changed conditions for fish breeding, limiting migration. Stable water levels replaced small-medium rises that fish used as breeding cues.

As early as 1934, SA Fisheries blamed the locks for fish decline. Fish passage is being improved on locks and weirs in South Australia and upstream to Hume Dam as fishways are now being built – over 90 years after they were recommended.

The Depression years

The Depression years meant that the Hendricks became more reliant on the resources available in the river. A day on the river also meant catching and collecting baits from the local area.

So actually fishing was a very cheap way of entertaining for a family. Didn't cost us anything for bait, 'cos all the bait was available in the river. And what we'd do, first thing, my father would shoot a bird, and that would go in a shrimp tin – well really, dip tins. Dip tins were used on the block so we had a lot of them, it was like a more or less better than a net. So you tied the bird, cut it half and put it in the shrimp tin, so we got shrimps.



Amas Harvey (Jack) Heward watching his son Frank Heward fishing near Berri, 1950.

Photo source: Berri Barmera Local History Collection, Berri Library & Information Centre.

Perfect bait for cod

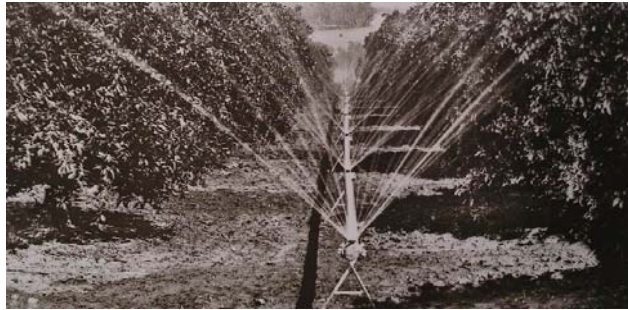
The smaller animals that lived in the river were so plentiful that there was always that perfect bait to catch cod.

We'd also dive in the river as boys, a little area we knew was safe and there was always mussels available in the bed in the river. So we'd get mussels for cod. We'd also catch little frogs and you'd get them in the bark of the gum trees, you'd pull off bark and there'd be a frog hibernating in there. Or we'd get little yabbies you'd also get in the shrimp tin. So that was the main bait for cod.

Using water for irrigation

During the years between WW1 and WW2, irrigation on Howard's family block was gravity fed. Water was pumped out of the river and held in storage, then released down miles and miles of man-made channels. Howard remembers:

In those days there was no sprinkler irrigation, no pumps, it was all gravity fed. So the water went down the vines and you had to direct it down with shovels and make furrows. And they had a bulkhead that held the water back 'cos it was a gravity channel, went for miles from the pumping station. And eventually ended up in Ral Ral Creek. The bulkheads held the water back so that many growers could water at one time.



By the 1950s sprinkler irrigation was being developed. By the 1970s many converted to 'under-tree' systems to avoid salt damage to foliage. Image source: Cobdogla Steam Museum Local History Collection.

Over the twentieth century, more blockers came to the Riverland, more irrigation was built and more water was pumped from the river. Howard and his brother both got blocks at Loxton as WW2 veterans.

Salt

Salinity became a new problem for the local communities to manage. One of the changes to Howard's block was the introduction of overhead sprinklers, but these were then changed again to the more efficient drip irrigation used today in the Riverland.

Also of course the salt content increases as the river goes down, and that may have a bit of effect on the native fish, because they're used to the fresher water from years ago. It went very salty, oh I don't know, 20 years ago. I remember we converted all our overhead sprinklers above trees to under-tree, because the salt in the water is so high it was burning the leaves on the tree. So all the irrigation practices on the Riverland changed, to watering under the trees and under the vines rather than over the top. I think because when the rivers were high it would flush all the backwaters out where the salt had accumulated in the river.



The Berri Evaporation Basin (pictured) drainage scheme started in 1942, although salt and drainage issues were noted at Berri Experimental Orchard as early as 1923.

Photo: Scott Nichols.

The rise of salt

Native fish in the Murray-Darling evolved to tolerate salt levels that fluctuated with the natural cycles of drought and flood.

Due to underlying geology, the lower reaches of the Murray have always functioned as a natural pathway for removal of salty groundwater. During floods or high rivers, these waters are diluted, but during times of low flow, water tables would be exposed and the salinity of the river would increase.

Native vegetation was the key to keeping a balance between the water tables and salinity. The system changed when there was widespread clearing for grazing and cropping. Early grazing runs and the Overland Stock Route hugged the river, as livestock needed access to water. However, the stock damaged the river banks by eating and trampling the vegetation. In 1917, 800 bullocks were pastured at Katarapko Creek.⁵

Cropping and an internment 'wood camp' at Katarapko during WW2, meant trees were removed to fuel pumping stations, produce fence posts, and make way for irrigated crops.⁶ Loss of trees and addition of irrigation water raised the water table and brought salt closer to the surface as waters evaporated. Attempts were made to flush salts away by adding more water to crops.

The rising water table has been a serious problem from the 1940s, necessitating evaporation basins to dispose of saline drainage water. Today at many priority sites, 'salt interceptions schemes' act to collect some of the salty groundwater before it reaches the river and redirect it to evaporation basins away from the floodplain.

Barry Porter – Spending time on the water



Barry was born in 1949. As a youngster growing up in Berri he loved nothing more than to grab his pushbike with his brother and head off to the River with their cord-lines attached to bamboo rods.

Families out fishing

The professional fishers locked up the reaches around Berri, so the family would often travel out of town to throw a line in.

In the '50s we'd travel a couple of miles outside of Berri, because you knew you could catch fish. Dad and Mum's brother would go out in the old boat, rowing and fishing while Mum looked after the two kids on the riverbank. Plenty of other families did the same thing. We used to fish fairly regularly. Probably a couple of times a week in the summer. The family would be out probably at least once a fortnight because it was a cheap addition to the family food.

Floods mean yabbies

In Barry's family the floods meant yabbies. As the flood waters in the Murray or the Darling made their way downstream to the Riverland the Porters were preparing for floodplain adventure.

Yabbing, an historic institution. 1956 we had a huge flood here, 1957 we had the biggest yabby run I've ever seen. It was what you did after a flood. While the floods were up you get the yabby nets out.

Barry describes their yabby nets as two wire hoops, with the bottom one covered in bird mesh and the sides made from an old wheat bag. He remembers:

When they got wet they were very heavy.



Barry's father with a catch. Photo source: Barry Porter.

The regular flood water of the 1960s and 1970s filled the myriad of wetlands, lagoons and backwaters of the local Katarapko floodplains. As the waters peaked and started to recede, the signal was up for the boys to head out yabbing.

We preferred very shallow water, no more than about two feet of water, you actually had to row around in the flood plain before the flood's gone right down. Yabbies came out of the mud to breed.

Yabby

(Cherax destructor)



Photo: Charlie Carruthers.

- Seldom over 250g
- Widely distributed in SE Australia
- Found in ponds, billabongs and slow flowing streams
- More active in the warmer months, less active when water temperatures are below 14°C
- Breed from September to March
- Fast growing: can reach 50g in first year
- Grow for 6-7 years
- Reduction of backwaters, floodplains and billabongs biggest threat, overfishing leading to localised losses

On a barge on the river

As a young man Barry gained his crane driver's license and in the 1970s he secured a job on a pile-driving barge. His first job was to help install all the effluent disposal stations for the houseboats that were becoming so popular with tourists.

The barge travelled up and down 1 400 kilometres of river between the Murray mouth and Mildura. As well as driving piles, the crew maintained and rebuilt locks and helped out with odd jobs at the pumping stations along the way. They also helped to remove snags that were a navigation hazard from the main river channel.

Howard Hendrick recalls how there were more fish in the creeks, where they didn't remove the snags:

Years ago there was another very famous fishing spot, the Katarapko. The fish seemed to like creeks where all the logs had fallen over the years. Whereas in the main river they used to clear it for the paddle steamers, clear the logs out and make it a safe passage. Where no one worried about the creeks because there was no big ships, or boats rather, going up the creeks, so they were full of logs. And that was a marvellous breeding place for fish to feed and catch shrimps and all that sort of thing too.

River transport

In the 1840s, locals dreamed of the river as a transport route to the goldfields. A decade later shallow-draft steamboats moved produce, including fish, to market. Barges removed snags with steam-driven winches to make clear passages for larger boats. The water then moved along the channel faster, scouring the riverbed as it went. By the time the locks and weirs were built rail and later road transport had replaced river trade.



The S.S. Ellen at Berri. Photo source: Berri Barmera Local History Collection, Berri Library & Information Centre.

The post war era saw the rise of tourism in the Riverland. Caravan parks and camping grounds opened along the river banks. The population in summer swelled with water skiers and fishers. House boats became popular in the 1970s demanding new services like effluent stations. Desnagging to clear channels continued into the mid-1990s.

I've seen islands grow

Working on the barge was a golden opportunity to explore the river by fishing and to see the changes to the river environment.

I've seen islands grow where they weren't before. Especially over the last 20 years when we were out in small boats a heck of a lot more. We've noticed through the '70s that the big floods shifted a huge amount of sand around. This formed the shape of the river that we've got at the moment – cut new passages through the flats in a few places.

Upstream of Katarapko Creek, irrigation schemes have been developed for many industries. Barry says upstream irrigation means they don't see the small floods they used to. The loss of small flows and the fewer, smaller floods of the 1990s have changed the river in ways that people might not see. Barry explains:

We used to drive straight down the middle of the river, now we're weaving around looking for a spot through. People look at the river and, oh there's plenty of water there and it's 150 metres wide, but what they don't know is that most of it's less than a metre deep.

De-snagging

Until relatively recently there was large scale removal of snags in the River Murray to improve navigation as this story from Adelaide's *The Register News* shows:

'The S.S Industry has been between Lock 4 and Loxton for some time ... About 50 large snags have been removed. Some were 50 feet long and yards round. Tackling broke like pieces of string when these huge logs were being lifted clear of the river. Cod and large crayfish dropped out of holes in the logs - which Captain Harry Brand considered had been on the river's bottom for half a century or more.'

(The Register News (Adelaide), 26 February 1930)

- Snags were also removed because it was thought they caused erosion of river banks, however it is now recognised that in many cases the presence of snags can actually reduce erosion by protecting the river banks
- There was also the misconception that snags increased flooding by reducing the amount of water that the river channel could hold. Under normal circumstances this is not the case
- The maintenance, protection and restoration of habitat including snags are objectives of the *SA River Murray Act 2003*
- The removal of large woody debris (snags) is a key threatening process under the *NSW Fisheries Management Act 1994*, *Victorian Flora and Fauna Guarantee Act 1988* and is implicated in the decline of endangered Murray cod and Trout cod

Working on the salt problem

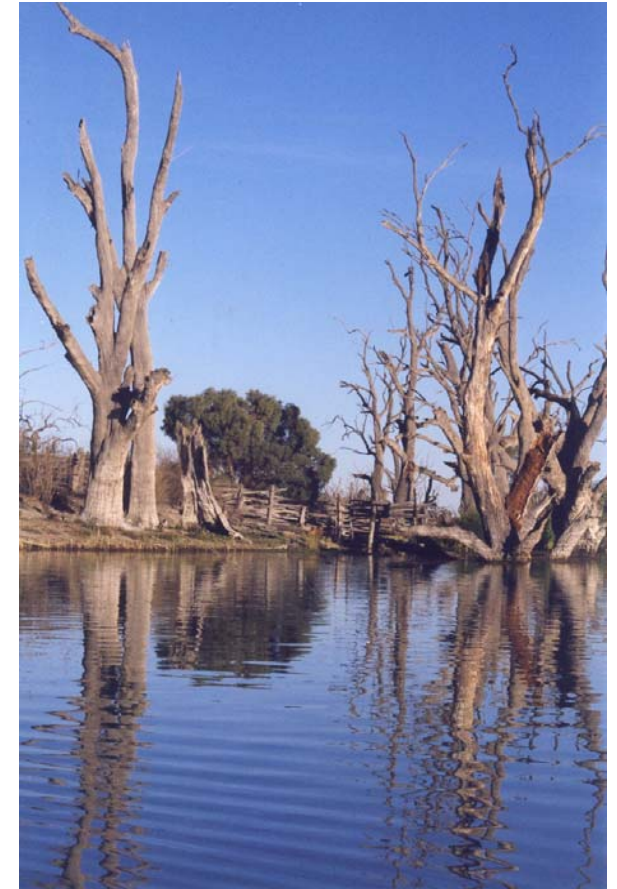
Since the 1980s Barry has worked for South Australian Water and the Department of Water, monitoring salinity and developing programs that measure and identify salt plumes in the river.

Fishing remains his favourite recreational activity and he spends as much time on the water as he can. Fish are no longer as plentiful as they used to be. He doesn't see the periodic movement of the channel in the river as a problem for the fish. He says:

I don't think that that sort of change affects the fish as much as the changes in flow. It's just another symptom of the lack of flows, the gradual drying of the bottom half of Australia.



Barry working on the salinity issues affecting the Murray River. Photo: Jodi Frawley.



These river red gums are dying due to increased salinity and changed cycles of flood and dry. Photo: Scott Nichols.

Tracy Bye - *For her father, a fisherman*



Tracy was born in 1964 and came to live in the Riverland in the mid 1970s. Her father, Colin Schultz, purchased the Shell depot in Loxton. With her brother and sister, Tracy learnt

to fish from her Dad. Fishing was a way to explore and put down roots in their new home.

Tracy sees telling her story as a way of paying homage to her father's love of fishing and to talk about how important the river is in all their lives.

Dad loved Katarapko Creek

Dad was born down the south-east, so from all accounts he was probably more of a sea fisherman. But he just fell in love with the river. I mean it's such a beautiful stretch here. He loved going up Katarapko Creek, getting away from some of the speedboats and other people. He had his special secret spots that he'd come home with all of his fish and not tell us where he caught them. He was a bit tight lipped some times.



Colin Schultz out on the river. Photo source: Tracy Bye.

Colin patiently taught his children to bait their lines, where to cast and how to get a fish into the boat. Tracy even learnt how to fillet the fish. But being on the river was also an opportunity to take in the river.

He really enjoyed it and I think that's why we enjoy it down there so much as well, because we were brought up to really appreciate the colours and the water and the trees. I can remember sitting with him for ages. We'd be looking at the trees and discussing, you know, what was wrong with them or which one looked like it probably had a bird in the hollow and all that sort of stuff. It was really interesting. He just loved it.

Golden perch

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

- Grows to 76cm and 23kg, but usually less than 40cm
- Likes warmer, slow moving waterways, floodplain lakes
- Found around fallen timber, undercut banks, rocky ledges
- Occupy a territory of about 100m for several months before moving to a new home range
- Known to migrate over 1 000km in spring and summer
- Migration cued by warmer water and rising water levels
- Eggs drift downstream on floodwaters
- Eat shrimp, yabbies, small fish and aquatic insect larvae



Barry Porter with a callop. Photo source: Barry Porter.

Always keep the callop

Unlike many fishers in the Riverland, Tracy and Colin didn't chase Murray cod as a favourite fish from the river. Tracy remembers that the three most common fish when she was growing up were catfish, redfin and callop.

I didn't like catfish when it was easy to catch them. They're just ugly things really. They were just slimy looking, horrible things. Dad used to keep them, of course, when we were able to, but in preference we'd always keep the callop. It's just such a beautiful meat.

All the comforts of home

Over the Christmas holidays, the Schultz family would camp for six to eight weeks by the river. Tracy's mum wasn't quite the passionate fisher as the rest of the family. So Colin would take a generator to the river and hook up all the comforts of home.

He used to take the generator for her so she could use her hair curler. She would put her hair in curlers and put a cap on and sit there with the hot air blowing. We thought it was quite funny. He did whatever it took to make sure Mum was happy down there so she'd stay for that little bit longer.

While the family stayed at the camp site, Colin would travel back and forward to work at Loxton. Often he'd give a feed of fish to people he knew would appreciate it:

People who perhaps weren't that well or had lost their husbands who had been fishermen.

Clear water and white sand

Things have changed in the river since Tracy first came to the area. One of the things that she's noticed is a difference in the colour of the water:

I think the colour of it. Like I said, it was quite clear. When we used to go yabbing as kids in the river you would see a foot out before it became darker. Now it's quite murky. It just seems to be different. It almost has taken on quite a grey-green tinge. As a child I can remember it almost being blue.

Over Tracy's lifetime there have also been dramatic changes to the vegetation, both in the river and on the banks.

There's a lot more weed growing in the river as well as from the bottom. I can't remember having to walk through weed as a kid, or having weed tickling your legs as you're coming in from the boat. Whereas that's quite common now.

Reeds for yesterday and tomorrow

Harvesting the reeds from the river was usually done by Aboriginal women and children. The women used different types of weaving to create baskets, string bags and nets for fishing. Weft-twining, knotting and coiled baskets were made across the Riverland. Reeds were stripped and then dried, or woven green as a communal activity on the riverbank. Weaving, like fishing, has always been an opportunity to gather for storytelling. Once complete, woven items trapped fish, acted as keeper nets and were used to store fish as they were carried from the river to the campsite.

Both the river and the Aboriginal people have changed since Sturt first visited in 1830. Baskets and other woven wares became items for sale to curious immigrants and tourists – providing important income from a traditional practice.



River reeds are a type of riparian vegetation. The two most common species found along the rivers in the Murray-Darling Basin are typha (cumbungi or bulrush) and phragmites (common reed). Both stabilise river banks and provide habitat to small fish, birds and invertebrates. Photo source: Malcolm Wilksch.

River vegetation

Water plants are important because they provide habitat, food, refuge, spawning and nursery sites for fish and invertebrates. They also stabilise and filter sediments and influence water quality. One of the more common species seen in the river channel and some wetlands is called ribbon weed (*Vallisneria spp.*). This plant is rooted to the sediment and has strappy leaves that reach the surface.



Ribbon weed growing next to a snag. Photo: Scott Nichols.

The plants on the river bank ('riparian vegetation') are a key source of organic matter for the aquatic system. Many aquatic invertebrates feed on decaying material and these, in turn, provide a food source for other invertebrates and fish. Woody material which falls into rivers and streams provide fish with shelter and a substrate for food, such as algae, and breeding sites. Riparian vegetation provides shade, which reduces daily and seasonal extremes in water temperature, stabilises riverbanks, slows surface runoff and can act as a filter to pollutants and nutrients. It also leads to more diverse fish habitats through providing snags, undercut banks and variation in the channel bed.

Occasionally you would see duck weed come through. We used to have fights with it, whereas now it's quite common to see large patches of it. There are now reeds growing in and on the side of the sandbars. Some sandbars we used to go to as kids were just pristine white sand right down to the water. Now they have reeds all over them growing right into the water.

Finding peace

In 2000 Colin was diagnosed with cancer, which had a devastating impact on the family. Fishing became a refuge from his illness. By Katarapko Creek Colin could find the peace and quiet to just do what he had always done. Tracy is sure that it helped him to cope.

And I think he found that it was quite nice just to get away a little bit on his own and deal with things in his own way. He also used to have a favourite fishing spot down around the bottom of Katarapko Creek, and when he was diagnosed the second time, with cancer, he jokingly used to say to his friend that he used to go fishing with, that's where my ashes are going. So when he did pass away that's where his ashes went, up to Katarapko Creek. And that's just where he should be.



Tracy says: *This magnificent old river gum proudly marks the spot of Dad's ashes.* Photo source: Tracy Bye.



Colin Schultz's love of fishing lives on. Tracy's son, Jack, and nephew, Will, are as keen to learn as Tracy and her siblings were. Photo: Tracy Bye.

Kingsley Abdulla - *Passing on what our grandparents taught us*



Kingsley was born in 1976 and grew up at the Gerard Aboriginal Community next to Murray River National Park. As a spokesperson for this community, he sits on the Katarapko Creek Demonstration Reach

Steering Committee and he'd like to see more Aboriginal participation in the management of the National Park.

Learn to sit still and be quiet!

Whenever a big mob went fishing and camping, storytelling amongst the generations took on a different emphasis. One of the first lessons in fishing is to learn to sit still and be quiet – one that Kingsley says was not always easy to learn! But once kids get it, he says, listening brings much more than knowledge about baiting a hook.

That's when we'd take the time to educate all the younger ones about their history and how we used to do things. To pass on what our grandparents taught us.



Rainbow fish, a small, pretty native fish found in the Murray-Darling Basin. Photo: Gunther Schmida.

So if you get the young ones to do that then you can still be taught your traditional way and non-traditional way which is good. I've grown up with both so I can do a combination of both.

Callop, Pondi and Thukeri

When Aboriginal families go out fishing, Kingsley says they favour the big fish of the Murray to bring home for a feed:

You've got the yellowbelly. We call them callop up this way. You've got the Murray cod, which we call Pondi. And then you've got your silver bream, which we call Thukeri, that floats on the top of the water.

Murray hardyhead

(Craterocephalus fluviatilis)



- Small fish up to 7.6cm, commonly 4 - 6.5cm
- Only found in the southern part of the Basin
- Found in lake edges and wetlands, prefers open, shallow, slow flowing or still water with a sandy or silt bottom; sometimes found in deeper water with dense aquatic vegetation
- Can survive in highly saline environments
- Spawn from September to April
- Short lived, only some adults survive to a 2nd year
- Eats microcrustaceans, aquatic insects and algae
- Formerly abundant, now very restricted

and other small fish

Other small species found in the Murray-Darling Basin include gudgeons, Australian smelt and rainbowfish. These small fish occupy various habitats: some prefer wetlands and off channel habitats, others prefer fast flowing mainstem waterways or heavily vegetated sites. Most have small home ranges but will move upstream if they drift or get washed downstream.

Catfish are no longer present in the numbers that they were in Kingsley's youth.

You get the odd one or two but the majority have all disappeared somehow. I don't know why. It's probably because of what's been happening with the salt and everything else. They're driven away or they've stopped breeding, because there's no water in the back waters where they can breed. So they haven't bred up for 10 or 15 years, maybe longer.

Katarapko and Chowilla

The Old People's stories talk about the connections between Katarapko Creek and Chowilla wetland, a couple of hundred kilometres upstream. The connections are important to the Aboriginal people of the Riverland. Kingsley explains how the two systems differ:

They are two different systems, but they are related. They're both related but they're different cousins. Like first and second cousins. Up at Chowilla it's more open and it's got a dry land. More like an arid type of wetland up that way compared to down this way, which is more widgee river clay. Up there it's more sandy and stuff like that, which is two different ecosystems. Totally.

Flow in complex systems

In the summer of 1829-1830 Charles Sturt travelled by boat from the Murrumbidgee River to the Murray River mouth. Sturt described a variety of habitats, from wide, slow-flowing pools to 'rapids' and noted on their return journey: *'Shoals frequently impeded us as we proceeded up the river, and we passed some rapids that called for our whole strength to stem'*.

Today, the locks and weirs on the mainstem Murray River have made the river a series of connected weir pools, with uniform slow-flowing habitat at most flows except floods, and fast-flowing habitat mainly restricted to anabranch systems or tributaries.

These conditions have benefited some native species like bony bream (bony herring) and carp gudgeons, but also the introduced carp and redfin. Species like Murray cod and callop, that prefer fast flowing habitats, have been disadvantaged by the creation of weir pools.

In South Australia, the most complex anabranch system is Chowilla. It has streams with different hydrological characteristics, aquatic plants and woody debris and includes permanent creeks, ephemeral creeks and lakes that fill at different river levels. The Chowilla system therefore acts as a microcosm of what the lower Murray River once was. It supports a diverse, healthy native fish fauna including one of the most significant Murray cod populations in the lower Murray River.

Like Chowilla, Katarapko Creek and floodplain possess a variety of habitats and because the creek passes around Lock and Weir 4, its fast flowing habitats are preserved, benefiting species that prefer these conditions like Murray cod and callop.⁸



Bulyong Creek, Chowilla. Photo: Scott Nichols.

The back ponds

Fish benefit from regular water flowing into the wetlands around Katarapko Creek. Katarapko Creek is important for native fish to breed, says Kingsley:

It's good when the water comes up because it actually builds the back ponds up where they do all the breeding. As they grow they follow the water down and back into the main rivers. We used to do most of our fishing in the back creeks, where the water was a bit more stiller and it was a lot warmer than the river. The river's constantly moving and it just brings the cold water with it. And the back waters are nice and warm for the breeding and everything else.

But it is not just the fish that benefit. Kingsley points out that all the animals, trees and river vegetation need that water to survive.

Well if you don't get water into your back creeks, you don't build up what they call the nurseries, which is for all animals. If you haven't got those they can't go back into the main river system. And once they fill up the black swans and ducks will come back.

Wetlands

Prior to river regulation, all wetlands around Katarapko would have dried out periodically. Post regulation, several became permanent and were blocked to prevent water loss.

A wetland isn't necessarily always wet; however a wetland needs to be wet long enough to support the plants and animals that live in it for at least part of their life cycle, like most of the 46 fish species native to the Murray-Darling, which use them for feeding, spawning and nursery habitat.

Wetlands like Katarapko's Ngak Indau are now managed using flow control structures so that it can be watered or dried.



Photos: SA Department of Environment and Natural Resources.

Not enough water

The effects of the drought over the last fifteen years has taken its toll on the Murray-Darling Basin. This dry has been even more devastating on the Katarapko than earlier droughts because of the lower and lower flows coming down the river.

When there's not much water around, the vegetation decreases and then that opens up to the elements like the wind. And the wind is the biggest one. If you haven't got any windbreaks it will just score through anywhere. That's the biggest one we've got. And once you've got water and rain, if there isn't any ground cover, it destabilises everything, especially if the water had dropped back too far.

There go the windbreaks

Since the 1980s, cropping and agriculture has increased across the Riverland and the Riverina. The salinity in the area has increased.

The salt levels come up and the acidity in the sand and that just kills all your native trees around the edges. And then there goes the windbreaks.

Managing salt

The salt interception basins are important features of salt management in the area. People see these salt inception basins differently. Barry Porter, for example, argues that these schemes have seen an improvement in the water quality.

Because we've taken the salt interception schemes and tackled the big salt ascensions, we're actually removing probably half of that salt before it gets into the river now.

Kingsley, on the other hand, sees the salinity problems of the area as interconnected with other pressures that have been building over the last three decades.

I've seen it go from lovely and lush to grey and dreary, which a lot of the trees are just getting killed of by salt because there's not enough water coming through. Plus you got the expansion of towns and cities which is even worse. Plus people doing cropping. So just their techniques, some will do cropping, some will do spraying. And the sprayings will get into native bushes and that actually kills a fair bit of it. Which they don't intentionally do but it's just with their drift some chemicals just wipe to out all together.

Making connections

Belonging

Tracy Bye's family felt they had come to belong on the river after they moved from Adelaide and started fishing.

We didn't fish when we were in Adelaide, down at the beach. But as soon as we hit the Murray we were there all the time. It would have been when I was 11 or 12 that we first started fishing. I suppose it all boils back to Dad, and he had an absolute love of the river. I can remember going down with Dad in his boat. And he used to put up with so much from us kids but he always encouraged us to go down with him. He never got any fishing done himself, because he'd spend the whole time baiting us up, untangling us. He would just spend every waking moment down there if he could.

Throughout Kingsley Abdulla's life, fishing has been an important part of Aboriginal community life.

We were always camping and fishing especially during the holidays, especially in the warm weather. Always on the river. We'd go as a family. The close family as well as an extended family, plus community members. Sometimes 40 or 50 of us would go out camping at the one time.

A professional relationship

Gilli Stoneham and John Aston (senior) both fished the Murray around Renmark. A common problem was who could fish which parts of the river. Gilli and John squabbled with another pro-fisher over the boundaries of their reaches.



John Aston, a third generation professional fisher in the Murray River. Photo source: John Aston.

John's son, also called John, recalls how this was resolved and how a creek got named. John junior feels that his family's history is permanently part of the history of the river.

Dad went to the fisheries department to try and resolve this argument. And they said well, what is his area of it? Well, he said, Gilli Stoneham was working from this point to that point. So the fisheries officer said, I think that's a pretty fair argument. And he said to my dad, 'And what do you think we should call this creek? It has no name.' And he said, 'What about Squabbly Creek,' and that's what it was named.

Knowing the fish

Malcolm Wilksch took up a professional fishing reach in 1957 and took the time to learn as much as he could about fish habits in his area.

We'd have to find the bait the fish were biting on that year, they never ate the same food all the time like you'd expect. Quite often we'd start off with mussels. And some years would be all yabbies. One year I found a spot where there was very large shrimp in the off season. I caught big cod on those as well.

Before Dartmouth Dam was finished in 1979, water was pulsed down the river from Lake Victoria and through the locks and weirs for irrigators.

Judging the reaction of the fish to these rises and falls in water level meant Malcolm could adjust his weekly timetable:

After a while I realised that I really only had to fish three days a week, cos only three days of the week the fish would actually bite.

Big cod were also, naturally enough, a favourite for young boys. Norm Dixon was a young boy when he and his schoolteacher had this encounter in 1910:

*I used to do a bit of fishing before school, and one morning I caught a big Murray cod that weighed 68 pounds when cleaned. The teacher asked me why I was late for school. I told her and she said to show her the cod. I rowed the teacher down-river to where the cod was tethered and told her she could pull it up out of the water. Well the fish really let her have it and almost drowned her!*⁵

Gilli Stoneham's wife, Gladys, recalled an old wives tale for using mussel shells that shows that a healthy river can also provide for the health of the people who live around it:

We used to bake them, grind them up and any sores – we used them as a powder. A wonderful healing power.

Part of life

A lifetime spent fishing in Katarapko Creek and around the Murray River near Loxton meant that the river has come to be an important place of renewal and contemplation for Tracy Bye.

I hadn't realised how often we radiate down towards the river for things that happen in our lives. My husband proposed to me down the river. When Dad passed away, without even realizing, we took the kids down the river to tell them. I tend to go down there if I need some time out. So it's just played such a vital role in different things that have happened over the years. I'd find it really hard not to live near the river.



Barry at play, releasing the lovely callop he's just caught. Photo source: Barry Porter.

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.⁶

The Lower Murray was surveyed in 2005. Both the Lower Murray Valley fish community and Ecosystem Health were considered to be in 'Poor Condition'.

Only 35% of predicted native fish species were caught from the 'upper zone' (near Lock 3). The ecological community was dominated by alien fish (64%).

Abundant un-specked hardyhead, bony herring, Australian smelt, Murray-Darling rainbowfish and Murray-Darling carp gudgeon dominated the native fish. Carp dominated the alien species captured. Eastern gambusia and goldfish were also found.



Lower River Murray Lobsters ready for market.

Photo source: State Library South Australia (SLSA: PRG1258/2/2495).

Visions for Katarapko

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.

This is all we've got

Todd Goodman is a recreational fisher on a mission. In 2007 Todd's family discovered a small population of 50 southern purple spotted gudgeons in a wetland adjacent his father's holiday shack.



Todd Goodman's aquariums where he is breeding southern purple spotted gudgeon. Photo: Jodi Frawley.

Since then, he has been breeding the fish in aquariums in his garage. The species was declared extinct in South Australia in 2000 and now Todd works with other breeders in Adelaide and a number of local schools to ensure their survival.

Well basically this is it. This is all we've got. These guys used to be so common. They used to be used as cod bait, as live bait. They're part of the food chain. They're genetically distinct from the other populations around the place. Everyone you talk to used to catch them as kids. They used to be all through the irrigation channels. But they're just one of those species that for some reason has just disappeared. And I suppose being on our property we felt that it was our obligation. Originally it was only going to be for 12 months, now we're four years on. They've domesticated really easy. Why wouldn't you want to keep them? They are a great little fish.



Southern purple spotted gudgeons (*Mogurnda adspersa*). Photo: Gunther Schmida.



A week's catch of Murray crayfish in 1955. Photo: John Aston.

Future health

Retired professional fisher John Aston voluntarily gave his license up in 1996. The long years of drought from 1992 until 2000 were a time when the fish did not breed as regularly. John believes that reducing the professional fishers at that point was beneficial to the future health of the river.

So in my opinion if the fishermen had been left there long enough, the number of cod would have gone down. From 1992 to now, 2010, we haven't had any water. In that period if the fishermen had continued to be in there it would have made a dramatic difference on our native fish.

Howard Hendrick would like to see more water allowed to flow to help the wetlands maintain themselves for longer periods between high river cycles. He says:

But the last 12 - 14 fourteen years we've had no floods, no breeding up and these fish have gone out and there's very few are being hatched out and coming down this way. So it's fallen off with the fishing a lot.

Kingsley Abdulla sees pest management as one way to help the fish. He sees the removal of carp as being important for a healthy river.

The carp can be classed as a weed and pest, you can have your land-based weeds and pests and your water-based.

He also sees a special role for the Gerard Aboriginal community in rejuvenating Katarapko Creek for native fish.

I'd like to see co-management with the Gerard community on the National Park as well as other reserves around. Co-management would mean that we would be looking after the land and water. We could develop teams to do certain projects like weeds and pests and revegetation.



Carpark Lagoon during a wet phase.
Photo: SA Department of Environment and Natural Resources.

These two photos illustrate the difference in wet-phase and dry-phase vegetation at Carpark Lagoon. Reinstating natural cycles of wetting and drying can be an important way to help manage populations of pest fish like carp, which like permanent still water.



Carpark Lagoon after it has been dried, showing dry phase wetland plants. Photo: SA Department of Environment and Natural Resources.

'Katfish Reach' Demonstration Project

The Katarapko-Eckert Creek demonstration reach in South Australia's Riverland is south-west of Berri and north and opposite Loxton on the River Murray. The demonstration reach includes Katarapko Creek anabranch, its surrounding floodplain and associated waterways (Eckert Creek, The Splash, Sawmill and Piggy Creeks). The total length of the anabranch is about 38km.



The 'Tree of Knowledge' indicates the heights of floods, the highest being 1956. Photo: Jodi Frawley.

Bringing back the fish

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

a) 'Katfish Reach'

The 'Katfish Reach' demonstration project within the Katarapko-Eckert Creek anabranch system is supported by the MDBA's *Native Fish Strategy*. The vision for the reach is 'A healthier and more productive aquatic and floodplain ecosystem that everyone can enjoy.' The key areas of activity to achieve this vision include:

- managing drainage water at the Berri Evaporation Basin to benefit the population of nationally threatened Murray hardyhead that lives there
- modifying or replacing road crossings, weirs and wetland structures to:
 - a) improve fish passage
 - b) allow flooding of the floodplain at low river flows
 - c) temporarily dry The Splash and Eckert Creek north and south arms

- d) improve management of Ngak Indau, Katarapko Island, Horseshoe lagoons and Gerard wetlands.

You can get involved by volunteering, donating water to the environment and /or financial support. For more information contact the SA Department of Environment and Natural Resources (08) 8595 2111.

b) The Sea to Hume Dam program

This Murray-Darling Basin Authority project has begun restoring stream continuity within the Murray by constructing fishways on 14 mainstem structures on the river, including the tidal barrages at the Murray mouth – a distance of 2 225km!

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

c) Friends of Riverland Parks volunteers

If getting personal with water birds, bush birds, possums, Regent Parrots, or kangaroos is more your style you could join the Friends of Riverland Parks volunteers and help out with their fauna and wetland monitoring activities. The Friends group also conduct tree planting, weed control and walking trail maintenance if you are that way inclined.

To find out how to get involved in these activities, contact the Friends of Riverland Parks (08) 8583 5430.

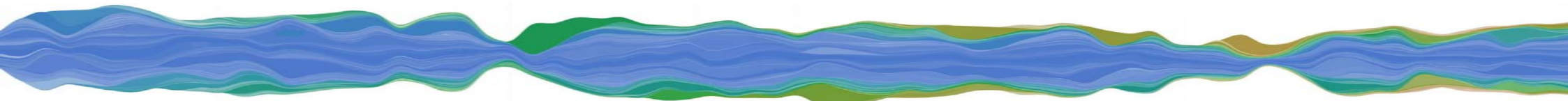
d) Wetland monitoring

Both the Berri-Barmera and Loxton-Bookpurnong Local Action Planning (LAP) Associations undertake wetland monitoring activities either side of the River Murray including Martins Bend, Gurra Gurra Lakes, Yatco Lagoon, Spectacle Lakes, Loveday Lagoons and Overland Corner. Water quality, water birds, frogs, and tree health surveys are conducted regularly.

For more information and to get involved contact Berri-Barmera LAP (Paul Stribley: (08) 8582 2183), or Loxton-Bookpurnong LAP (Craig Ferber: (08) 8582 2824).

Similarly, the SA Murray-Darling Basin Natural Resource Management Board monitors over 40 different River Murray wetlands that are managed in some way – 21 of these have community wetland groups attached. The Board also conducts environmental monitoring technique training for the community.

For more information and to get involved contact Rebecca Turner (08) 8532 1432.



River resources

- Native Fish Strategy Coordinator, South Australia
Jonathan McPhail: (08) 8463 4418
- Katfish Reach Demonstration Project
Kevin Smith (Chair), Katfish Reach Steering Group:
(08) 8583 5430 or www.katfish.org.au
- Berri-Barmera LAP, Paul Stribley: (08) 8582 2183
- Loxton-Bookpurnong LAP
Craig Ferber: (08) 8582 2824
- SA Murray-Darling Basin Natural Resource
Management Board, Rebecca Turner: (08) 8532 1432
- Gerard Reserve Council (Inc), Winkie SA:
(08) 8583 7304
- Renmark/Berri Field and Game Association:
0488 587 101
- Berri & Districts Local Heritage Collection
Berri Community Library: (08) 8595 2666
- Murray Pioneer Newspaper: (08) 8586 8000

Abbreviations

DPI	Department of Primary Industries (NSW)
DSE	Department of Sustainability and Environment (Vic)
PIRSA	Primary Industries and Resources (SA)
SAMDBNRMB	SA Murray-Darling Basin Natural Resource Management Board
LAP	Local Action Planning Association
SA DENR	SA Department of Environment and Natural Resources
MDBA	Murray-Darling Basin Authority

About the *Talking Fish* project

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

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

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

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

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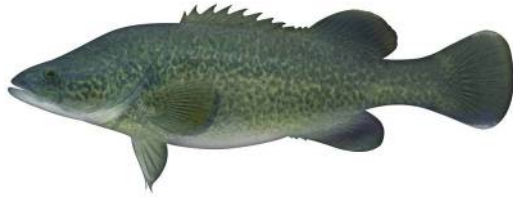
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Some fish of Katarapko Creek and the Murray River

Native
(Not to scale)

Murray cod / Cod / Pondi



Catfish / Eeltail catfish / Jewie / Pomeri



Yabby / Craybob



Golden perch / Yellowbelly / Callop / Pilaki



Trout cod / Bluenose cod / Rockcod



Murray cray / Spiny cray



Silver perch / Murray bream / Grunter / Tcheri



Macquarie perch / Black bream / White eye



Introduced
(Not to scale)

European carp / Common carp



Redfin / English perch

