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# Rings of River History

By Simon Kaminskas

*This story is inspired by a brief report in a fishing magazine of the oldest Murray cod yet recorded. It was 49 years old and was born only two years after the end of World War II. This king of the river was found in 1996 with a broken back, almost certainly through being struck by a speedboat\*, and sadly had been starving to death. Also remarkable is that scientists suspect Murray cod can reach far greater ages, perhaps as much as 100 years. With the growth rate of Murray cod in rivers very roughly averaging 1 kilogram a year, the largest Murray cod ever (reliably) recorded, an 113.5 kilogram fish caught in the Barwon River in Walgett, NSW in 1902, was estimated to be between 70 and 100 years of age. This article has attempted to bring together as much of our knowledge on Murray cod breeding and biology as possible in an interesting story. Its description of Murray cod breeding is therefore technically accurate†.*



Large Murray cod have experienced many years of river history. (Picture courtesy of Steve Edwards).

**I**t was November 1947 and the world was recovering from horrors of World War II. Germany was divided between Allied and Soviet caretaker regimes, and Japan was ruled by an American caretaker regime. The last of the Australian troops had long since returned home to giddy celebrations. Ben Chifley was Prime Minister and Australia was settling down to the task of populating and conquering its southern lands and the rivers that flowed through them.

**A**s Don Bradman scored his 100<sup>th</sup> century against India in the SCG, the Murray River was flowing hard, pulsing with spring snow melt from the Australian Alps and widespread rains. Despite Hume Dam upstream, the Murray's annual spring flood was in progress, one of the last before the dams and weirs completely strangled the river.

Beneath the roiling flood waters, two Murray cod performed an aeons-old courtship ritual. A female cod, an enormous fish with an impressive green mottled expanse of a body, and a male cod, almost as impressive, chose a red gum snag close to the inundated river bank as a spawning site. The snag was only a metre or two from the heavily timbered edge of the river, where the hatched fish must feed, but was far out enough to be caressed by some current, which would help keep the eggs healthy and free of fungus.

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\* There have been a number of reliable reports of large Murray cod being hit and killed by speedboats in the lower Murray River, and this is a probable cause of the fish's injuries

† Dr Stuart J. Rowland, Scientist-in-Charge, Grafton Aquaculture Centre, NSW Fisheries, provided some technical feedback for this piece. His assistance is greatly appreciated.

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The female cod cleaned the spawning surface with sweeps of her massive black tail before positioning herself over it. She released her large eggs in streams, gentling bedding them down with her underbelly between releases. When she was finished, a matt of large, sticky, yellowish eggs covered a large part of the red gum snag. The male, who had been watching proceedings intently, positioned himself over them. Shuddering slightly, he released a cloud of white milt, enveloping and fertilising the egg matt.

The female cod circled the spawning site several times and looked at the male cod. Reassured that her job was done, she left. In August, as Prime Minister Chifley had announced the nationalisation of the banks to the nation, she had felt the rising waters and left her home snag—a mighty sunken redgum—and migrated more than 100 kilometres upstream to spawn. Now she headed downstream to return to the exact same snag. Her mate had made a similar migration and would return to his home snag too, but first he must guard the eggs.

**The** male cod guarded the eggs for a week. He chased away an inquisitive turtle and several golden perch, but otherwise spent the time resting and fanning the eggs with his tail to keep them clean. Now the eggs were beginning to hatch.

**The** juvenile Murray cod struggled out of his individual cell in the sticky egg matt. He was only 10 millimetres long, semi-transparent and poorly formed, and carried a large bulbous yolk sac under his chest. He and thousands of other larvae sat quietly around the hatching site, the male cod still guarding them.

**After** 6 days, the juvenile cod and all his siblings became more active and dispersed, swimming into night-time currents and drifting away. The male cod, satisfied that his guard duty was complete, headed downstream for his home snag.

**After** 10 days the juvenile cod, now greyish-silver in colour and looking more like a cod in form, had used up most of his yolk sac. Now he turned to live prey. The rich flood plain waters spilled over the edge of the river channel and back into the river. Hunger and instinct drew the juvenile cod to this fertile junction—a life-long habit of living and hunting along drop-offs was beginning. Weaving amongst the inundated redgum branches that normally line the bank, the juvenile cod hovered finning in the murky flood water currents. Suddenly his eyes caught the erratic darting motion of a zooplankter—a calanoid copepod borne along with the flood waters. He darted forward. In alarm the copepod zipped away, but with several extra beats of his tail the juvenile cod pounced on it, his jaws slamming shut with tiny ferocity. Around him, his siblings hovered and darted, feeding the same way.

He grew strong on zooplankton in those critical early weeks, and as summer progressed and the floodwaters lessened, the little cod—now a perfect green miniature of an adult Murray cod—progressed to larger prey. First aquatic insect larvae, then tiny *Parataya* shrimp, and then larger *Macrobrachium* shrimps with their long and spindly claws. Finally, as the river assumed its normal level, his ferocious jaws started to slam upon juicy, dusky, darting little western carp gudgeon. The little cod grew rapidly. Soon he would be safe from birds, and in four or five summers time, there would be almost nothing he could not eat, with his size and strength and cavernous mouth.

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**I**t was the summer of 1996. 49 years had passed since the cod had hatched that warm November and pounced fiercely on the zooplankton that drifted through the flood waters. Now a mighty fish, even bigger than his mother, the Murray cod weighed 48 kilograms, and measured 1.27 metres. He was the king of the river, and a formidable predator. He could out-sprint any other fish. Several sharp beats of his massive tail would send him hurtling mightily towards his prey—easily faster than any prey could flee—and there was no escape.

He had seen many changes in his life. Many of the snags he had used as homes and spawning sites had suddenly disappeared—de-snagging had seen to that. The spring floods in which he repeated the aeons-old courtship ritual had virtually disappeared—the construction of Dartmouth Dam had finally seen to that. The river ran upside down. There were no more spring floods, but in summer, when the river should have been warm and peaceful, the water roared and was cold—irrigation demands had seen to that. The rich weed beds and clear waters of summer disappeared, and the river became permanently muddy. Fish species he had known and hunted disappeared, while strange new fish arrived. And his own kind had grown few. But worse was to come.

He was near the surface, very near, hunting the strange new fish that often congregated near the surface and sucked away with pale rubbery lips. As he drifted near them, planning his attack, a strange droning noise bothered him in the background. He thought of his attack. But the droning noise was still there

coming closer

coming fast

LOUDER

LOUDER

DEAFENING

Suddenly he convulsed as a massive crippling blow struck his back. Something enormous flashed over him, making an unbelievable noise, and left him rocking in its wake. His back burned with pain. It was broken. He could not swim.

Sadly he drifted, paralysed and starving, 49 years of river history and memory, his magnificent body wasting away. Until he was discovered and mercy given, his remains destined for research.

His otoliths or earbones were retrieved, sectioned and polished, and examined under a microscope. A ring of calcium spoke for each rich summer he had spent hunting for food in the river where he was king, like rings in a tree trunk. 49 of them. Raising his head from the microscope, the researcher lent back in his chair and paused. He realised a unique Australian—a giant among fish—had died.

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About the author: *Simon Kaminskas has an ecology degree with Honours and is a passionate native fish conservationist and catch-and-release angler. His interests cover all native fish species but the Maccullochella cod species are his area of specialisation. This article was also published in the November 2004 edition of Fishing World, Australia's largest recreational fishing magazine.*