



The Cadell Fault

At some time in the last 60,000 years a comparatively minor bump in the earth's crust had a major effect on the Murray River and a couple of associated streams. It is claimed to be one of the world's most spectacular examples of seismic activity altering the course of a river. Scientists are still working to explain exactly what happened, and when, but recent research suggests that several large earthquakes pushed up the land between where Echuca-Moama and Deniliquin now stand and dammed what was then a very mighty Murray.

Until about 45,000 years ago the Murray flowed westward through the area where Mathoura now stands.

It is thought by some scientists that the uplifting of what we call the Cadell Tilt had begun perhaps 20,000 years before this but when the large block was suddenly thrust up the river had nowhere to go.

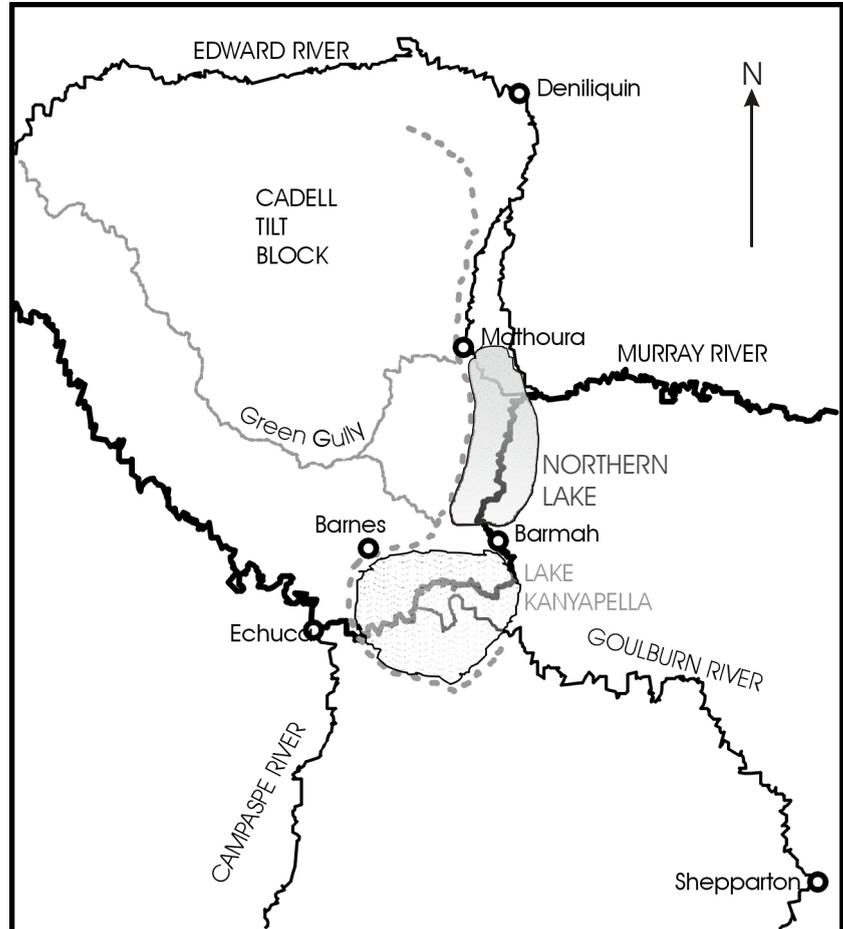
The weir held back both the Murray and the Goulburn rivers, initially flooding two huge areas. Eventually the Murray turned north, most of its water flowing through what we now call the Edward while still filling the northern lake and building silt jetties across it towards Barmah. The Goulburn however continued for some time to fill Lake Kanyapella which covered an area from south of Moira to the other side of where Echuca now stands.

The landscape was then quite different to what we see today. There were no great forests.

In fact there were no river red gum trees at all. Pollen from soil tests show that red gums invaded the area only about 6,000 years ago. At around this time there is also evidence of tree ferns growing along the Murray. The river banks were mostly open woodland and grassy plains although the higher ground west of the uplift was arid.

Until the end of the last ice age, about 20,000 years ago, glaciers covered the ranges near Mt Kosciuszko, contributing a steady stream of meltwater which fed the Murray for most of the year.

Once the Edward River was established, the northern lake began to drain, becoming a series of wetlands and swamps.



Map showing position of Cadell Fault (broken grey line) and ancient stream beds together with Lake Kanyapella and the northern lake. (After Bowler and Harford, 1966 and Stone T. 2007)

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The annual spring snow melt however continued to flood the area. Most trees would not have survived what were probably quite long inundations but Moira grass, a type of couch, flourished.

Then in quite recent times, well after the arrival of the aboriginal people, the Murray established a new course southwards, joining the Goulburn which by then flowed through the present site of Echuca-Moama. Lake Kanyapella had by then drained.

Local aboriginal legend says that the indigenous pioneers helped the river break through by digging through a sandhill. This may well have happened during a massive flood event. The 1870 flood was the largest ever recorded at Echuca but at that time aborigines spoke of even bigger ones in the past.

Scientific testing by Dr Tim Stone of the section of river bank between Picnic Point near Mathoura and the Victorian town of Barmah (known as The Narrows or the Barmah Choke) have shown that the channel is only about 550 years old. The river here has straight-sided banks whereas older sections of river show the normal sloping sides of a mature stream. A squatter, Edward Curr, was the first to document the appearance of the streambank at this point, remarking that it's appearance was unusual for Australian rivers.

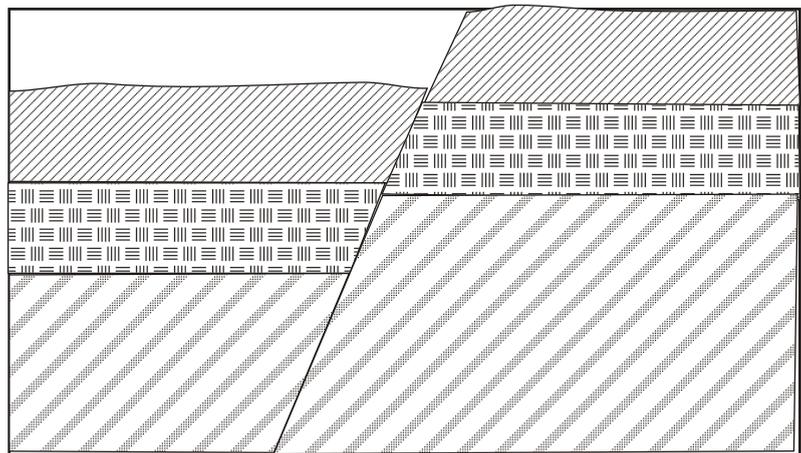


Diagram showing how the uplift thrust the western block upwards. The resulting dam held back the Murray and Goulburn, forming two lakes.



The Narrows or Barmah Choke on the Murray River between Picnic Point (near Mathoura) and Barmah. This is a recent section of the river, believed by some scientists to have been formed as recently as 550 years ago. Formed as silt jetties, the banks are straight-sided while the older sections of the river up- and downstream have the sloping banks typical of a mature stream. This is the first section of the local river to flood when high flows come down the Murray.

Researched and written by David Joss for the Mathoura Visitor information and Business Centre.

SOURCES: Stone, T. The late-Holocene origin of the modern Murray River course, south-eastern Australia. (2007) Elsevier; Pels, S. Radio-carbon datings of ancestral river sediments on the riverine plain of south-eastern Australia. (1969) Journal and proceedings, Royal Society of NSW, Vol 102 pp. 189-195.