

# Local dig uncovers new species of ancient fish

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Three-dimensional life-size model of *Edenopteron keithcrooki*, built by Baz Crook, on display at the Canberra Museum and Gallery, December 2011. A crocodile skull is shown on the left for comparison.

(Phys.org) —Researchers from The Australian National University (ANU) working on the New South Wales south coast have discovered a new species of ancient fish, after unearthing the largest fossilised lobe-finned fish skull ever found in rocks of Devonian age. The descendants of these ancient fish evolved into the first land animals.

Dr Gavin Young from the Research School of Earth Sciences and his research team were excavating the skeleton of an extinct armoured fish from 360 million-year-old rock near Eden, NSW, when the bones they uncovered suggested there was more in the site than met the eye.

"As we lifted out the block, we noticed a very large fang, at least 4 cm long," said Dr Young. "Armoured fish don't have teeth, so we knew there must be a much larger predator also preserved at the site.

"We uncovered an almost complete skull and shoulder girdle of an enormous lobe-finned fish, with jaws about 48 cm long."

Preparing the fossil in the ANU laboratory took several years.

"We used traditional methods of acid etching and casting, but also experimented with the latest surface scanning techniques to reconstruct the bones, and used the ANU high resolution [CT scanner](#) to investigate the internal structure of the teeth.

"We compared the shape and structure of the preserved bones with about 100 fossil [fish species](#) from elsewhere in the world. It turns out that we have not only a species new to science, but also a new genus of lobe-finned fish, which we have named Edenopteron after the town of Eden," said Dr Young.

The species name *Edenopteron keithcrooki* acknowledges Professor Keith Crook of the former ANU Geology Department, who supervised student geological mapping on the NSW south coast over several decades, when many of the important [fossil fish](#) sites were discovered. The new species is described today in the international journal [PLOS ONE](#).

The discovery of this new [species](#) has implications for the classification

of other Devonian lobe-finned fish, says Dr Young.

"This animal had some unusual features compared to Devonian fish fossils from the Northern Hemisphere, including extra bones in its palate, and strange ornamentation on the scales," said Dr Young.

"These features were first identified in fish fossils from the well-known Canowindra fossil site in central NSW, and we have now found the strange scales at the Jemalong Range near Forbes, and in similar-aged rocks in Australian Antarctic Territory. The Eden site is only the fourth place in the world where Devonian fish show these unusual features," explained Dr Young.

When Edenopteron was alive, Australia and Antarctica were joined in the great southern supercontinent of Gondwana.

"It's pretty clear that we had an endemic lobe-finned [fish](#) group in this part of the world, and that has very interesting consequences for hypotheses of where the first [land animals](#) evolved," said Dr Young.

The next step for the research team is to continue excavating the site to see if the body of Edenopteron might be preserved deeper in the rock.

"That would be a massive excavation because it would be 2 to 3m long, but would most definitely be an absolutely spectacular find," said Dr Young.

The article can be accessed at [dx.plos.org/10.1371/journal.pone.0053871](https://dx.plos.org/10.1371/journal.pone.0053871)

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