

Oldest flying fish fossil found in China

Fish could glide over water as early as middle Triassic.

Nidhi Subbaraman

31 October 2012



ROYAL SOC.

A near-complete skeleton found in China has been identified as a new species of flying fish.

A fish from China has displaced its European relatives to become the oldest known gliding fish.

A near-complete skeleton of the fish, named *Potanichthys xingyiensis*, was found near Xingyi in Guizhou province in southwest China. It is described today in the *Proceedings of the Royal Society B*¹.

"They have beautiful details of the bone. I always envy material like this," says Alison Murray, a palaeontologist at the University of Alberta in Edmonton, Canada.

The fossils suggest that *Potanichthys* was a squat swimmer, almost as wide as it was tall, and lived in the Triassic period. "Fish of that age are chunky, heavily built. You wouldn't expect them to be flying out of the water," Murray says.

But Matt Friedman, a palaeobiologist at the University of Oxford, UK, says that "they have the right kinds of bits in place" for flight.

Potanichthys had well-developed pectoral fins, like modern flying fish. But what seals the deal for gliding flight is the fish's forked, asymmetrical tail, which had a chubby lower lobe similar to that seen in flying fish today. "They're using these fins to make prolonged jumps out of the water," Friedman says. "If *Potanichthys* were anything like modern flying fishes, glides of tens of metres are not out of the realm of possibility."

Potanichthys is not an ancestor of today's flying fish, however. Aside from similar adaptations for gliding, "they're a completely different evolutionary experiment", says Friedman.

The fossils' discoverers say that *Potanichthys* is related to a now-extinct family of over-water glider known as thoracopterids. Fossils of these gliders, which lived in the late Triassic, around 200 million years ago, have been found in Italy and Austria^{2,3}. *Potanichthys* is the only glider found in Asia and it is the oldest, dating tens of millions of years earlier to the middle Triassic.

Potanichthys and the European thoracopterids probably have a common ancestor, says Guang-Hui Xu, the paper's first author. Although the Austrian thoracopterid has scales, the Italian ones lack them entirely. *Potanichthys* is on the fence: it has just four rows of scales reaching back to its tail. "This fish provides a transition, it's a missing link between them," Xu says.

Potanichthys' ancient home adds to evidence that the thoracopterids moved between what is now Asia and Europe. Murray expects that they would have avoided deep water, instead travelling close to the shoreline that extended from what is now China to what is now Europe.

As the theory goes, fish evolved gliding flight to escape predators. So *Potamichthys*' gliding ability is more evidence that the ocean bounced back fairly quickly from the end-Permian mass extinction around 250 million years ago, in which up to 95% of marine life died. "This discovery indicates that the recovery after the end-Permian is more rapid than previously thought," Xu says.

Nature | doi:10.1038/nature.2012.11707

References

1. Xu, G.-H., Zhao, L.-J., Gao, K.-Q. & Wu, F.-X. *Proc. R. Soc. B.* <http://dx.doi.org/10.1098/rspb.2012.2261> (2012).
2. Tintori, A. & Sassi, D. *J. Vert. Paleontol.* **12**, 265–283 (1992).
3. Griffith, J. *Zool. J. Linn. Soc.* **60**, 1–93 (1977).