

Largest bony fish ever lived during the age of dinosaurs

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Giant fish that could grow up to 16m long roamed the seas 165 million years ago, new research from the University of Bristol suggests.

Giant plankton-eating animals first filled the prehistoric seas more than 160 million years ago but they were wiped out in the same event that killed off the dinosaurs, and then replaced by plankton-eating sharks and whales. The question is: just how big did these giant fishes get? New work suggests between 12 and 16m long.

The giant plankton-feeders in today's oceans are among the largest living [vertebrate animals](#) alive. The first animal known to occupy this role was a large [bony fish](#) called *Leedsichthys* that lived in the Middle Jurassic, around 165 million years ago. This [fish](#) was a pioneer for the [ecological niche](#) filled today by mammals (like [blue whales](#)) and cartilaginous fish (such as [manta rays](#), basking sharks and whale sharks). However, scientists were unclear just how large this large fish could be – until now.

Professor Jeff Liston of the University of Kunming in China and the University of Bristol's School of Earth Sciences said: "*Leedsichthys* skeletons preserve poorly, often only as isolated fragments, so previous size estimates were largely historical arm-waving exercises. We looked at a wide range of specimens, not just the bones but also their internal growth structures – similar to the [growth rings](#) in trees – to get some idea about the ages of these animals as well as their estimated sizes."

The researchers demonstrated that a small adult *Leedsichthys* of 8-9

metres could reach that length within around 20 years, whereas after 38 years it would be around 16.5 metres long – possibly even outgrowing today's massive [whale sharks](#).

The project began in Glasgow with a review of the remains of the giant Jurassic fish *Leedsichthys*, in conjunction with the excavation of a new specimen of this creature. Professor Liston, who ran the excavation in Peterborough, England, found this specimen to be an anomaly as, before then, vertebrate suspension-feeders did not get larger than 50cm in length.

Professor Liston said: "The existence of these large suspension-feeding fish at this time is highly significant as it would seem to be clear evidence of a major change in plankton populations in the oceans of Jurassic Earth: a 'smoking gun' that something new, widespread and highly edible was around, possibly related to the first appearance of small crustaceans called copepods. This has implications for our understanding of biological productivity in modern oceans, and how that productivity has changed over time."

The researchers also looked at specialist structures on the gills as a means of how *Leedsichthys* grew so large.

Professor Liston said: "One of the truly fascinating aspects of this fish as a suspension feeder, is that it seems to have developed a unique mesh structure on its gills to help it extract plankton as the seawater passed through its mouth. Extremely delicate and rarely-preserved, it resembles the honeycomb pattern in a bee-hive. It functioned like a trawler's net to trap plankton, and obviously was very effective, given the large sizes this animal achieved. This mesh structure is very different to what we see in today's suspension-feeding fish and whales. It had a unique way of solving a similar problem."

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