

# Jurassic ichthyosaurs divided food resources to co-exist, researchers find

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The skull of Ichthyosaurs *Hauffiopteryx typicus* from the Strawberry Bank Lagerstätte (BRLSI M1399) one of the specimens that were the subject of this study. Credit: Bath Royal Literary and Scientific Institution Collections

Early Jurassic ichthyosaur juveniles show predatory specializations, scientists at the University of Bristol have revealed.

Their findings, published today in the *Journal of Anatomy*, suggest that physical differences in their snouts show they evolved to have different diets and were not competing for the same resource.

Ichthyosaurs, the classic "sea dragons," were dolphin-shaped [marine predators](#) that fed on fish and squid-like swimming shellfish. The ichthyosaurs of the Lower Jurassic, some 185 million years ago, are renowned because the first specimens were found over 200 years ago at Lyme Regis in southern England, by the celebrated fossil collector and paleontologist Mary Anning. Some of her specimens have long, slender snouts and others have short, broad snouts.

"Functional studies need excellent three-dimensional specimens," said Matt Williams of Bath Royal Literary and Scientific Institution, "and the Lower Jurassic ichthyosaur fossils from Strawberry Bank in Ilminster are just that. Mary Anning's fossils are amazing, but they are mostly squashed flat."

"Our idea was to CT scan the specimens," said Dr. Ben Moon, of Bristol's School of Earth Sciences and a supervisor of the study. "The scans allow us to make a detailed, 3D model of the skull in the computer, and it can then be tested for the likely forces experienced during biting."

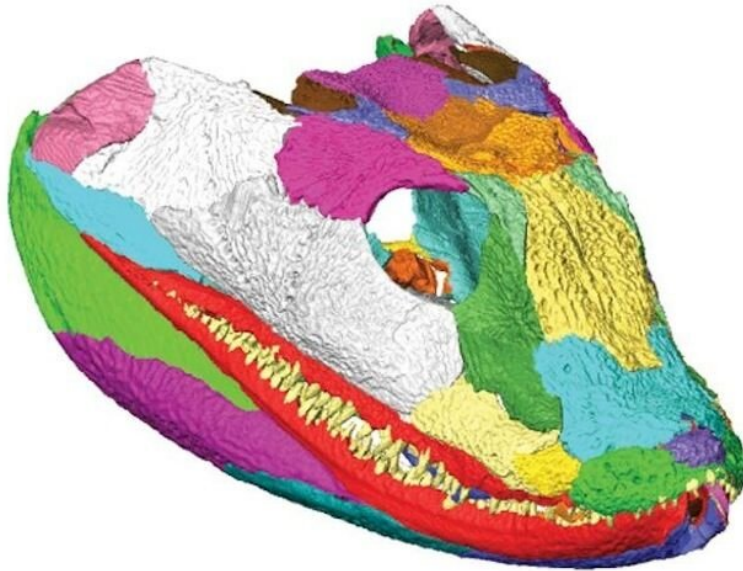


Figure showing 3D models of Ichthyosaurs skull. Credit: Mike Benton

"After we had the models, we could stress test them," said supervisor Andre Rowe. "We tested and confirmed the hypothesis that the slender-snouted ichthyosaur had a quick but weak bite, and the broad-snouted ichthyosaur had a slow but powerful bite."

"Confirming the supposition was important," added author Professor Michael Benton. "It's important we apply rigorous scientific approaches such as these engineering analyses. The two species of [ichthyosaur](#) presumably chased fast-moving prey (the fast biter) and slower, tough-shelled prey (the slow, powerful biter)."

Sarah Jamison-Todd, who completed the work as part of her MSc in Paleobiology said, "I learned about CT scanning, model construction, and biomechanical testing using standard engineering software that is

used to test how buildings and large structures bend."

Prof Benton concluded, "Modern predators like sharks and [killer whales](#) tend to eat anything they can, so it is exciting to be able to show that in the Jurassic there were definite specializations. The work can be extended to explore other marine reptiles such as plesiosaurs and crocodiles, so we get a detailed picture of these amazing and alien worlds of the Jurassic oceans."

**More information:** Sarah Jamison-Todd et al, Dietary niche partitioning in Early Jurassic ichthyosaurs from Strawberry Bank, *Journal of Anatomy* (2022). [DOI: 10.1111/joa.13744](https://doi.org/10.1111/joa.13744)

Provided by University of Bristol

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