

The UK's biggest *Ichthyosaurus* skeleton goes on display at Thinktank, the Birmingham Science Museum



New Marine Worlds gallery opens 25 March 2016

Sixty one years after it was first discovered in a farmer's field in Warwickshire, the opening of a major new gallery at Thinktank, Birmingham Science Museum, this Easter, will see the skeleton of the UK's largest example of *Ichthyosaurus* laid out in full for the first time ever.

The fossil remains of this prehistoric marine reptile are almost 200 million years old and it swam in the sea at the same time as dinosaurs walked on land. It was found in 1955 by a farmer at Fell Mill Farm in Shipston-on-Stour, Warwickshire and was excavated by Birmingham Museum & Art Gallery (BMAG) staff. Skip forward to 2016 and the skeleton is finally being displayed in full for the first time as the centrepiece of the new Marine Worlds gallery, at Thinktank, Birmingham Science Museum having been researched and conserved in a project that has revealed its unique importance as the UK's largest *Ichthyosaurus* with amazing 3D preservation.

Luanne Meehitiya, Natural Science Curator at Birmingham Museums said, "It has been a delight to see the Thinktank ichthyosaur develop, from just a skull that was too fragile to be displayed to a beautifully conserved and completed skeleton that is the centrepiece of a new permanent gallery. The project has been full of surprises, including finding the rest of the skeleton in storage and discovering quite how important this specimen is. It is an amazing thing for Birmingham Museums to have this in our collections, and I am looking forward to watching people reacting to it in the gallery!"

Why is the Thinktank ichthyosaur so important? Dean Lomax, an ichthyosaur expert who has advised on this project explains, "The Thinktank ichthyosaur is approx. 3.5 meters long and the largest *Ichthyosaurus* previously discovered was estimated at 3m, so it is potentially a new species - although we won't know that until it has been further studied, which is why it is currently called *Ichthyosaurus* sp."

Nigel Larkin, the specialist palaeontological conservator on this project said, "Most ichthyosaurs are flattened during fossilisation but this was preserved in 3D, enabling us to study individual bones that are not usually accessible in ichthyosaurs, such as those at the back of the skull and the braincase elements. This type of preservation allows us a unique insight into the skull of this ichthyosaur in particular but also ichthyosaurs more generally."

The skull, which is 80cm long and 33cm wide, was cleaned by Nigel before being completely taken apart and reconstructed to be more anatomically correct, as our knowledge of ichthyosaurs has increased since 1955 when it was first put together.

Ichthyosaurs evolved from a group of land reptiles that returned to the sea, just as modern dolphins and whales evolved from mammalian land ancestors – in fact ichthyosaurs look a lot like dolphins. They belong to a different group of reptiles from dinosaurs but they did live in the sea at the same time as the dinosaurs lived on the land.

Luanne takes up the story: “Securing funding from the Arts Council in 2014 allowed us to start work to repair, rebuild and clean the skull with conservator Nigel Larkin and researcher Dean Lomax.

During this work we realised that the skull was so important that we had to have it CT scanned so that researchers worldwide could study the individual bones once they had been fitted back onto the skull. We micro-CT scanned individual skull bones and then scanned the whole skull, which allowed us to create a 3D model.”



Reconstruction of what the ichthyosaur would have looked like, by Bob Nicholls of Paleocreations (@Thinktank, Birmingham Science Museum).

The project team began to be suspicious that there were more remains of the ichthyosaur in store. Luanne Meehitiya began a search and found the rest of the skeleton. She explains, “It was hugely exciting to find that we had the rest of the skeleton as well as the skull and gave us the new aim of conserving it and putting it on display for the first time! The bones were very fragmented so it was clear that they had never been displayed and memory of their link to the skull had been lost over six decades.”

Fortunately, The Curry Fund of the Geologists’ Association saw the potential in the skeleton and granted funds for its conservation and completion. Conservator Nigel Larkin explains, “The bones all needed cleaning and I spent many hours piecing together the fragments of rib like a huge 3D jigsaw puzzle! We decided to complete the appearance of the skeleton, but only using replicas that were based on existing bones. Luckily, one side of the skeleton was preserved more than the other, so we were able to work with ThinkSee3D to CT scan the fossilised bones, flip the data and then 3D print perfect accurate replicas of the missing limbs and some skull bones. I also used the existing fossilised backbones to make moulds and cast replicas of missing backbones to complete the spine. The most satisfying thing is how great the skeleton looks but that you would never know how much work went into it.”

The nearly complete skeleton is now the centrepiece of a new permanent gallery at Thinktank, Birmingham Science Museum, called Marine Worlds. Luanne Meehitiya explains, “Ichthyosaurs are a brilliant example of land-living and air-breathing animals that evolved to return to the sea. Marine Worlds looks at the many fascinating animals that have also left the land and adapted to a marine life – we will be showing a taxidermy penguin, walrus skull and a fossil marine crocodile for example.”

Luanne Meehitiya adds, “One of the most fun parts of this project has been working with palaeo-artist Robert Nicholls to produce a new artistic reconstruction of the ichthyosaur, which gives us a much better impression of what the massive marine reptile must have looked like and this is displayed life-sized above the skeleton. We have even been able to bring this to life in 3D with a new interactive by Taran Singh, who has created an interactive digital model of the ichthyosaur. Visitors can use it to learn about the behind-the-scene’s story of the conservation and research, including being able to play with the digital model of the skull created in the CT scan.”

Palaeontologist Dean Lomax of The University of Manchester, who is an expert on ichthyosaurs and advised on the scientific rebuild and redisplay of the skull and skeleton, says, "This is a very important specimen. Not only is this the largest recorded *Ichthyosaurus* in the UK, but possibly in the world. It also comes from a location previously unrecorded for ichthyosaurs, so this adds to our understanding of the geographical distribution of ichthyosaurs during the Early Jurassic, a time when the UK was a series of islands. As for a new species, only time will tell." Dean is still studying the specimen with Nigel and Luanne.



Nigel Larkin, Luanne Meehitiya and Dean Lomax pose beside the skeleton prior to installing it in the display case.

- For more information about the ichthyosaur and the new Marine Worlds gallery at Thinktank, Birmingham Science Museum please visit www.birminghammuseums.org.uk or #ThinktankIchthyosaur.
- For details of all of other events, tours and activities taking place over the Easter holidays at Birmingham Museum & Art Gallery, Thinktank, Birmingham Science Museum and Birmingham Museums Trust's five heritage sites, visit www.birminghammuseums.org.uk/whats-on

Birmingham Museums Trust is an independent charity that manages the city's museum collection and venues on behalf of Birmingham City Council. It uses the collection of around 800,000 objects to provide a wide range of arts, cultural and historical experiences, events and activities that deliver accessible learning, creativity and enjoyment for citizens and visitors to the city. Most areas of the collection are designated as being of national importance, including the finest collection of Pre-Raphaelite art in the world. Attracting over one million visits a year, the Trust's venues include Aston Hall, Birmingham Museum & Art Gallery, Blakesley Hall, Museum Collections Centre, Museum of the Jewellery Quarter, Sarehole Mill, Soho House, Thinktank and Weoley Castle.

www.birminghammuseums.org.uk

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National Lottery to help create these experiences for as many people as possible across the country.
www.artscouncil.org.uk

The Curry Fund is a charitable fund administered by The Geologists' Association that seeks to further geological research and educational initiatives <http://www.geologistsassociation.org.uk/curry.html>

Luanne Meehitiya is the Natural Sciences Curator at Birmingham Museums who managed this project and curated the Marine Worlds gallery. Luanne looks after over a quarter of a million natural science objects in Birmingham's collections. She has worked in the museum sector for over a decade and has also worked on collections at the Natural History Museum and Horniman Museum. Luanne is a palaeontologist with degrees in English Literature, Natural Science and Museum Studies. Twitter: [@Luannasaurus](https://twitter.com/Luannasaurus)

Nigel Larkin is a palaeontologist who has worked in museums for over 25 years, including the Natural History Museum in London. He specialises in the preparation, conservation, curation and display of geological, palaeontological and osteological specimens but has a passion for ichthyosaurs in particular. He cleaned, dismantled, conserved and rebuilt the Thinktank's ichthyosaur skeleton and organised the CT scanning and micro-CT scanning of the bones with Laura Porro of the Royal Veterinary College London. See: www.natural-history-conservation.com
Twitter: [@MrIchthyosaurus](https://twitter.com/MrIchthyosaurus)

Dean Lomax is an ichthyosaur expert who provided specialist advice on this project. He is a multiple award-winning palaeontologist, science communicator and author. Dean is an Honorary Scientist at The University of Manchester and has described several new species of ichthyosaur. He has written two books, numerous scientific papers and many popular articles and regularly appears on television, most recently as series advisor and recurring on-screen expert presenter for ITV's Dinosaur Britain (a two-part series based in-part on the book Dinosaur of the British Isles). See: www.deanlomax.co.uk Twitter: [@Palaeo7](https://twitter.com/Palaeo7)

ThinkSee3D is a 3D scanning company that specialises in working with heritage organisations. They 3D printed the missing parts of the Ichthyosaur, including a whole front limb and half of the rear of the skull, by mirroring existing bones from CT scans. See: www.thinksee3d.com Twitter: [@ThinkSee3D](https://twitter.com/ThinkSee3D)

Bob Nicholls is a palaeontological artist who has been creating anatomically correct reconstructions of natural history specimens for museums worldwide for over 20 years. He created a new accurate artistic reconstruction of the ichthyosaur. See: <http://paleocreations.com/artist.php> Twitter: [@Paleocreations](https://twitter.com/Paleocreations)

Taran Singh is a 3D digital designer who works at TaranSingh3D. He created an interactive 3D model of the ichthyosaur that is displayed in the new Marine Worlds gallery. Twitter: [@taransingh3d](https://twitter.com/taransingh3d)