

Museum researchers find new species of early mammal

New research by National Museum of Scotland has revealed details of early mammal life in Scotland.

X-ray scanning of specimens found on the Isle of Skye, including two complete skulls of small mouse-like mammals, has uncovered a species which is completely new to science, *Borealestes cuillinensis*.

The specimens date to the Middle Jurassic period, which the researchers say makes them 166 million years old. They are part of the collections of National Museums Scotland, and are described in a new paper published in The Zoological Journal of the Linnean Society.

Lead author of the study, Dr Elsa Panciroli, an Associate Researcher at National Museums Scotland and Research Fellow at the Oxford University Museum of Natural History, said: "These two skulls may be tiny in size, but their significance is huge. They belong to the most complete early mammal skeletons described so far from the UK, and they offer a unique insight into the early development of mammal life.

"They weren't found at the same time. The first was found back in 1972, and was named *Borealestes serendipitus*. *Borealestes* was the first mammal from the time of dinosaurs ever found in Scotland. We found the second fossil in 2018 on Skye. We thought it was the same species, but realised it was a new one after CT scanning it, based on the shape of the upper teeth. The ridges on the teeth reminded us of the peaks of the Cuillin mountain range on Skye, nearby where the fossil was

found, so we named it after them, *Borealestes cuillinensis*.”

Borealestes cuillinensis was a small, mouse-like animal that lived alongside the dinosaurs. It had a long snout and its body was covered in fur. It ate insects, and lived on the margins of the freshwater lagoons that covered Skye at that time.

The specimens were discovered 46 years apart, but both were found on the Strathaird peninsula on the Isle of Skye. Numerous other fossils have been found there, including amphibians and dinosaurs which would have lived alongside *Borealestes*. The CT and synchrotron scanning techniques used in the research have enabled production of a 3D digital reconstruction by Matt Humpage of what the skulls would have looked like when intact.

Dr Nick Fraser, Keeper of Natural Sciences at National Museums Scotland and co-author of the study, said: “When we think of the Jurassic period, most of us will automatically think of dinosaurs, and that’s probably especially true of Skye, where there have been some terrific dinosaur finds. However, the development of mammal life, including ourselves, goes back to this time with lots of new groups and lineages emerging.

“Aside from describing a new species, which is always exciting, this is an important piece of research because Jurassic mammals are frequently only known by their teeth and isolated fragments. This paper is really significant because it describes skull material which is really rare. As such it will be widely cited in the future on many publications dealing with Jurassic mammals from anywhere in the world.”

The paper was co-authored by curators from the Natural Sciences department at National Museums Scotland and researchers from the Universities of Oxford, Birmingham, Chicago and Edinburgh, the Natural History Museum in London,

and the European Synchrotron Radiation Facility (ESRF). The current paper describes the skulls, with further detailed study to follow on the animals' skeletons.

