

New prehistoric 'Hobbit' creature is among 3 discoveries suggesting rapid evolution of mammals after dinosaur extinction

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Left to right, *Conacodon hettingeri*, *Miniconus jeanninae*, *Beornus honeyi*.
Credit: Banana Art Studio

Research published today in the peer-reviewed *Journal of Systematic Palaeontology* describes the discovery of three new species of ancient creatures from the dawn of modern mammals, and hints at rapid evolution immediately after the mass extinction of the dinosaurs.

These prehistoric mammals roamed North America during the earliest Paleocene Epoch, within just a few hundred thousand years of the Cretaceous-Paleogene boundary that wiped out the dinosaurs. Their discovery suggests mammals diversified more rapidly after the [mass extinction](#) than previously thought.

New-to-science, the creatures discovered are *Miniconus jeanninae*, *Conacodon hettingeri*, and *Beornus honeyi*. They differ in size—ranging up to a modern house cat, which is much larger than the mostly mouse to rat-sized mammals that lived before it alongside the dinosaurs in North America.

Each have a suite of unique dental features that differ from each other.

Beornus honeyi, in particular has been named in homage to The Hobbit character Beorn, due to the appearance of the inflated (puffy) molars (cheek teeth).

The new group belong to a diverse collection of placental mammals called *archaic ungulates* (or condylarths), primitive ancestors of today's hoofed mammals (eg, horses, elephants, cows, hippos).

Paleontologists from the University of Colorado in Boulder unearthed parts of lower jaw bones and teeth—which provide insights into the animals' identity, lifestyle and [body size](#).

The three new [species](#) belong to the family Periptychidae that are distinguished from other 'condylarths' by their teeth, which have swollen premolars and unusual vertical enamel ridges. Researchers believe that they may have been omnivores because they evolved teeth that would have allowed them to grind up plants as well as meat, however this does not rule out them being exclusively herbivores.

The mass extinction that wiped out the non-avian dinosaurs 66 million years ago is generally acknowledged as the start of the 'Age of Mammals' because several types of [mammal](#) appeared for the first time immediately afterwards.

As lead author Madelaine Atteberry from the University of Colorado Geological Sciences Department in the USA explains, "When the dinosaurs went extinct, access to different foods and environments enabled mammals to flourish and diversify rapidly in their tooth anatomy and evolve larger body size. They clearly took advantage of this opportunity, as we can see from the radiation of new mammal species that took place in a relatively short amount of time following the mass extinction."

Atteberry and co-author Jaelyn Eberle, a curator in the Museum of Natural History and Professor of Geological Sciences at the University of Colorado, studied the teeth and lower jaw bones of 29 fossil 'condylarth' species to determine the anatomical differences between the species, and used phylogenetic techniques to understand how the species are related to each other and to other early Paleocene 'condylarths' in the western United States.

The evidence supports the discovery of these three new species to science.

About the size of a marmot or house cat, *Beornus honeyi* was the largest; *Conacodon hettingeri* is similar to other species of *Conacodon*, but differs in the morphology of its last molar, while *Miniconus jeanninae* is similar in size to other small, earliest Paleocene 'condylarths', but is distinguished by a tiny cusp on its molars called a parastylid.

"Previous studies suggest that in the first few hundred thousand years after the dinosaur extinction (what is known in North America as the

early Puercan) there was relatively low mammal species diversity across the Western Interior of North America, but the discovery of three new species in the Great Divide Basin suggests rapid diversification following the extinction," says Atteberry. "These new periptychid 'condylarths' make up just a small percentage of the more than 420 mammalian fossils uncovered at this site. We haven't yet fully captured the extent of mammalian diversity in the earliest Paleocene, and predict that several more [new species](#) will be described."

More information: Madelaine R. Atteberry et al, New earliest Paleocene (Puercan) periptychid 'condylarths' from the Great Divide Basin, Wyoming, USA, *Journal of Systematic Palaeontology* (2021). [DOI: 10.1080/14772019.2021.1924301](https://doi.org/10.1080/14772019.2021.1924301)

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