

New study finds earliest evidence for mammal social behavior

November 2 2020



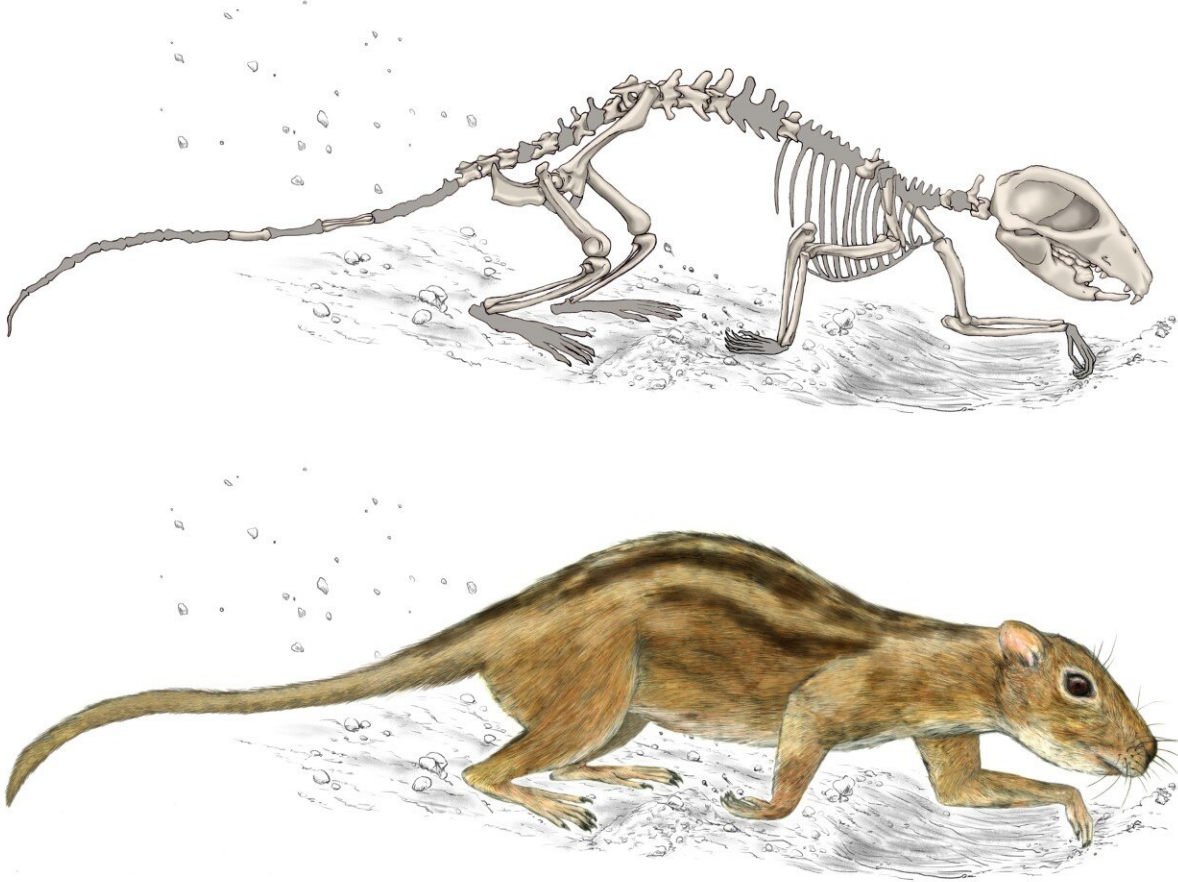
An artistic reconstruction of a social group of *Filikomys primaevus* in a burrow while dinosaurs romp above. Credit: Misaki Ouchida

A new study led by paleontologists at the University of Washington and its Burke Museum of Natural History & Culture indicates that the earliest evidence of mammal social behavior goes back to the Age of Dinosaurs.

The evidence, published Nov. 2 in the journal *Nature Ecology & Evolution*, lies in the [fossil](#) record of a new genus of multituberculate—a small, rodent-like mammal that lived during the Late Cretaceous of the dinosaur era—called *Filikomys primaevus*, which translates to "youthful, friendly mouse." The fossils are the most complete mammal fossils ever found from the Mesozoic in North America. They indicate that *F. primaevus* engaged in multi-generational, group-nesting and burrowing behavior, and possibly lived in colonies. Study co-authors—including lead author Luke Weaver, a UW graduate student in biology, and senior author Gregory Wilson Mantilla, a UW professor of biology and curator of vertebrate paleontology at the Burke Museum—analyzed several fossils, all about 75.5 million years old, and extracted from a well-known dinosaur nesting site called Egg Mountain in western Montana.

Fossil skulls and skeletons of at least 22 individuals of *F. primaevus* were discovered at Egg Mountain, typically clustered together in groups of two to five, with at least 13 individuals found within a 30 square-meter area in the same rock layer. Based on how well preserved the fossils are, the type of rock they're preserved in, and *F. primaevus*' powerful shoulders and elbows—which are similar to today's living burrowing animals—Weaver, Wilson Mantilla and co-authors hypothesize these

animals lived in burrows and were nesting together. Furthermore, the animals found were a mixture of multiple mature adults and [young adults](#), suggesting these were truly [social groups](#) as opposed to just parents raising their young.



A life-like reconstruction along with identified fossilized bones found of *Filikomys primaevus*. Its powerful shoulders and elbows suggest it was a burrowing mammal. Credit: Misaki Ouchida

"It was crazy finishing up this paper right as the stay-at-home orders

were going into effect—here we all are trying our best to socially distance and isolate, and I'm writing about how mammals were socially interacting way back when dinosaurs were still roaming the Earth!" said Weaver. "It is really powerful, I think, to see just how deeply rooted social interactions are in mammals. Because humans are such social animals, we tend to think that sociality is somehow unique to us, or at least to our close evolutionary relatives, but now we can see that social behavior goes way further back in the mammalian family tree. Multituberculates are one of the most ancient [mammal](#) groups, and they've been extinct for 35 million years, yet in the Late Cretaceous they were apparently interacting in groups similar to what you would see in modern-day ground squirrels."



A block of *Filikomys primaevus* fossils analyzed from the Egg Mountain Formation in western Montana. This particular block includes skulls and skeletons of two adult and one subadult individuals. Credit: Luke Weaver

Previously, scientists thought [social behavior](#) in mammals first emerged after the mass extinction that killed off the dinosaurs, and mostly in the Placentalia—the group of mammals humans belong to, which all carry the fetus in the mother's uterus until a late stage of development. But these fossils show mammals were socializing during the Age of Dinosaurs, and in an entirely different and more ancient group of mammals—the multituberculates.

"These fossils are game changers," said Wilson Mantilla. "As paleontologists working to reconstruct the biology of mammals from this time period, we're usually stuck staring at individual teeth and maybe a jaw that rolled down a river, but here we have multiple, near complete skulls and skeletons preserved in the exact place where the animals lived. We can now credibly look at how mammals really interacted with [dinosaurs](#) and other [animals](#) that lived at this time."

More information: Early mammalian social behaviour revealed by multituberculates from a dinosaur nesting site, *Nature Ecology & Evolution* (2020). [DOI: 10.1038/s41559-020-01325-8](https://doi.org/10.1038/s41559-020-01325-8) , www.nature.com/articles/s41559-020-01325-8

Provided by University of Washington

Citation: New study finds earliest evidence for mammal social behavior (2020, November 2)

retrieved 19 June 2024 from <https://phys.org/news/2020-11-earliest-evidence-mammal-social-behavior.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.