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ANCIENT APE WAS A CLIMBER, NOT A WALKER

NEW STUDY OF CONTROVERSIAL *OREOPITHECUS* FOSSILS SHOWS IT MOVED UNLIKE ANY APE ALIVE TODAY

Some have said it walked upright on two legs. Others suggest it moved under branches like a sloth. The locomotion of *Oreopithecus bambolii*, an ape that lived between 6 and 8 million years ago, is nothing short of contentious. New work published today in the *Proceedings of the National Academy of Sciences* continues the debate, showing that the extinct primate likely was a climber, but that it moved differently from all living species of apes.

"If you can name a locomotor behavior that's been attributed to a primate, it probably has been applied to this fossil," said lead author Ashley Hammond, an assistant curator in the American Museum of Natural History's Division of Anthropology.

More than 60 years ago, researchers found a surprisingly complete fossilized skeleton of *Oreopithecus* embedded in a slab of coal in a part of Italy that used to be an island. *Oreopithecus* is an ape but it does not belong to the same lineage as humans. Since its discovery, its anatomy has confounded scientists, primarily because the skeleton was

flattened during fossilization.

"It's fairly complete, but it's flat as a pancake," Hammond said. "I can understand why it has led to such drastically different conclusions. It doesn't look exactly like a living ape and it doesn't look like a human. But you can start to imagine all the different ways it might have looked because the fossil has been so distorted and deformed."

Adding to the enigmatic nature of this fossil are its strange teeth, Hammond said. Their unusual shape make it difficult to determine how *Oreopithecus* was specifically related to other species, what it ate, and how it behaved.

In the new study, Hammond worked with Museum senior research scientist Sergio Almécija and collaborators to take a comprehensive look at all of the vertebrae and pelvic fossil material for *Oreopithecus*, including the Italian specimen—housed at the Natural History Museum of the University of Florence—and pieces found from other *Oreopithecus* individuals that are part of the collections at the Natural History Museum of Basel, Switzerland. The Italian skeleton was prepared over the course of several years with a focus on the pelvic elements, and Hammond and Almécija were among the first outside researchers to access it since that work took place. The researchers compared the ape's features to bipedal hallmarks in early hominins.

"We were able to get a glimpse of anatomy that couldn't be appreciated before the new preparation of the fossil," Almécija said. "What we see is a combination of features that is new to science, providing a much needed view of how this late Miocene ape looked. We can confirm it was a good climber, not a habitual suspensory ape or a biped."

The researchers found that the body form of *Oreopithecus* isn't seen in living apes: it had a more flexible lumbar region than living great apes, giving it greater behavioral diversity. With limb proportions intermediate between modern-day orangutans and bonobos, it would have been a skilled climber. But its shorter fingers probably made it less suited for hanging below the branches. Its torso shape was similar to siamangs (the largest of the "lesser apes" that also includes gibbons). However, in terms of overall body size, *Oreopithecus* was bigger than the "lesser apes," and would have been on the lower end of the size range of great apes alive today.

"*Oreopithecus* might give us an idea of what it means to be an ape at this particular body size," Hammond said. "It's also important to consider fossil apes in the context of

early hominins because it gives us a guidepost as to where early hominins started off. *Oreopithecus* is not an ancestor of hominins, but it gives us a window to what was happening in that time period."

Other researchers on this study include Lorenzo Rook, from the University of Florence; Alisha Anaya, from the American Museum of Natural History; Elisabetta Cioppi, from the Natural History Museum of the University of Florence; Loïc Costeur, from the Natural History Museum of Basel; and Salvador Moyà-Solà, from the Miquel Crusafont Catalan Institute of Paleontology and the Catalan Institution for Research and Advanced Studies. This work was funded, in part, by the Wenner-Gren Foundation, Leakey Foundation, the Research Centers of Catalonia (CERCA), Spanish AEI/FEDER EU, and MINECO.

ABOUT THE AMERICAN MUSEUM OF NATURAL HISTORY (AMNH)
The American Museum of Natural History, founded in 1869 and currently celebrating its 150th anniversary, is one of the world's preeminent scientific, educational, and cultural institutions. The Museum encompasses 45 permanent exhibition halls, including those in the Rose Center for Earth and Space plus the Hayden Planetarium, as well as galleries for temporary exhibitions. It is home to New York State's official memorial to Theodore Roosevelt, a tribute to Roosevelt's enduring legacy of environmental conservation. The Museum's approximately 200 scientists draw on a world-class research collection of more than 34 million artifacts and specimens, some of which are billions of years old, and on one of the largest natural history libraries in the world. Through its Richard Gilder Graduate School, the Museum grants the Ph.D. degree in Comparative Biology and the Master of Arts in Teaching (MAT) degree, the only such free-standing, degree-granting programs at any museum in the United States. Annual on-site attendance has grown to approximately 5 million, and the Museum's exhibitions and Space Shows can be seen in venues on six continents. The Museum's website, digital videos, and apps for mobile devices bring its collections, exhibitions, and educational programs to millions more around the world. Visit **amnh.org** for more information.

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Image: This photo shows the Oreopithecus bambolii *skeleton embedded in a slab of coal found in Italy.*

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