

Scientists Describe New Genus of African Monkey: First in 83 Years

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Rungwecebus kipunji in the wild. Photo: copyright Tim Davenport.

Thanks to a globe-spanning collaboration and an animal found in a farmer's cornfield in Tanzania, a new genus of living monkey has been characterized, marking the first such discovery in 83 years, according to a report this week in *Science Express*.

The new African monkey, *Rungwecebus kipunji*, was first described scientifically last year based only on photographs. At that time, scientists placed the reclusive monkey, which has only been found in two remote locations in Africa, into the genus *Lophocebus*, commonly known as mangabeys. Shortly thereafter, one of these monkeys was caught and died in a farmer's trap.

With the first real specimen at hand, a team of scientists, organized by

Tim Davenport of the Wildlife Conservation Society in Tanzania, was able to closely examine the monkey's physical characteristics and analyze samples of tissue on a molecular level. Their research has concluded that Kipunji, the common name given the monkey, belongs to an entirely new genus.

“This is exciting news because it shows that the ‘age of discovery’ is by no means over,” says William Stanley, a co-author of the study and Collection Manager in the Division of Mammals at The Field Museum of Natural History in Chicago, which now houses the world's only specimen of this forest-dwelling monkey.

“This was an amazing collaborative effort,” said Eric Sargis, Assistant Professor of Anthropology at Yale, and co-author on the study. While the assignment of the monkey's genus was initially based on previously described characteristics and how it looked in photos, with an actual specimen to study, experts in anatomy and molecular classification joined the study. The skeleton and soft tissues were analyzed at the Field Museum. “Only by uniting information from several sub-disciplines were we able to conclude that Kipunji represents a new genus.”

“I was very skeptical of the need for a new assignment when I first saw a photo of the animal — because it looks like a mangabey,” said Sargis, an expert in the characteristics of primates. “But such appearances have been misleading in the past.”

The DNA of this monkey strongly suggests that its closest relatives are the widespread savanna baboons in the genus *Papio*, even though it lives in forest and spends much of its time in trees. Once Sargis was able to examine the specimen and compare it to other Old World monkeys, he was convinced that it could not be placed in *Papio*.

Link Olson, a co-author and Mammals Curator at the University of

Alaska Museum, used markers from mitochondrial DNA which is inherited only through mothers to offspring, Y-chromosome DNA that is passed only from fathers to sons, and a chromosomal gene that is passed to all offspring to identify the placement of Kipunji on the family tree of primates. Given the results of the molecular and anatomical analyses, the team placed Kipunji in its own genus *Rungwecebus*, named after Mt. Rungwe where Kipunji was first observed.

These authors agreed that the ability to study an actual specimen was critical to identifying Kipunji's lineage. Authors of the paper describing Kipunji as a new species were unable to do that. "A picture may paint a thousand words," noted Olson, "but in the case of Kipunji, those thousand words didn't tell the whole story."

"To find, in the 21st Century, an entirely new species of large monkey living in the wild is surprising enough. To find one that can be placed in a new genus, and that sheds new light on the evolutionary history of the monkeys of Africa and Eurasia as a whole is truly remarkable," said John F. Oates, Professor of Anthropology at Hunter College and a renowned primatologist. "This discovery also reinforces the view that mountains in southern Tanzania have played an important and until recently unexpected role as a refuge for many species long extinct elsewhere."

This global collaboration reflects the speed and value of the new phenomenon of conducting research across many time zones. Sargis was the first to receive Davenport's emails from Tanzania. "I would edit the manuscript, add comments, or write new sections and send the manuscript out for Stanley in Chicago and Olson in Alaska to make their changes," said Sargis. "Then, before going to bed I would take another pass at it, after Olson added his comments." Over the course of a few hectic weeks, the authors exchanged over 500 e-mails.

“Finding a new genus of the best-studied group of living mammals is a sobering reminder of how much we have left to learn about our planet’s biodiversity,” notes Olson.

As the human population continues to increase, along with their impact on all ecosystems and on other species, it is particularly important when a new group of animals so closely related to humans is identified. It is especially surprising – in a world so carefully explored – when new animal species any larger than a rat are found living in the wild, not just as unstudied specimens in museum cabinets.

These monkeys have light-to-medium grayish brown fur, with off-white fur on the belly and the end of their long, curled-up tail. They have a “crown” with a very broad crest of long, erect hair. Adults make a distinctive, loud, low-pitched honk-bark. An omnivore, Kipunji eats shoots, leaves, flowers, bark, fruit, lichen, moss and invertebrates.

Kipunji are predominantly tree-dwelling monkeys and are known to live in only two high-altitude locations: the Rungwe-Livingstone forest and Ndundulu Forest Reserve in Tanzania. They live in social groups of 30-36 adult males and females. Less than twenty such groups are known to exist.

“Although Rungwecebus is endangered, there's still an opportunity to conserve this reclusive animal,” said Sargis. “This is particularly encouraging to a paleontologist like me because I often study mammals that have been extinct for millions of years.”

Co-authors on the paper included Daniella W. DeLuca, Noah E. Mpunga and Sophy Machaga of the Wildlife Conservation Society in Tanzania, all leading experts on the ecology and behavior of Kipunji. The research was supported by grants from the National Institutes of Health, the National Science Foundation, the Alaska INBRE program and the

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