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A Biological Hot Spot in Africa, With New Species Still to Discover

By [CARL ZIMMER](#)

The Eastern Arc Mountains of [Tanzania](#) may not be terribly tall — only half the height of their famous neighbor, Mount Kilimanjaro. But to scientists who tally the planet's biodiversity, they tower over the rest of the world. The forests that cover their flanks contain the highest density of endangered animals anywhere on earth.

"This is a really important place," said Neil Burgess, an expert on the Eastern Arc Mountains at the University of Cambridge and the World Wildlife Fund. "Biologists who go there just keep finding more and more species."

In January, an international network of scientists presented the latest [findings](#) on diversity in the Eastern Arc in the journal *Biological Conservation*.

Many species that live on the mountains live nowhere else in the world. (Scientists call them endemic.) So far, researchers have identified 96 endemic species of vertebrates in the Eastern Arc Mountains, including sunbirds, chameleons and the wide-eyed primates called bushbabies.

Many insects are also endemic to the Eastern Arc, including 43 species of butterflies. Some of the most popular houseplants in the world come from its forests, including African violets, and the mountains are home to at least 800 other endemic species of plants.

All of these species are crammed into 13 patches of forest that, put together, would be barely bigger than Rhode Island. Only a few places on earth, including New Zealand and Madagascar, have comparable densities of endangered endemic species. Scientists call them biodiversity hot spots.

Geography plays a big role in the making of a hot spot. The Eastern Arc has been around for some 30 million years. "They've probably had forests on them for all of that time," said Dr. Burgess, the lead author of the new reports. "Even during very dry periods, the forests have survived."

Lineages that became extinct elsewhere in East Africa have been able to survive in the Eastern Arc. Studies of the [DNA](#) of [birds](#) and primates reveal that many species belong to ancient lineages. In some cases, their closest living relatives are found hundreds or thousands of miles away. As the old lineages endure, new species also evolve. "You've got these ancient things that are collected in the mountains, and then you've got newly evolved species on the mountains as well," Dr. Burgess said.

The diversity of the Eastern Arc is all the more impressive because 70 percent of the original forest cover is gone. Farmers and loggers have cleared many of the trees, and hunters have eliminated many mammals, like

elephants and buffalo. Many of the remaining species are endangered, including 71 of the 96 known endemic vertebrates.

The destruction of the forests may prove harmful to Tanzania's economy as well. The rivers that flow from the mountains power the dams that supply half the nation's energy. Deforestation may make the water supply less reliable during dry months. The Tanzanian government and conservation organizations are working on ways to preserve the remaining forests.

With money from the Critical Ecosystem Partnership Fund, scientists are continuing to explore the Eastern Arc forests in search of new species — and are finding them. While many are small amphibians and reptiles, some are surprisingly big.

In 2005, for example, scientists discovered a new species of monkey, a slender, tree-dwelling primate called the Kipunji. At first it appeared to belong to a group of monkeys called mangabeys. But last year scientists studying its DNA were surprised to discover that it was not a mangabey at all; its closest kin are actually baboons.

Dr. Burgess said he expected still more discoveries in the next few years. "There will be plenty of new and fun things for people to find out about," he said.

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