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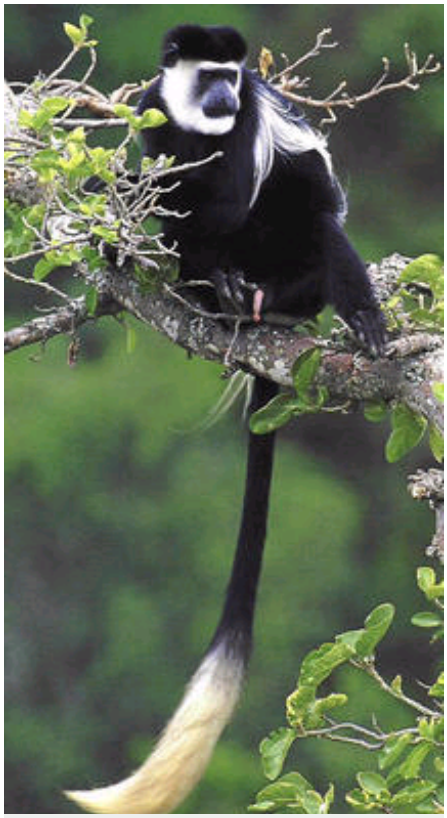
18 DEC Leaf-eating monkeys ‘ may be wiped out’ by climate change

RSS

18 Dec 09

Environment

Monkey species will become ‘increasingly at risk of extinction’ because of global warming, according to new research published this week.



Colobus monkeys are one of the primate species most at risk from climate change.

The research reveals that populations of monkeys and apes in Africa that depend largely on a diet of leaves may be wiped out by a rise in annual temperatures of 2°C. The study by researchers from Bournemouth, Roehampton and Oxford Universities suggests that the species most at risk are the already endangered gorillas and colobine monkeys.

The paper, published online in *Animal Behaviour*, pinpoints which species are most threatened by climate change in a series of new global maps. The maps show current and predicted distributions of primates, comparing the populations according to their diet and the amount of enforced rest they are predicted to need.

The researchers warn that Old World monkey populations in

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Africa will be hardest hit even by a very modest 2°C increase in global mean temperature, especially those whose diets are mainly leaf-based such as the beautiful colobine monkeys.

In contrast, New World monkeys in South America will be virtually unaffected by a rise of 2°C in mean temperatures.

However, even the South American species will begin to suffer if temperatures rise as much as 4°C because suitable habitats will then become increasingly fragmented, and small fragmented populations are more liable to risks of extinction.

These predictions are based on analyses of ecological constraints that determine how much time animals are forced to rest. The researchers found that animals that have forced rest have less time to forage for food or engage in other biologically essential activities, such as forming friendships.

> These results suggest that even if we find ways to solve [the problems of deforestation and hunting], it may not save some species of monkeys and apes from extinction.
>
> Professor Robin Dunbar

Although most primates have adaptations that help them cope with the heat, they head for shelter and rest when the sun gets too hot. The researchers show that resting time is influenced by three main factors: the percentage of leaves in the animals' diet, temperature variation and mean annual temperature. When these three effects come together, susceptible species will be unable to cope and populations will go extinct.

The researchers used climate models coupled with an analysis of quantitative data on the behaviour, diet and group size of different primate species across the world.

African monkeys and apes that have a high percentage of leaves in their diet are geographically more restricted even now, being confined to a relatively narrow region around the equator. However, fruit-eating species like the baboons and guenon monkeys of Africa typically have a much wider latitudinal range and can cope with a wider range of climatic conditions.

This ecological separation between fruit- and leaf-eating species is much less obvious in the Americas, and so these species will be much less badly affected by climate warming.

The contrast between the continents may be due to the fact that African fruit-eating species may have developed a particular ecological adaptation to more challenging habitats than those encountered by species in South America.

Lead author Dr Amanda Korstjens, from Bournemouth University, said: 'The possibility that enforced resting time might have so strong an effect on where on the map a major mammal group is likely to survive has not previously been appreciated. This study suggests that the amount of time available for monkeys and apes to gather food and socialise may be a key

factor when looking at possible effects of climate change on animal distribution patterns in the past and in the future.'

Professor Robin Dunbar, from the Institute of Cognitive and Evolutionary Anthropology at the University of Oxford, said: 'We often worry about deforestation and hunting as the two main factors threatening the extinction of primate populations, but these results suggest that even if we find ways to solve these problems, it may not save some species of monkeys and apes from extinction. Instead, we perhaps should worry about ensuring that we provide these species with habitats that are more in tune with their capacities to cope with climate change.'

Dr Julia Lehmann, from Roehampton University, said: 'At overall temperature increases of 2°C and 4°C, the distribution of habitat suitable for species that eat a lot of leaves will be greatly reduced. The distribution of suitable habitat would become progressively restricted and increasingly fragmented. The scale of the effect is sufficiently large that the implications for the survival of the dietetically more specialised primates are worrying.'

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