

Winning by a neck -- Giraffes avoid competing with shorter browsers

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Giraffe in its natural environment. Photographed by Miroslav Duchacek (from Czech Republic) in Africa. Credit: Wikipedia.org

The giraffe's elongated neck has long been used in textbooks as an illustration of evolution by natural selection, but this common example has received very little experimental attention.

In the January issue of the *American Naturalist*, researchers at the Mammal Research Institute in the Department of Zoology and Entomology at the University of Pretoria tested whether foraging competition with shorter herbivores could explain why giraffes feed

mostly on leaves high in trees, despite being able to feed at lower levels as well.

"This [study] provides the first real experimental evidence that the long neck of the giraffe might have evolved as a consequence of competition, which provides support for a previously untested textbook example of natural selection," says Elissa Cameron (University of Pretoria), who coauthored the study with Johan du Toit (University of Pretoria and Utah State University).

Giraffes are well known for their unusual height, and they generally feed high in the tree canopy, above the height other herbivores can reach. Giraffes receive more leaves per bite by foraging high in the tree, but it's unclear whether this is caused by competition -- smaller browsers eating some of the leaves at lower heights -- or if more leaves grow at higher levels.

The researchers built low fences around trees in greater Kruger National Park to stop smaller browsers from eating leaves. After a complete growing season they found that the number of leaves on the fenced trees was roughly the same, revealing that small browsers are responsible for most of the foraging. Therefore, the researchers argue, it is competition from other herbivores, such as kudu, that appears to drive giraffes to eat leaves high in the trees.

Citation: Cameron, Elissa Z. and Johan T. du Toit, "Winning by a neck: tall giraffes avoid competing with shorter browsers." *The American Naturalist*: January 2007.

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