

Food, predators, and people influence giraffe social behavior

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Groups of giraffes in Tanzania. Credit: Wild Nature Institute

The behavior of giraffe groups with calves is influenced more strongly by the risk of predators than is the behavior of all-adult groups, which is mostly determined by the availability of food. An international team of researchers from Penn State and the University of Zürich studied giraffe

behavior in a 2,000 square kilometer region of Africa and pinpointed some of the special requirements needed by mother giraffes to keep their babies safe. A paper describing the research, which can help land managers to protect the habitats most important for giraffes, appears online in the journal *Oecologia*.

"Like all herbivores, giraffes need to find quality food to survive, but also need to avoid lions, or at least see them coming," said Monica Bond, Ph.D. candidate from the University of Zürich and lead author of the paper. "Giraffes in our huge, unfenced study area can choose from among many [different places](#) to spend their time—places with different kinds of trees and bushes, places deep inside protected parks, or places closer to farming towns or ranchlands where people live. There are lots of options in this landscape, including fewer lions outside the parks versus inside. So, we wondered how do these options influence giraffe grouping behavior?"

The study found that groups composed of only adult giraffes were food-focused and not affected by predation risk. These adult groups formed the largest groups—up to 66 individuals—in the rainy season when food is plentiful, but formed smaller groups during the dry season when food is harder to find. In contrast, predation risk was a very important factor influencing groups of giraffes with [calves](#).

"Giraffe calves are vulnerable to being killed by lions and other carnivores, while adults are typically large enough to escape predation," said senior author Barbara König, professor at the University of Zürich. "We were testing hypotheses about mother and calf behavior to see if their strategy was for calves to hide in thick bushes to avoid predators, be in the open to see predators coming, or be in large groups for many eyes and lower individual risk."



Groups of giraffes in Tanzania. Credit: Wild Nature Institute

The researchers showed that in areas with the most lions, groups with calves were found more often in dense bushes than in open grasslands, and that those groups were smaller in size. This observation supports the idea that giraffe mothers and calves have a strategy of hiding in dense bushes, rather than staying in open areas to better see lions or gathering in large groups to dilute the predation risk. Dense bushlands are therefore important habitat for giraffe calves that the researchers suggest should be protected. Some cattle ranchers promote shrub removal to encourage grass for their livestock, but this thinning of brush could be detrimental to giraffes and other animals that share the rangelands.

The study also explored the influence of humans on giraffe grouping behaviors.

"Outside the parks, the [human population](#) has been rapidly expanding in recent years," said Derek Lee, associate research professor of biology at

Penn State and co-author of the study. "Therefore, we felt it was important to understand how human presence affected grouping behavior, as natural giraffe habitat is ever-more dominated by people."

Interestingly, adult females with calves were more likely to be found closer to traditional pastoralist compounds called bomas, made by livestock-keeping, non-farming people.



Groups of giraffes in Tanzania. Credit: Wild Nature Institute

"We suspect this is because the pastoralists may disrupt predator behaviors to protect their livestock and this benefits the giraffe calves," said Lee.

Conversely, groups with calves avoided areas close to the larger towns of farming people, suggesting a difference between traditional bomas

versus more densely populated human settlements for giraffe mothers seeking food and safety for themselves and their calves.

"We were happy to find that traditional [human settlements](#) by ranchers appear to be compatible with the persistence of [giraffe](#) populations," said Bond. "But on the other hand, disturbances around towns likely represent a threat and should be limited in areas favored by giraffes. Masai giraffes are the world's tallest herbivores and are beloved by people around the globe, but they were recently classified as an endangered species by the International Union for Conservation of Nature (IUCN). The data in this study can help us know what places are most important for these magnificent animals."

More information: Monica L. Bond et al, Fission–fusion dynamics of a megaherbivore are driven by ecological, anthropogenic, temporal, and social factors, *Oecologia* (2019). [DOI: 10.1007/s00442-019-04485-y](https://doi.org/10.1007/s00442-019-04485-y)

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