

Environmental factors help limit gene flow between different giraffe species

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

Giraffe species may only breed with each other based on the timing of rainfall in their local environments, according to new research published October 23 in the open-access journal *PLOS ONE*, by Henri Thomassen and colleagues at UCLA.

Three types of [giraffe](#) species in East Africa are genetically distinct and rarely intermingle, even though they live in close proximity to each other. Given that these different giraffe species are capable of long-

distance travel, and are known to breed together in zoos, it remains a mystery how they maintain such genetic diversity in the wild and why they choose to stay only within their species range.

To answer these questions, the authors here used a suite of powerful analytical methods and climate data to analyze the specific environments of genotyped giraffes. They tested four hypotheses that might explain the maintenance of these three distinct giraffe species: isolation-by-distance, physical barriers to dispersal, general habitat differences resulting in habitat segregation, or regional differences in the [seasonal timing](#) of rainfall.

They found that regional differences in the timing of precipitation, and the resulting increase in local vegetation and plants ("greening"), could best explain the source of [genetic differences](#). Each species seems to be tied to their local seasonal cycle of greening, which is markedly different among species, suggesting that annual climate cycles may help maintain genetic and phenotypic divergence in giraffes.

More information: Thomassen HA, Freedman AH, Brown DM, Buermann W, Jacobs DK (2013) Regional Differences in Seasonal Timing of Rainfall Discriminate between Genetically Distinct East African Giraffe Taxa. PLoS ONE 8(10): e77191. [DOI: 10.1371/journal.pone.0077191](#)

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