

Traditional ranching practices enhance African savanna

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Credit: Robert Pringle

(Phys.org) —That human land use destroys natural ecosystems is an oft-cited assumption in conservation, but ecologists have discovered that instead, traditional ranching techniques in the African savanna enhance the local abundance of wild, native animals. These results offer a new perspective on the roles humans play in natural systems, and inform ongoing discussions about land management and biodiversity

conservation.

For thousands of years, pastoralists in East African savannas have penned their cattle overnight in brush-walled corrals, called bomas. Bomas remain in use for about a year, resulting in tons of manure that fertilizes these small areas. After [abandonment](#), a lush carpet of grass springs up and these fertile "glades" – sometimes as large as a football field – remain visibly distinct from the surrounding savanna for over a century.

The team of ecologists, based at the Mpala Research Center in Kenya, found that trees close to the edges of glades grew faster and were generally larger than trees elsewhere in the savanna. They also found more insects and, the particular focus of the study, higher densities of a [native species](#) of gecko, *Lygodactylus keniensis*.

"The effect of these glades is clear," said Colin Donihue, the Yale University [doctoral student](#) who led the research, which is described in *Ecology's* April issue. "Our findings are particularly exciting given how long glades persist in the savanna. This means that even decades after the pastoralists move on, they leave fertile footprints across the landscape that significantly alter the dynamics of the entire ecosystem."

Previous research has shown that glades are the preferred grazing sites of many large African mammals. Donihue et al.'s research uniquely demonstrates that the effects of glades cascade to a far broader swath of the savanna's plant and animal inhabitants.

The researchers also measured the interacting effects of nearby glades. Unexpectedly, the area between two close glades had some of the lowest gecko lizard densities and tree growth rates of the entire study. "This result was a surprise to us," Donihue said, "and has important management implications as we think about integrating knowledge from

agrarian cultures and traditions into modern ranching practice."

The surprising result may be due to cattle overuse of the area between an established boma and nearby glade. Further experiments are currently underway at the research center to explore this pattern and determine optimal distances between bomas.

It is important to note that over-grazing can have myriad detrimental impacts on ecosystems. This project simply demonstrates that traditional corralling techniques in Kenya leave a landscape-scale legacy that can bolster local abundances of native plants and animals.

"With human populations booming, we must look beyond the 'leave no trace' conservation ethic," said Donihue. "We must strive to find ways that our impacts on ecosystems can work in concert with natural processes. Our study suggests that traditional practices, honed over millennia, offer insightful lessons on how to do it."

More information: [DOI: 10.1890/12-0856.1](https://doi.org/10.1890/12-0856.1)

Provided by Yale University

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