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Eating poisonous plants saves life of gemsbok in Namibian desert

How different dietary strategies secure the co-existence of two herbivore species in adverse ecosystems

In drought periods browsing springbok (*Antidorcas marsupialis*) feed on all plant material they can find, while grazing gemsbok (*Oryx gazella gazella*), in contrast, switch their diet to a high proportion of poisonous plants – and they survive. These findings were just published in the scientific online journal *PLOS ONE*.

"We wanted to understand how these quite well-studied ungulates with contrasting feeding strategies can survive and even flourish in an adverse habitat like the Kunene region in Namibia, where the environment is characterised by strong and unpredictable variation in resource availability," says David Lehmann, doctoral candidate at the German Leibniz Institute for Zoo and Wildlife Research (IZW) and first author of the study. Researchers from the IZW, the University of Namibia and other Namibian partners found that gemsbok (also called oryx) adjusted its diet according to season. During drought periods, they fed on a restricted mixture of plants, including more than 30 % of shrubs and trees. Surprisingly, gemsbok diet also consisted of up to 25 % of Damara milk-bush (*Euphorbia damarana)*, an endemic, large succulent plant which is available all year round but highly toxic. When food was plentiful, gemsbok specialised exclusively on grasses and more ephemeral succulent species.

In contrast, springboks fed on a higher proportion of shrubs and trees than grasses and succulent plants irrespective of environmental conditions. As the researchers expected, springbok opportunistically adjusted their diet in response to variation in food sources availabilities, preferring e.g. grass sprouts during the wet season and browsing predominantly on leaves of bushes when grass quality decreased during drought. Springbok therefore adopted a different dietary strategy than gemsbok when facing a shortage of food sources.

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The potential effects of the Damara milk-bush on gemsbok health are still unknown. However, by extensively using this poisonous plant, gemsbok succeed in surviving environmental challenges. Gemsbok seem to be well adapted to the toxic effects of special plants growing in dry regions, and they benefit from their high water and nutritious content. Because global climate change increases drought periods and enhances desertification in Southern Africa, it is crucial to understand how wildlife species respond to the impoverishment of their natural environments and the decline of their food sources. Furthermore, gemsbok and springbok are two of the main protein sources for local communities, who would be negatively affected by declining wildlife population sizes. Knowledge about feeding behaviours of local species like gemsbok and springbok is therefore fundamental to establish sustainable wildlife management plans.

Publication

Lehmann D, Mfune JKE, Gewers E, Cloete J, Brain C, Voigt CC (2013): Dietary plasticity of generalist and specialist ungulates in the Namibian desert: A stable isotopes approach. PLOS ONE: http://dx.plos.org/10.1371/journal.pone.0072190

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Caption photo

Gemsbok (*Oryx gazella gazella*) in the Kunene region in Namibia.

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