

# Qualia

## Teaching lions to leave livestock alone

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Lions and humans are increasingly clashing, causing researchers to find new ways to protect both the lions and humans. (Photo: AAAS member Hadas Kushnir)

People and lions have co-existed on the African savanna for tens of thousands of years. In recent decades, however, cattle farms have taken over more land, pushing out the lions' natural prey. In the absence of their normal prey, many lions have turned to killing and eating cattle, causing serious conflicts between the big cats and the farmers who depend upon cattle for their livelihood. Too often, the lions pay with their lives.

Now conservationists are trying to encourage lions to avoid livestock – by making them sick to their stomachs. The Colorado-based nonprofit WildiZe Foundation is funding research into teaching lions to associate the taste of beef with nausea. The process is called conditioned taste aversion, and it could help lions at a critical time to reduce conflicts with people.

Conditioned taste aversion is a powerful form of learning. It's a natural defense mechanism that enables animals to survive encounters with a toxic food. When animals experience nausea after consuming a food, they form an aversion to the taste and smell of that food item and will avoid the offending items long after recovering. A single encounter with a nausea-inducing food can result in a powerful and long-term aversion.

You may have experienced conditioned taste aversion yourself. Have you had food poisoning after eating at a restaurant and later found that the sight or smell of that particular food made you feel ill? Or perhaps drank too much tequila one night, and couldn't touch the stuff again after that?

With funding from the WildiZe Foundation, Denver Zoo research associate Bill Given completed a preliminary experiment this September on lions at Grassland Safari Lodge in

Botswana. The lions that make their home here are problem cats. They have previously preyed on cattle but were captured by lodge personnel before local farmers killed them. Now these big cats live semi-wild in an 11-hectare enclosure at the lodge, dependent on humans for food.

Given and his team fed eight of the lions meals of beef treated with the deworming agent thiabendazole in doses large enough to make them temporarily nauseous but not cause any lasting ill effects. Afterward, when the lions were offered untreated beef, seven of them refused to eat it, and the eighth actually refused all food for a short period.

With the success of this test, Given is now seeking approval from Botswana's Department of Wildlife and National Parks and the Kenya Wildlife Service to implement this plan in the wild.

Efforts like this one to ease conflicts between lions and people are needed urgently. Fifty years ago, an estimated 450,000 lions roamed Africa. Today, there are only about 23,000. The greatest losses have come in the past two decades, with a suspected population decline of 30 to 50% in just three generations of the big cats. According to the International Union for Conservation of Nature, the biggest threat facing lions is the expansion of agriculture into their range. If people and lions are to continue to coexist in Africa, innovative solutions that benefit both species will be necessary.

## **Related Links:**

📷 AAAS member Hadas Kushnir spent time in Africa researching ways to protect humans from lion attacks. Learn more about her work, and see more incredible lion images, like the one used for this story, in [our audio slideshow](#).