



Thieves in the Night

Elephant crop-raiding in Botswana

You are asleep, lying in your bed.

All of a sudden your dog starts barking. You wake up to hear the sounds of an intruder in your house. The electricity is off so you can't see anything, but he sounds massive. You know that there have been armed, dangerous thieves roaming your neighborhood recently; it sounds like one of them has chosen your property to loot tonight. You must decide whether to risk facing the intruder or hope he leaves on his own.

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This is a frequent occurrence for farmers living in the Okavango Panhandle of northern Botswana. It isn't human robbers they are tormented by, but the 5-ton elephants who raid their crops at night. Although these mega-herbivores lack the malicious intent of thieves, they nonetheless cause serious damage when they come across fields full of delicious crops. Studies across Africa have focused on where, when, and why elephants raid farmers' fields, with hypotheses spanning from opportunistic feeding, to learned raiding behavior, to nutrition-driven foraging.

Likely, there is not a single answer as to why elephants eat crops and cause damage, but instead a complex interplay of causes and circumstances. Climate and weather, environmental variation, history and memory, social behaviors, vegetation patterns policy, development trends, population change; all of these play some role in the

social-ecological system. Research is crucial for teasing out the relationship between elephant behaviors and their interactions with humans. For my dissertation research, I am focusing on spatial and temporal patterns of elephant movement and human-elephant conflict. I am taking advantage of technology such as GPS collars, GIS modeling, and applications of circuit theory to better understand and predict where and when elephants move through the landscape. To complement those methods, I have also worked with farmers through the growing season to collect data on crop raiding mitigation and damage, and will be conducting interviews to gather local ecological knowledge of elephant behavior.

Elephants are having a particularly significant effect on farmers' livelihoods in my study region of northwestern Botswana. This area is characterized by subsistence farming, where



the cereal crops which are harvested and milled by hand represent a family's primary sustenance for the year. Crop planting and harvesting takes place during the end of the dry season to take advantage of the following rainy season. Once the rains have stopped, crops have ripened and are ready to harvest and dry. However, during the final rains and into the harvest season, elephants begin to move from their more remote ranges in the bush to closer to the villages. The villages and their associated fields are located near to the only permanent water source in the region, the Okavango River Delta. As the dry season progresses and elephants come to access the water and vegetation along the Okavango, interactions with people -and therefore the potential for conflict- increase.

For the 8 villages along the Okavango that I am studying, over 250 elephant crop-raiding

incidents were reported for the 2016 growing season. These incidents range from a single bull elephant walking through the field and crushing plants underfoot, to entire breeding herds which broke through the fence on side of the field and ate their way through the crops until they exited through the fence on the opposite site. Throughout the growing season I was able to collect information on when elephants raided, which fields were affected, what crops were grown, how farmers protected their fields, and if they used any active mitigation measures. I hope that through analyzing these data I will be able to identify any patterns in when and where raids occur, and which mitigation techniques are proving most effective. This information can then be used by the Department of Wildlife and National Parks (DWNP) in order to allocate conflict-response resources effectively, and create and improve management plans.

It can be used by the local organizations as well as governmental initiatives which aim to improve farming practices and reducing conflict. It will also provide feedback to farmers, who have little opportunity to see how their experience fits in to a larger picture. Later this year, I will be meeting with each village to share my findings, including whether there are certain mitigation techniques that are more effective than others and therefore should be prioritized for those with limited resources.

Elephants can raze an entire field during the night. The first time I attended a field that had been completely destroyed by elephants, hardly any of the millet (a tall, staple cereal crop) was left. Stalks were bent and some half-chewed heads of millet had fallen into the sandy soil from the elephants' mouths as they ate. It was like coming into a house where robbers had trashed every room, leaving behind a chaotic mess of debris and destruction. The destruction can be bleak and disheartening, but it is my hope that with applied research, innovative approaches, and cooperation and compromise, a system is possible where elephants and humans can coexist.

Right: community officers meet with farmers in their fields to assess damage caused to crops by elephants, in the western Okavango Panhandle of Botswana (credits: Erin K. Buchholtz). Previous: Black and white elephant images from regional camera traps (credits: Rocío Pozo).

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