

Using learning to balance the benefits with the drawbacks of living alongside bats



Citizen science and community activities were used to find out about people's relationships with bats, resulting in information vital for public health messages.

WITH the Ebola epidemic in recent memory, bats have become widely vilified. Bats, as the epidemic showed, can act as reservoir hosts for a number of dangerous viruses – and the straw-coloured fruit bat (*Eidolon helvum*), which occurs in vast numbers and is widespread in Ghana, is known to carry Henipaviruses. These can cause illness and

death in people and domestic animals. Although Henipavirus infection has not been recorded in people in Ghana, this is likely because it has never been looked for.

But bats also play an important role in many ecosystems. For example, in Ghana they are an important pollinator.

It is therefore essential to

conserve bat populations while also minimising the possibility of bat-borne disease spread. This is why researchers in the Ghana team of the Dynamic Drivers of Disease in Africa Consortium sought to assess community perceptions of bats as an essential component of their work. Their aim was to understand how these perceptions influence human-bat interactions, and hence the risk of disease spread.

First though, they took an innovative 'citizen science' approach to acquire vital and significant amounts of data about bats in Ghana. Through newspaper ads, the public was asked to report places where they knew bat colonies to exist. Reported colonies were then confirmed and the species of fruit bats identified before interaction with the communities near the colonies was initiated.

A total of 86 towns and villages, across all regions and ecological zones of the country, were reported to have bat roosts – with only 10 of these being previously known. Most were in the heart of towns or very close to where people lived, for example in hospital and school



A hunter handling a freshly killed straw-coloured fruit bat Image: Kofi Amponsah Mensah

compounds, market places, bus stations and, commonly, in trees within compounds of houses where people relaxed or prepared food.

Community voice

The team examined perceptions of bats and bat-human interaction in three sites: two rural sites, Tanoboase, site of a sacred grove in the Brong Ahafo Region, and Ve-Golokuati, in the Volta Region; and one urban, the 37 Military Hospital in Accra. A wide variety of stakeholders was involved in activities such as participatory mapping, focus groups and transect walks. These included department heads, traditional leaders, and community leaders and members. In particular, they included those who could facilitate community access and help disseminate the study's findings. Researchers noted that people were excited to be given a voice in the project

The team found bat distribution in the communities varied. In Ve-Golokuati, people live closely with the bats; in Tanoboase, the bats live in the sacred grove, flying out to "dine" at night, often at fruit farms; and at the 37 Military Hospital, the bats are found on trees within and in front of the hospital and its surroundings.



Bat droppings on chilies sold under a roost
Image: Kofi Amponsah Mensah

Community perceptions of bats were found to be closely linked with the benefits they bring (especially economic ones), proximity to roosting sites, and religious and cultural beliefs. Unsurprisingly perhaps, those directly benefiting from them, for example via hunting or tourism, tended to have more positive attitudes towards them. Those with negative perceptions said, for example, that bats defecated and urinated on their clothes, walls, cars and other property, made a lot of noise, were hideous looking, and smelled foul.

The team identified activities which led to bat conservation. For example, at Ve-Golokuati the community actively promotes bat conservation to attract tourists. At the 37 Military Hospital, bat hunting with guns is banned by the military and Ghana's Wildlife Division of Forestry Commission, which indirectly helps to conserve them. In Tanoboase, bat hunting has been declared illegal by the Chief there, again with support from the Wildlife Division of Forestry Commission and again helping to conserve the animals.

Importantly, the team also identified four types of people who, by the nature of where they live or work or what they do, are most at risk of bat-borne disease. These are fruit farmers, hunters, traders and those who live or work close to the roosts. Hunting was identified as hunters often handle dead and bloody bats with bare hands and can be bitten. Picking and eating partly bat-eaten fruits such as guava and black plum was also identified as risky.

These findings point to bats occurring in far greater numbers and far closer to people than previously thought

– thus the nationwide risk of disease transmission is higher than initially thought too. They provide a better picture of the extent of human-bat

“Bats are not blind. They sleep at daytime when the farmer is more active on the farm, and steal at night when the farmer is at home.”

Research respondent,
Tanoboase

interactions and information on where further research can be carried out.

This information can now also be put to use in designing effective policies and communication strategies to deal with the potential risk of disease spillover from bats. Policymakers and risk communicators will be able to develop and target their messages based on how people interact with bats and how they perceive them. This will enable people to interact safely with bats without exposing themselves to risk of disease – or compromising bat conservation.

This is one of a series of impact case stories produced by the Dynamic Drivers of Disease in Africa Consortium, an ESPA-funded research programme designed to deliver much-needed, cutting-edge science on the relationships between ecosystems, zoonoses, health and wellbeing with the objective of moving people out of poverty and promoting social justice. Find more info at www.driversofdisease.org.

