A Dynamic Drivers of Disease in Africa Consortium impact case story: Zambia

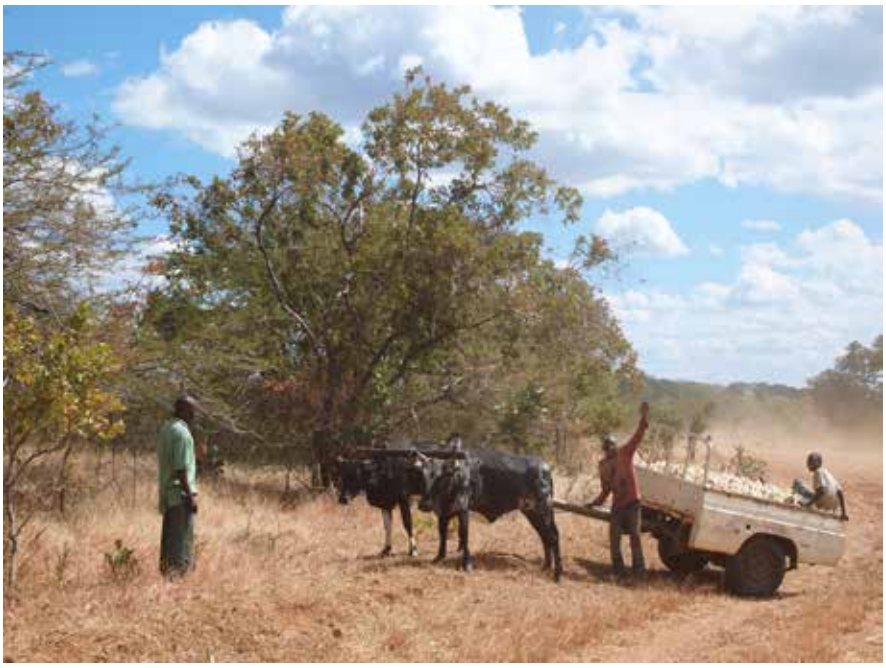
Building trust, sharing learning and seeking solutions with communities in flux

One Health research has helped people in the Luangwa Valley to understand better the disease risks – both new and old – that they face. Now they are looking to form farming groups to club together and access the services they need.

The mid-Luangwa Valley near South Luangwa National Park, in Zambia's Eastern Province, was once sparsely settled. Hunters visited it looking for bushmeat, but people lived and farmed on the plateau over 50km away. The area was known for its abundant population of tsetse – flies which can transmit the blood parasite found in wildlife and domestic animals that causes the disease trypanosomiasis. Trypanosomiasis can affect both livestock, where it causes *nagana* which leads to production losses and sometimes death, and people, where it causes sleeping sickness, which is fatal if untreated.

Accordingly, few cattle were kept in the area and sporadic cases of sleeping sickness were reported.

However, the past three decades have seen the population of Zambia more than double, driving a huge increase in the demand for land for cropping and livestock rearing. Researchers from the Dynamic Drivers of Disease in Africa Consortium wanted to find out how these changes have affected tsetse and trypanosomiasis in the Luangwa Valley, as well as to set these trends in the context of human and livestock health, broader agricultural development and vegetation change. They applied a One Health approach to their research, studying people, livestock, wildlife, vegetation and tsetse.



Bringing in the harvest *Image: Susan Welburn*

The migration pattern that emerged was seen to be not so much that of the colonisation of a new frontier zone, but that of a very mobile population setting up new homesteads within the area, often in response to declining soil fertility. Google Earth images show a mosaic of new fields in the woodland. Cotton, a key component of the cash economy, was found to be grown by 85% of households.

Tsetse populations appear to be reducing, reflecting loss of their preferred woodland habitat and, possibly, the use of pesticides on cotton fields. Still, blood sampling showed that *nagana* was present in just under a quarter of cattle. No people tested positive for sleeping sickness, although

cases have been reported occasionally. Just over a quarter of cattle tested positive for diseases carried by ticks and there was evidence of tick-borne infections in people. There was also evidence

"If a ploughing animal falls sick from anything then you get a lower cotton yield and are forced to reduce the hectares you can grow on."

Farmer

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of an increase in malaria in children aged under five. In addition, the rapidly increasing pig population seems to have brought with it cysticercosis, a disease diagnosed in pigs in that area for the first time by the project team. This can cause epilepsy and seizures in people and locals reported a marked increase in illnesses of this type.

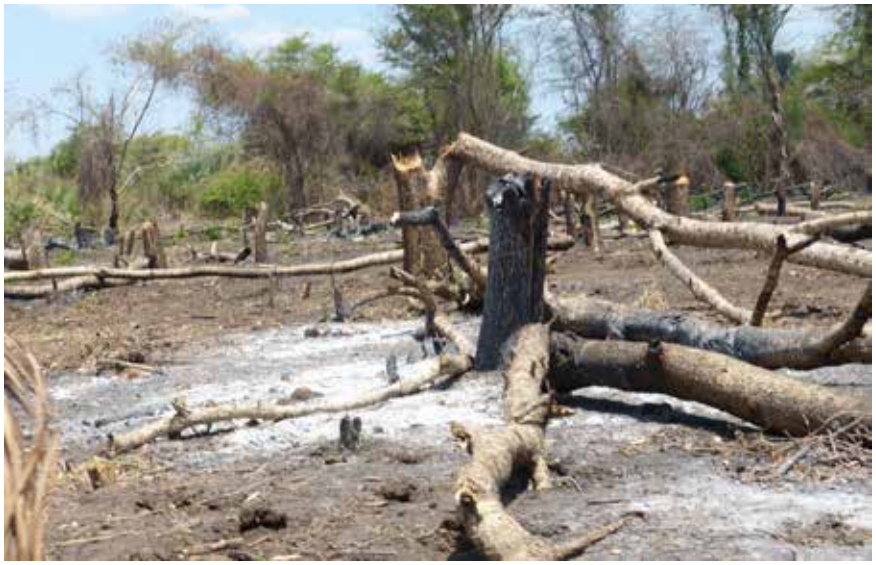
Importantly, a clearer picture of recent changes and local concerns emerged during the focus group discussions, which were attended by over 250 people. The establishment of the Lupande Game Management Area in 1972, alongside the National Park, was intended to empower villagers to see wildlife as a source of lucrative tourist and licensed hunting revenue. However, the communities' relationships with wildlife were seen to be complex and often unsatisfactory. Wildlife remain a source of illegal bushmeat. They also cause crop damage and endanger the lives of people and animals. Incomes generated from wildlife tourism are often not sufficient to mitigate the costs experienced by individual villagers living on the boundaries of the park. Human-wildlife-livestock contact is close, so the risk of disease transmission is ever present.

The research has established a new baseline from which changes in the tsetse population, in *nagana* in livestock and in the risk of sleeping sickness in people can be monitored. It has also enabled local people to make their views heard. The feedback sessions acted as a vehicle for educating the populations about the diseases they face, as well as those that are emerging. The epidemiology of cysticercosis was explained, the signs to look out for in sleeping sickness were recalled and older members of the communities shared their observations of that disease in the past. Local people said they appreciated having access to this information.

Farming groups

The household interviews also highlighted that people in this area of shifting settlements are very poor, and that their health and that of the animals they depend on is precarious. Government resources are limited, hence the lack of health, veterinary and other services there. The best option for local populations to access such services can be to set up farming groups who can club together to buy drugs or ask for support – an option explored during the feedback workshops.

Looking to the future, the relationships and trust built during the research between the University of Zambia researchers and local people, their chiefs, their teachers, the human and animal health workers and agricultural extension agents will last beyond the consortium. They are now set to act as a focus for future disease surveillance, community education and empowerment.



Clearing woodland to grow crops. *Image Joanna Kuleszo*

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.

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