January 2014

About this project

Name

Dynamic drivers of disease in Africa: ecosystems, livestock, wildlife, health and wellbeing (NE-J001570-1)

http://www.espa.ac.uk/projects/ne-j001570-1

www.driversofdisease.org

Principal Investigator

Melissa Leach, Institute of Development Studies, Brighton

Timeframe

February 2012 to July 2015

Objective

To investigate how disease regulation, as an ecosystem service, is affected by changes in biodiversity, climate and land-use, with differential impacts on people's health and wellbeing.

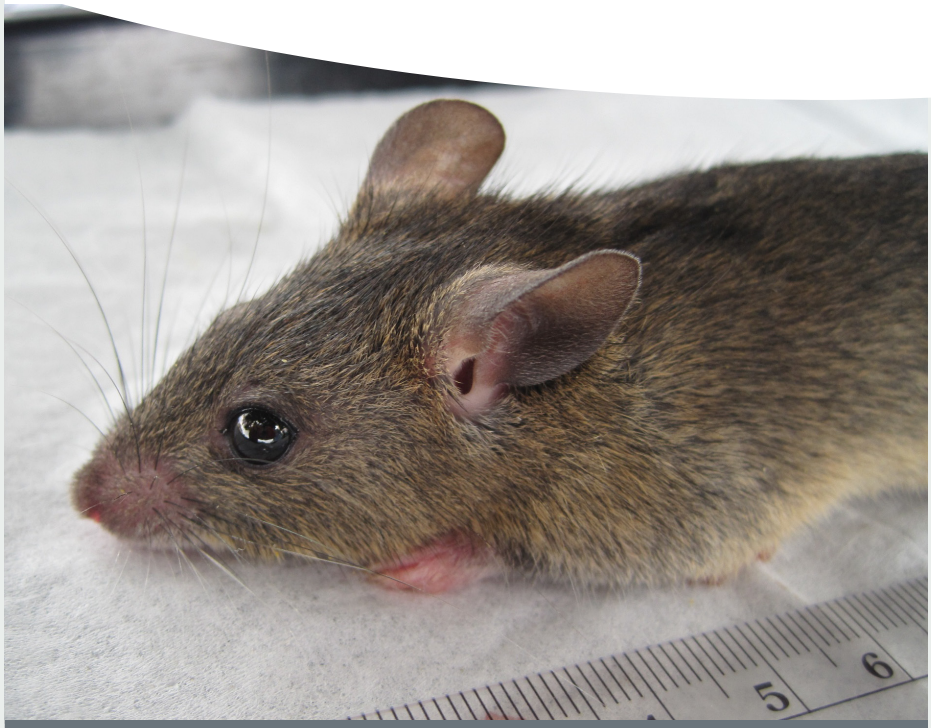
Summary

The project offers cutting edge science on the relationships between ecosystems, animal-borne diseases, health and wellbeing with the objective of moving people out of poverty and promoting social justice.

These zoonotic diseases disproportionately affect the poorest people in poor countries. Their emergence, transmission and potential control are thought to be affected by a wide range of complex factors, including ecosystem use and management, but at present this is poorly understood.

Four diseases are being studied, each affected in different ways by ecosystem changes, different dependencies on wildlife and livestock disease hosts, with diverse impacts on people, their health and livelihoods.

This note shares the project's experience investigating Lassa fever in Sierra Leone. The project is also looking at henipaviruses in Ghana, Rift Valley fever in Kenya and sleeping sickness in Zambia and Zimbabwe.



Designing research for development impact

Good research unearths new knowledge, but often fails to get that knowledge into practice or policy. This ESPA project is ensuring impact by considering it in the research methodology from the outset and is integrating its findings into other programmes even as it is ongoing.

Zoonoses are the stuff of headlines and horror movies. They are diseases that are passed from animals to humans, and can present a threat of global disease outbreak – inducing fear in wealthier nations.

They are also quietly devastating lives and livelihoods, causing untold misery to the poorest people in the poorest countries; "untold" because these diseases are poorly understood and under-reported. This means that they are under-prioritised by health systems and development interventions.

There is a massive need for evidence and knowledge to inform effective, integrated approaches to controlling these diseases. This project is providing this evidence and knowledge for four diseases: this briefing note looks at the case of one of them.

Lassa fever in Sierra Leone

Lassa fever is a devastating disease, an often fatal haemorrhagic infection and is endemic in West Africa (including Sierra Leone). Treatment is limited and there is no vaccine. The disease can wipe out entire households and cause panic across villages. Sierra Leone is one of the poorest countries in the world and Lassa fever adds to its burdens.

Lassa is transmitted to humans by a common rodent, and in Sierra Leone changing land-use may be increasing the transmission, with significant impacts in poor communities. Yet there is little information on the complex system of transmission, or the ecological and social dimensions.

Forty years after Lassa's source was found in rodents, it is still not known what will work to control it. This lack of information on the disease is what this ESPA project is addressing.

Complex links between disease and ecosystem

The disease dynamic of Lassa fever is thought to interact with a range of local livelihood and ecosystem service processes, including: land-use patterns, climate, biodiversity, geography and lifestyle patterns. Consequently, the research needs to integrate social, participatory, ecological, epidemiological and environmental methods and modelling to explore the drivers of Lassa virus transmission.

The research is in the Kenema District of eastern Sierra Leone, which has the highest recorded incidence of Lassa fever in the world. Community level fieldwork is collaborative, with Kenema Government Hospital, the Ministry of Health and Sanitation, and other partners.

Making the research usable, and geting it into use

What is particularly special about the approach being taken in this research project are the multidisciplinary and participatory elements, both of which are key to the "One Health" concept which the project promotes. This integrates ecosystem integrity with animal and human health. The project involves unique partnerships between government and research institutions, including environmental, biological, social, political, and human and animal health researchers. The multidisciplinary approach looks not only looks at the medical aspects of transmission, but also the local people and their environment and culture - the local farming systems and how they are changing, daily work and behaviour patterns, what people eat, the types of house they live in, and use of local healers instead of hospitals.

Integrating all these issues in discussion with local people gives a full picture, nuances the basic data, and ensures that nothing is overlooked. This enables full understanding of the disease and how it spreads, and what could realistically work in practice to better control it.

The project researchers also have close contact and dialogue with government and other stakeholders involved in health, environment and development in Sierra Leone. This is intended to ensure that the research findings will contribute to more joined-up policy and practice in Lassa fever areas, as well as providing examples of how to implement the "One Health" agenda to benefit livelihoods.

Taking the ESPA research forward

The research team is already contributing to the nexus between policy and practice, thereby widening the impact of this crucial ESPA research. The research findings are being used in a UKAid funded "WASH" (water, sanitation, health) programme in Kenema District. The Kenema Government Hospital and Tulane University are working in 20 more villages, introducing Lassa fever education and rodent control training - using the information emerging from this ESPA project. This integration will ensure that the findings from the ESPA research are assimilated into the health service delivery in the District and beyond.

Project partners

- ESRC STEPS Centre, IDS, UK
- University of Cambridge, UK
- Institute of Zoology, UK
- University of Edinburgh, UK
- University College London, UK
- University of Southampton, UK
- Wildlife Division, Ghana Forestry Commission, Ghana
- University of Ghana
- Kenya Department of Veterinary Services
- International Livestock Research Institute, Kenya
- Kenya Medical Research Institute
- University of Nairobi, Kenya
- Kenema Government Hospital, Sierra Leone
- Njala University, Sierra Leone
- Zambia Ministry of Livestock and Fisheries Development
- University of Zambia
- Zimbabwe Ministry of Agriculture, Mechanisation and Irrigation Development
- University of Zimbabwe
- Stockholm Resilience Centre, Sweden
- Tulane University, USA

One Health - the movement

One Health recognises that the health of humans, animals and ecosystems are interconnected. It is a globally recognised approach established to promote the collaborative effort of multiple disciplines, working locally, nationally and globally, to attain optimal health for people, animals and the environment.

For further info see *www.onehealthglobal.net*

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