



Mpala Newsletter

February 2025 | Issue #27



Robert Ang'ila teaching BATUK wardens about rangeland health

Letter from the Executive Director

Dear Mpala Community,

February has been a month of inspiration and connection at Mpala! We kicked things off by celebrating the International Day of Women and Girls in Science on February 11th—a powerful reminder of the incredible contributions women make to research. At Mpala, we are passionate about fostering the next generation of female scientists, and witnessing their curiosity and determination fills us with optimism for the future.

We also had the privilege of hosting vibrant groups from BATUK, Wyss Academy, and Three Rivers Academy, whose enthusiasm for conservation was contagious! In addition, we welcomed faculty from Strathmore University and a distinguished delegation from Manchester University, including the Founders and Trustees of the Brooks Foundation and Ambassador Manohar Esipisu, former Kenyan High Commissioner to the UK. Mpala hosts a research project that studies wildlife and livestock population health in mixed grazing landscapes in northern Kenyan rangelands led by Dr. Susan Schultz of Manchester University. The study is set to uncover critical insights into how shifting surface water patterns and human-wildlife interactions affect gastrointestinal disease prevalence across East Africa, aiming to protect both people and ecosystems.

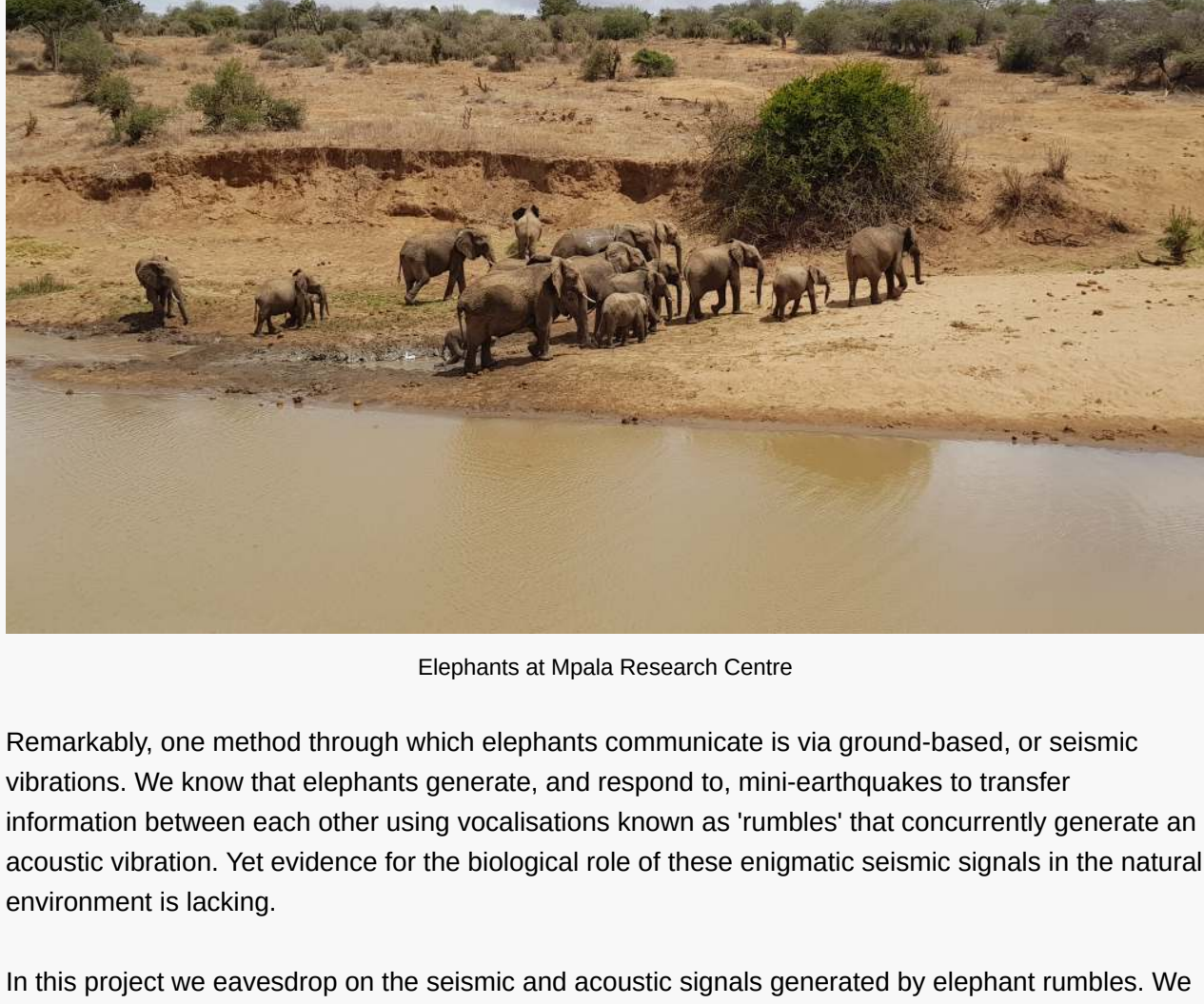
With so much energy and momentum, we can't wait to see what the coming months bring. Thank you for being part of this incredible journey—together, we are making a difference!

Warm regards,

Dr. Winnie Kiiru, Executive Director

Updates from the Field

Why do elephants use seismic communication?



Elephants at Mpala Research Centre

Remarkably, one method through which elephants communicate is via ground-based, or seismic vibrations. We know that elephants generate, and respond to, mini-earthquakes to transfer information between each other using vocalisations known as 'rumbles' that concurrently generate an acoustic vibration. Yet evidence for the biological role of these enigmatic seismic signals in the natural environment is lacking.

In this project we eavesdrop on the seismic and acoustic signals generated by elephant rumbles. We do this by placing seismic and acoustic sensors out Mpala Research Centre (MRC). This allows us to understand how information content of vibrational signals changes during propagation, specifically the different influences of environmental factors such as geology, noise, wind direction. We will also test how elephants respond to seismic vibrations, via playback experiments that allow us to manipulate the information content. By manipulating the position and noise content of acoustic and seismic vibrations, we can test for the relative importance of information and noise of these two vibration types at close range.

Our goal is to understand why elephants use seismic vibrations for communication. In addition to its functional importance, understanding what elephants use seismic signals for will inform decisions about endangered elephant conservation and management, including the challenges imposed on elephants by anthropogenic noise. Through this study, we will also develop novel methods to monitor elephants remotely, which can aid elephant conservation in the future.

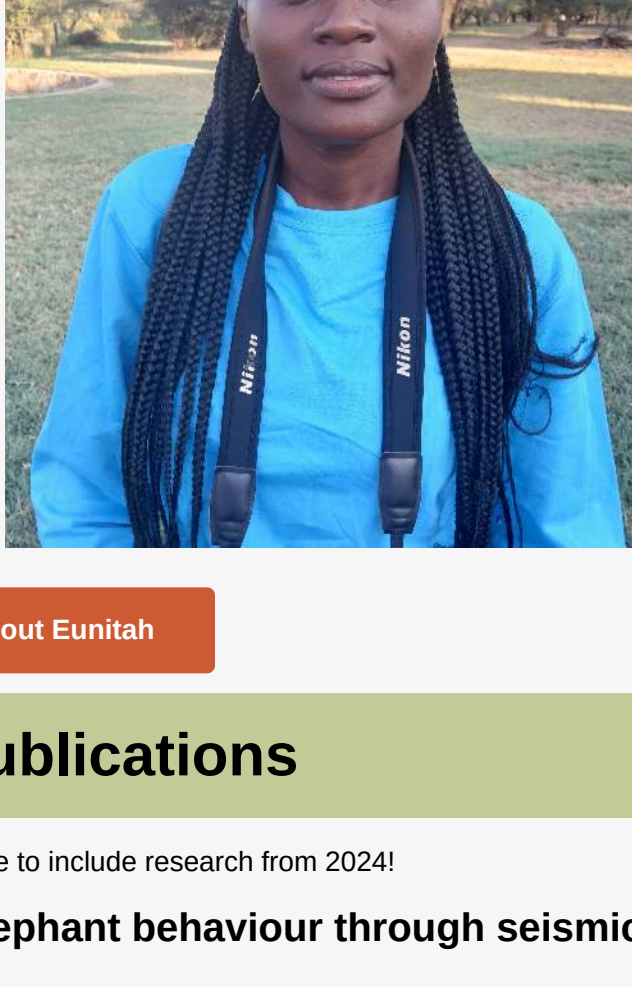
We have a strong team involved in data collection in 2025 at MRC. From the University of Oxford (UK): Dr Beth Mortimer (PI), Prof. Andrew Markham (Co-I), Dr Alice Morrell, Tom Mulder, Lara Boudinot, Ash Silva and Amy Lovewell. Prof. Tarje Nissen-Meyer (Co-I) is based at University of Exeter (UK) and Dr Rene Steinmann is based at GFZ, Germany. We work closely with Gabriel Meitiaki (MRC ranger). We also have two interns on the project: Eunitah Makokha (MRC) and Esther Ngondi (Save the Elephants). We thank all the rangers, staff and colleagues at MRC for their support of the project!

[Learn more about this project](#)

Faces of Mpala

Featured Researcher: Eunitah Makokha

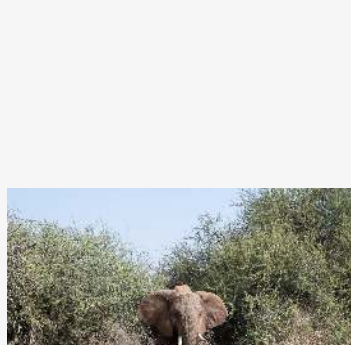
Eunitah Makokha is from Lugari Constituency, Kakamega County. She first joined Mpala Research Centre as an intern on the Vulturine Guinea Fowl Project and is now working on the Oxford Seismic Savanna Project led by Beth Mortimer. With a background in Wildlife Conservation & Management from the University of Eldoret, she is excited to build skills at Mpala and contribute meaningfully to ecological research, conservation technology, and habitat management.



[Read more about Eunitah](#)

Featured Publications

We have updated the list of [publications](#) on our website to include research from 2024!

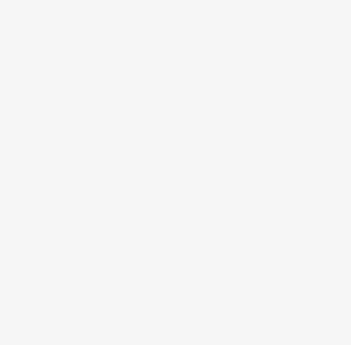


Classifying elephant behaviour through seismic vibrations

Beth Mortimer, William Lake Rees, Paula Koelemeijer, Tarje Nissen-Meyer

Seismic waves - vibrations within and along the Earth's surface - are ubiquitous sources of information. This study explores how terrain type and background seismic noise influence the propagation of seismic vibration generated by African elephants. Employing techniques from seismology to transform the geophone recordings into source functions, the team concluded that seismic cues have considerable potential for both behavioural classification and remote monitoring of wildlife.

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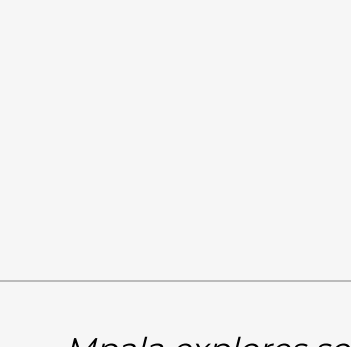


Noise Matters: elephants show risk-avoidance behaviour in response to human-generated seismic cues

Beth Mortimer, James A. Walker, David S. Lolchuragi, Michael Reinwald, David Daballen

African elephants (*Loxodonta africana*) use many sensory modes to gather information about their environment, including the detection of seismic, or ground-based, vibrations. To investigate seismic information transfer in elephants beyond communication, this study tested the hypothesis that wild elephants detect and discriminate between seismic vibrations that differ in their noise types, whether elephant- or human-generated. They concluded that seismic noise are cues that contain biologically relevant information for elephants that they can associate with risk, expanding our understanding of how elephants use seismic information, with implications for elephant sensory ecology and conservation management.

[Continue reading](#)



Seismic localization of elephant rumbles as a monitoring approach

Michael Reinwald, Ben Moseley, Alexandre Szenicer, Tarje Nissen-Meyer, Sandy Oduor, Fritz Vollrath, Andrew Markham, Beth Mortimer

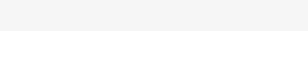
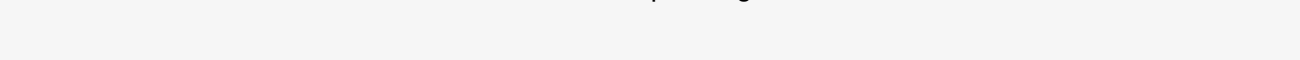
African elephants (*Loxodonta africana*) are sentient and intelligent animals that use a variety of vocalizations to greet, warn or communicate with each other. However, it is not well understood how each mode contributes to the animals' abilities to detect these rumbles and extract behavioural or spatial information. This study used seismic and co-generated acoustic rumbles in Kenya and compared their potential use to localize the vocalizing animal using the same multi-lateralization algorithms. The team concluded that seismic rumbles can be used to remotely monitor and even decipher elephant social interactions, presenting a tool for far-reaching, non-intrusive and surprisingly informative wildlife monitoring.

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Mpala explores solutions to current and emerging challenges by advancing transformational ecosystems research and teaching, conserving our environment, and partnering with our community

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