



Mpala Newsletter

October 2025 | Issue #35



Students from Tropical Biology Association Course at River Camp, Mpala Research Centre

Letter from the Mpala Team

Dear Mpala Community,

October was an exceptional month for research and teaching at the Mpala Research Centre, marked by new field courses, collaborations, and continued community engagement.

We begin this month by celebrating Mpala alumna Dr. Toby Kiers, who has been named a 2025 MacArthur Fellow. Dr. Kiers' pioneering research on the symbiotic relationships among plants, fungi, and microbes has transformed our understanding of cooperation and resource exchange in living systems. Her work exemplifies the kind of curiosity-driven, interdisciplinary science that Mpala strives to foster through its research and teaching mission.

Mpala also hosted Africa's first Wilderness Biomimicry Challenge, created by Dr. Paula Kahumbu, CEO of WildlifeDirect. Seventeen students aged 11 to 15 explored how natural systems can inspire human innovation—demonstrating the power of field-based education in cultivating future conservation leaders.

We welcomed faculty and administrators from Princeton University and the United States International University Africa. Their engagements at Mpala this month further deepened partnerships across disciplines.

Our Community Outreach team completed the installation of a 50,000-litre water tank for the Tiamamut community, built by Mpala's infrastructure team. The project enhances access to clean water and highlights Mpala's continued commitment to linking research, education, and community wellbeing.

Finally, we are pleased to share that beginning this month, a communications consultant is working with Mpala to help refine and strengthen our communications strategy, ensuring that our work and mission are conveyed with greater clarity and reach.

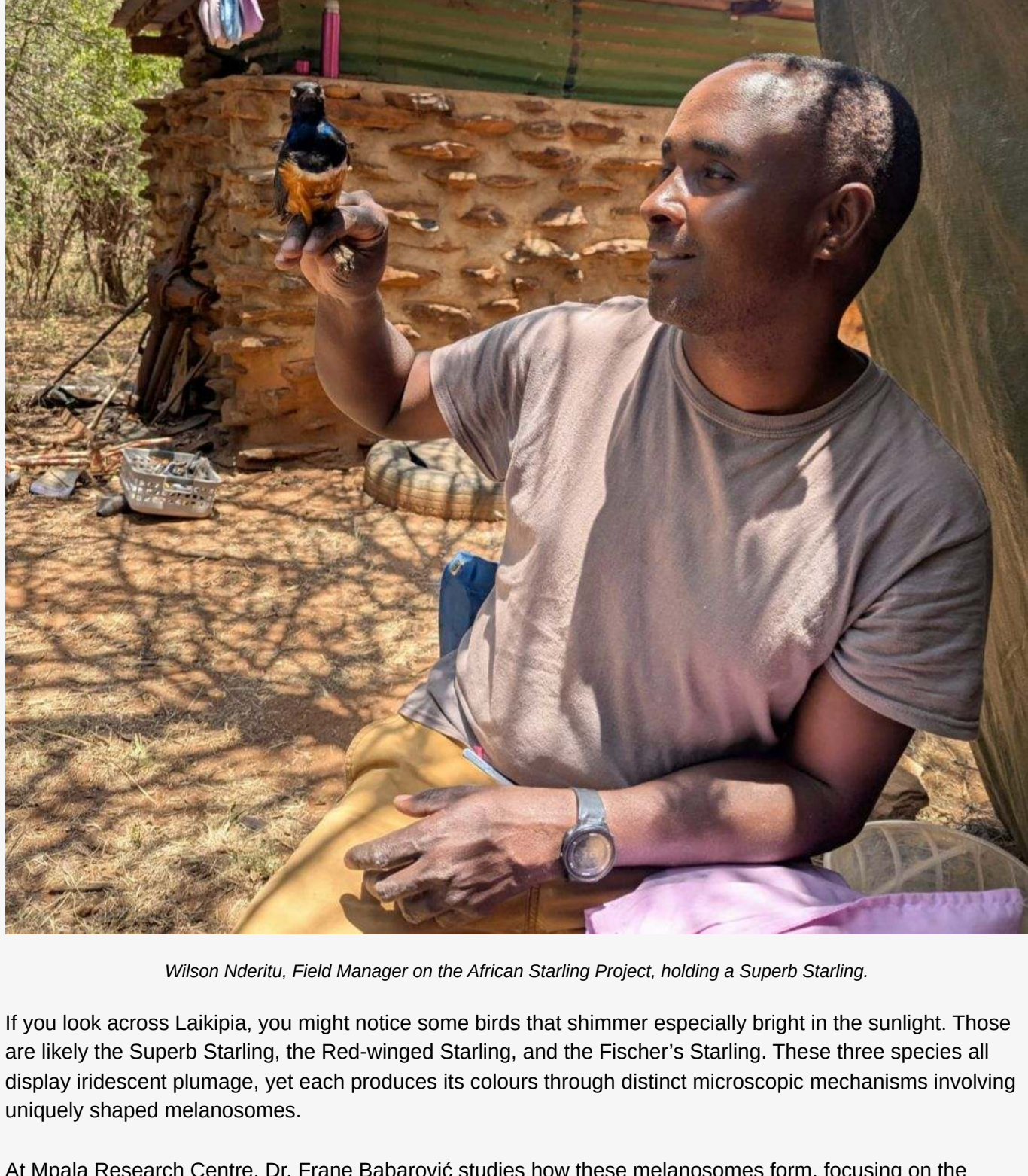
As we reflect on October's accomplishments, we are reminded that Mpala's success depends on collaboration among scientists, educators, and communities. We are grateful to everyone who contributes to our shared mission and continues to make Mpala a place where ideas grow, connections deepen, and impact endures.

Warm regards,

The Mpala Team

Featured Research

Molecular and Developmental bases of Iridescent Feathers



Wilson Nderitu, Field Manager on the African Starling Project, holding a Superb Starling.

If you look across Laikipia, you might notice some birds that shimmer especially bright in the sunlight. Those are likely the Superb Starling, the Red-winged Starling, and the Fischer's Starling. These three species all display iridescent plumage, yet each produces its colours through distinct microscopic mechanisms involving uniquely shaped melanosomes.

At Mpala Research Centre, Dr. Frane Babarović studies how these melanosomes form, focusing on the developmental processes that determine their flatness and hollowness. As part of his research, Dr. Babarović captures birds in the wild and temporarily houses them in aviaries at Mpala to collect newly grown feathers for sampling. Each feather is divided into two parts: one to study gene expression, and another to visualize cellular structures during development.

This project is conducted in collaboration with Professor Dustin Rubenstein's team, drawing on the deep field expertise of Wilson Nderitu, who has studied Superb Starlings for over two decades. Kelvin, the research assistant on this project, supports the work by caring for the birds and maintaining the aviaries to ensure they remain calm and undisturbed by neighbouring wildlife. Additionally, Rita Semeten has supported the project through sample organisation and preparation. Dr. Frane Babarovic, leads this project as part of a Marie Curie Postdoctoral Fellowship, with affiliations at Ghent University in Belgium and Columbia University in the US.

[Read more about this Project](#)

Faces of Mpala

Featured Researcher: Chrispin Odhiambo

Originally from the Abasuba community, an island community in Kenya, Chrispin Odhiambo has always been fascinated by how natural ecosystems function and more broadly, how plants adapt to environmental variability. Chrispin pursued a Bachelor's degree in Environmental Science and an MSc in Conservation Biology at Jomo Kenyatta University of Agriculture and Technology. His MSc studies are supported by the Mpala Graduate Student Scholarship.



[Read more about Chrispin](#)

Featured Publications



Potential spillover investigated by metagenome sequencing in Laikipia, Kenya reveals tick-borne pathogens and a novel bunyavirus.

Maureen Kamau, Koray Ergunay, Brian, P. Bourke, Janerose Mutura, Rashid Lebunge, Griphin Ochieng, Kimita Gathii, John Waitumbi, Beth Mutai, James Hassell, Michael E. von Fricken, Dawn Zimmerman, Suzan Murray, Le Jiang, Hsiao-Mei Liao, John P. Grieco, Emily G. McDermott, Nicole L. Achee, Yvonne-Marie Linton

Tick-borne infections pose a persistent One Health challenge. Using nanopore metagenomic sequencing in central Kenya, we screened ticks from habitats where humans, livestock, and wildlife interact. Bacterial taxa, including spotted fever *Rickettsia*, *Coxiella*-like endosymbionts, *Francisella*, and *Borrelia*, were widespread, alongside high viral diversity. Jingmen tick virus (JMTV) dominated, confirmed by PCR and full-genome assembly from *Amblyomma sparsum* within an East African-Asian lineage. Broader screening also revealed a divergent bunyaviricete-like virus, which we designate the Mpala virus. These findings highlight nanopore sequencing as a powerful tool for uncovering tick-associated microbes and novel pathogens across ecological interfaces.

[Continue reading](#)

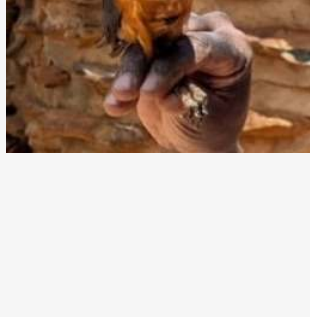


Feather Gene Expression Elucidates the Developmental Basis of Plumage Iridescence in African Starlings.

Dustin R Rubenstein, André Corvelo, Matthew D MacManes, Rafael Maia, Giuseppe Narzisi, Anastasia Rousaki, Peter Vandenabeele, Matthew D Shawkey, Joseph Solomon

Iridescent coloration is widespread in nature but its developmental and molecular bases remain poorly understood. In superb starlings (*Lamprolornis superbus*), we combined morphology, chemistry, and functional genomics to compare iridescent blue and non-iridescent red feathers. Iridescent feathers contained hollow eumelanin-based melanosomes, while red feathers had solid, pheomelanin-rich organelles, though both showed similar nanoscale arrangements. A new genome assembly and transcriptomic analyses revealed that non-iridescent feather development is linked to genes for pigmentation and metabolism, whereas iridescent feather formation involves genes for structural and cellular organization. These findings suggest that iridescent plumage arises through a combination of passive nanostructural self-assembly and active cellular processes.

[Continue reading](#)



Superb starlings: cooperation and conflict in an unpredictable environment

Dustin R. Rubenstein

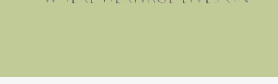
Starlings are an Old World bird family centered in the Indo-Malayan and Afrotropical regions, though several Eurasian species—such as the European starling (*Sturnus vulgaris*) and common myna (*Acridotheres tristis*)—have become globally invasive. The African clade, comprising about 45 species, exhibits exceptional social diversity, with nearly 40% practicing cooperative breeding. These range from simple systems with a single breeding pair and helpers to complex societies with multiple breeding pairs and cooperative care across nests. In East Africa, the superb starling (*Lamprolornis superbus*) is among the most familiar savanna birds. Noted for its striking iridescent plumage and elaborate social organization, it provides a key model for studying cooperation and conflict in unpredictable environments.

[Continue reading](#)

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

[Donate Now](#)

Our Partners



Mpala Research Centre
P.O. Box 55 - 10400
Nanyuki, Kenya
+254 721202324
info@mpala.org