



Mpala Newsletter

June 2025 | Issue #31



Dennis Keller cutting cake with Caroline Mwende and Shakira Mwendwa (Daraja Academy interns)

Letter from the Mpala Team

Dear Mpala Community,

What a lively month June has been! With our busy season in full swing, Mpala has been flourishing in every sense of the word.

We were delighted to host our Board of Trustees, who engaged in critical conversations to shape Mpala's strategic direction. Their visit culminated in an all-staff ceremony to celebrate and bid farewell to Dennis Keller, who has generously served Mpala for over 30 years. In tribute to his profound legacy, we planted three native trees symbolising growth, continuity, and deep-rooted impact on this community and the community at large.

Our Community Outreach team has been deepening Mpala's connection with neighbouring communities. On World Environment Day (June 5th), we hosted 26 Grade 9 students from Il Motiok Secondary School. From collecting tick samples to touring the solar farms, the students participated in hands-on learning experiences that nurtured their role as future environmental stewards.

The Centre has been teeming with life, as we welcomed students and researchers from global institutions, including Princeton University, Egerton University, the University of Notre Dame, Cornell University, San Diego Zoo Wildlife Alliance, and Aga Khan University. Their projects ranging from livestock disease monitoring to contraceptive health, reflect the remarkable breadth of Mpala's research platform.

Collaboration continues to power Mpala's mission. June reminded us of the strength and promise that comes from working together across discipline, borders, and communities.

Warm regards,

The Mpala Team

[Dennis Keller appreciation video](#)

Featured Research

Big-headed Ant Eradication Research Project



Dr. Pat Milligan showing NEMA representative a big-headed ant nest. *Photo courtesy of Pat Milligan.*

In the last twenty years, big-headed ants (*Pheidole megacephala*) have progressively altered the ecology of black cotton savannas in Laikipia. In black cotton savannas, big-headed ants prey on native ant defenders including *Crematogaster acacia*-ants but do not provide any defense against herbivores, leaving acacia trees vulnerable to heavy browsing by the large iconic herbivores found throughout black cotton savannas in Laikipia.

This research focuses on the ant-acacia *A. drepanolobium* because this tree dominates the overstory in black cotton savannas and serves various important ecosystem function roles that are unlikely to be replaced if its presence on the landscape is diminished through invasion. Invaded acacias suffer from heavy herbivory after invasion, reducing their photosynthesis by more than half. Without their biotic defense, these acacias pivot to a regrowth strategy that is insufficient for survival when herbivores are present. In just 10-20 years after big-headed ant invasion, entire groves of hundreds of acacia trees can be flattened into a grassland that no longer supports the browsing needs of black rhinoceros.

This raises important questions: is this invasion causing irreversible changes? What strategies might manage or reverse the invasion? Our team has been investing in new tools and strategies to address these questions. We have built photographic monitoring systems in the roots of acacia study subjects at OPC that allow us to measure the decline in acacia roots as time since invasion increases, which may help predict acacia "starvation". We are monitoring various acacia communities where big-headed ants died out in late 2023-early 2024 and native ants subsequently recolonized the surviving acacia trees. These die-offs appear to be driven by heavy rainfall, and we are now studying if an insecticide bait that specifically targets big-headed ants could be deployed following rains to effectively remove them from black cotton savannas and limit their future spread.

[Read more about this Project](#)

Faces of Mpala

Featured Staff: Leshan Lepiyiet

Born and raised in Il Motiok, Leshan brings a personal relationship to sustaining engagement with neighbouring communities as Mpala's Community Outreach Assistant. As an alumni of the George Small Fund Scholarship, he is dedicated to providing administrative support and guidance in Mpala's community development programs.

[Read more about Leshan](#)



Featured Researcher: Godfrey Gitimu

Gitimu first joined Mpala assisting Dr. Dino Martins on an acacias project. Now, as a Research Assistant on the Insect-Plant Interaction Lab's Buffelgrass Project, he works hard to assist his team while building skills and training students.

[Read more about Godfrey](#)



Featured Publications

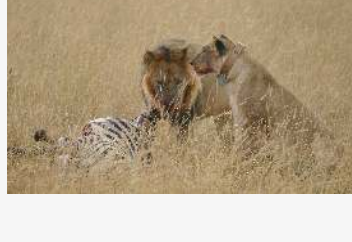


Carbon allocation in an East African ant-acacia: field testing a ¹³C-labeling method for evaluating biotic impacts on the carbon cycle

Gabriella M. Mizell, Thomas Kim, Benjamin W. Sullivan, John S. Lemboi, John Mosiany, Todd M. Palmer, Elizabeth G. Pringle

In central Kenya, the loss of vertebrate herbivores and the savanna's invasion by the ant *Pheidole megacephala* are disrupting mutualisms between the foundational tree *Acacia* (*Vachellia*) *drepanolobium* and its native ant defenders. This study piloted a ¹³Carbon (C) pulse-labeling method to investigate the influence of these biotic interactions on C allocation to ant partners by adult trees in situ. Results demonstrate the viability of the pulse-labeling method and suggest that C allocation to ant partners depends on the biotic context of the tree, but further investigation with replication is needed to characterize such differences in relation to invasion and herbivore loss.

[Continue reading](#)



Disruption of an ant-plant mutualism shapes interactions between lions and their primary prey

Douglas N Kamaru, Todd M Palmer, Corinna Riginos, Adam T Ford, Jayne Belnap, Robert M Chira, John M Githaiga, Benard C Gituku, Brandon R Hays, Cyrus M Kavwele, Alfred K Kibungei, Clayton T Lamb, Nelly J Maiyo, Patrick D Milligan, Samuel Mutisya, Caroline C Ng'weno, Michael Ogutu, Alejandro G Pietrek, Brendon T Wildt, Jacob R Goheen

This study reveals that the invasive big-headed ant (*Pheidole megacephala*) makes lions (*Panthera leo*) less effective at killing their primary prey, plains zebra (*Equus quagga*). Big-headed ants disrupted the mutualism between native acacia (*Vachellia*) spp.) and the dominant whistling-thorn tree (*Vachellia drepanolobium*), rendering trees vulnerable to elephant (*Loxodonta africana*) browsing and resulting in landscapes with higher visibility. Although zebra kills were significantly less likely to occur in higher-visibility, invaded areas, lion numbers did not decline since the onset of the invasion, likely because of prey-switching to African buffalo (*Syncerus caffer*).

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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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Our Partners



Mpala Research Centre
P.O. Box 555 - 10400

Nanyuki, Kenya
+254 721202324
info@mpala.org