



MPALA MEMOS

NEWS FROM MPALA

SEPTEMBER 2017



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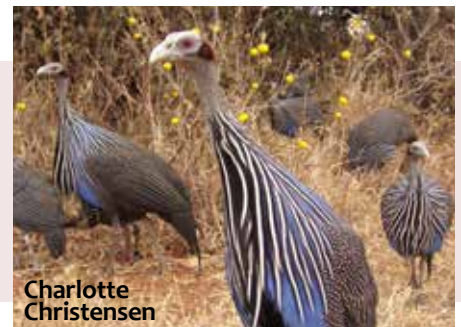
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The Secret Lives of Guineafowl

Charlotte Christensen shares early findings from the Vulturine Guineafowl Project: a study of collective movement and social behaviour in a relatively unstudied species. **Page 3**



Charlotte Christensen



Rhiannon Jakopak

In Conversation with Alois Wambua

Meet Mpala's resident *fundi*, or expert, on small mammals. We catch up with Alois to learn about his research and role at Mpala. **Page 6**

Parasites in Paradise

Watering holes bring wildlife, livestock and humans together. Using a suite of non-invasive field techniques, researchers are mapping disease transmission at these interaction hotspots. **Page 8**



Georgia Titcomb



Madeleine Sumner

Healthcare with Wheels

Princeton undergraduate Madeleine Sumner reflects on her trip to Tharaka Nithi County with the Communities Health Africa Trust (CHAT) Mobile Clinic. **Page 10**

Mpala at a Glance

Learn about four new fellowship winners, an invasive species forum, Community Conservation Day, and other happenings at the Centre. **Page 13**



Victor Kasii

From the Director's Desk



Dear Mpala Friends and Family,

Many greetings, and I'm very pleased to share with you here a glimpse of the wonderful things happening at Mpala. Firstly, as many of you know, we've had a challenging year in Laikipia, and this included the extended drought and issues related to security, politics and conflict over natural resources.

Despite these challenges, we've had a busy year, with students and scientists working on a wide range of projects from ants to elephants. The team at Mpala have rallied incredibly well over the past year, and it is thanks to their hard work and outstanding dedication that we can continue making scientific discoveries and working with our many partners. Please join me in thanking them for their efforts in keeping us all safe, fed and happy: Asante Sana!

I am very pleased to report that following the elections, there is new, energised leadership in place for Laikipia County and they are deeply committed to working with everyone towards a more sustainable and inclusive future for the region. Mpala remains central to the discussion and developments in Kenya's rangelands, and we are working closely with the Laikipia Wildlife Forum and other partners to provide input into the County Integrated Development Plan (CIDP), around issues of water, wildlife conservation and livestock production. This is being ably led by John Gitonga of the Caylor EcoHydrology Lab and Naomi Chege, our intern with a background in Information Science. Naomi will be reaching out to some of you for relevant publications and data that would be useful to this process. Working with the CIDP connects the science done at Mpala with planning a better future for Laikipia and Northern Kenya more broadly.

One area of growth that we have seen at Mpala is the number of fellowships available for students and scientists. Joint fellowships with the Smithsonian have grown to include a post-doc with the Smithsonian Conservation Biology Institute, two new veterinary fellows with the National Zoo and two incoming fellows for the Smithsonian-Mpala Postdoctoral Fellowship. Please join me in congratulating those who have been awarded these fellowships (see page 14) and watch this space – there are more exciting opportunities on the horizon.

As we draw towards the end of the summer, Mpala has been blessed with some rains, the bush is green and flowering, and we have some busy months ahead, including training workshops on livestock and wildlife health, construction of new lab spaces, hosting the Laikipia-Samburu large animal aerial survey and numbers of students and scientists at work. We look forward to welcoming all of you to Mpala.

Karibuni!



Dr. Martins shows Daraja Academy students a whistling-thorn acacia and the ants they host.

Dino J. Martins
Executive Director, Ph. D

A New Project on the Block: Our first year with the Vulturine Guineafowl



Charlotte Christensen



Danai Papageorgiou walks with Mpala's human-habituated group of Vulturine Guineafowl.

“Your birds were here this morning!”

This is a sentence I am regularly greeted with while making my morning coffee. The birds in question are Vulturine Guineafowl: strikingly feathered, peculiarly bald, predominantly terrestrial, group-living birds that are found in the more arid regions of Kenya, including the savanna landscape of Laikipia. One group roams within the Mpala Research Centre fence, frequently strutting by the outdoor dining area where researchers enjoy their meals. Of course, these birds are not actually mine, but their habituation level has allowed Danai Papageorgiou and myself (respectively, a Ph. D student and Field Technician at the Max Planck Institute for Ornithology, or MPIO) to follow them on foot and get close-up insights into their social interactions, vocal repertoire and dominance structure.

Dr. Damien Farine (Principal Investigator at the MPIO) set up the Vulturine Guineafowl project in early 2016, with the aim of studying collective movement and decision-making in this gregarious model species. Since then, the project has colour-banded almost 200 birds and deployed 11 GPS-tags across several groups residing in the southern end of Mpala Conservancy. With the help of our stellar project manager, Sylvester Karimi, and research assistant, John Ewoi, we have been able to monitor the birds' movement patterns, group compositions, and interactions over

the last year. Given the paucity of information on Vulturine Guinea fowl in the scientific literature, we have our work cut out for us.

A year on, I am happy to share some of the initial insights we have gained. Vulturine Guinea fowl live in relatively stable social groups of 20-60 individuals, but come together with other groups to roost and will occasionally form large aggregations of up to 300 birds. From the GPS data, we get a sense of where the home-ranges of different groups are and how much they overlap. These data allow us to see where, when and for how long different social groups are in touch. Although occasional squabbles take place, group aggregations are

Charlotte Christensen



Sylvester Karimi holds a Vulturine Guinea fowl marked with a GPS tag. The lightweight, solar-powered instruments allow the team to track the birds' movement patterns.



Andy Johnson
@andyjohnsonphoto

Damien Farine (right) and Japhet Breiholz (left) capture a group of guinea fowl in a walk-in trap. After a few weeks of baiting and letting the birds get used to the trap, a drop-down door is released. The birds are moved from the walk-in trap to holding cages during processing, then returned to the wild.



Danai Papageorgiou (left) and Sylvester Karimi (right) fit GPS tags on a captured guineafowl.

a peaceful affair. Whether these aggregations provide protection from predators, information exchange hubs, dispersal opportunities or a combination of the above will be revealed as our field observations continue. A striking pattern revealed by the GPS data is the tendency for home-ranges to shrink during rainy periods and expand during drought. Given the annual cycle of short and long rains here, we will be able to monitor how the Vulturine Guineafowl adjust their movements and habitat use to these fluctuating weather conditions and how these, in turn, drive contact with other groups.

We're also studying dynamics within social groups. In our first few weeks with the habituated group, their bizarre interactions left us wondering. We have watched them grab the tail feathers of an unsuspecting target and lasso them around, do head-bow displays to present food items to others, and display synchronous mouth-breathing facing one another on a hot afternoon. By recording who interacts with whom and noting the type of interaction, we hope to get a better understanding of the social functions these behaviours play. For example, the impressive tail-lassoing is a dominance display, triggered when the subordinate individual feeds too closely to the aggressor. The head-bow display, on the other hand, might be targeted towards specific individuals within the group – the displaying bird does not always grant the food item to just any bird that comes running! We have also described at least six different call types, each eliciting a different social response. For example, an inspection trill is given to alert others a novel object, which can be anything from a curious hyrax to a tasty piece of fruit. The quest to unravel Vulturine Guineafowl rules of conduct continues.

As the project moves forward, we will try to answer broad ecological questions regarding their spatial patterns as well as social questions, such as how individuals within a group coordinate their movements. We know you are wondering as much as we are: what goes on in those bald little heads? •



Sylvester Karimi and John Ewoi release two GPS-tagged birds.

Conservation Conversation: Alois Wambua



Anchal Padukone

Meet Alois Wambua – Mpala’s small mammal *fundi* (expert), and a formidable presence in the field and on the football field alike. We catch up with Alois to learn more about what drew him to the projects he works on and his role at Mpala.

Anchal: Could you describe your role at Mpala and talk a bit about your project?

Alois: I have been the Small Mammal Technician with UHURU [the Ungulate Herbivory Under Rainfall Uncertainty project], coordinating small mammal trapping, sample processing, data management, and everything else small-mammal-related, since May 2014. My own project started in May 2016, and I completed the fieldwork last March. My work is on the effects of perceived predation risk on the foraging behaviour of small mammals: why do small mammals choose to feed in certain areas and not others?

In my project, I’m using a concept called “giving up densities,” which involves setting up artificial feeding patches in the UHURU plots. I set up trays with a mixture of sand and millet seeds, with seeds weighed up to 10 grams. Now, that’s where the concept of giving up densities comes in. Since I set up 10g in each tray – then if, say, the animal feeds up to 5g, the giving up density is 5g. It’s the point to which the animal exploited its effort of feeding and felt safe. At that point, 5g, the animal disappeared. Then I’ve used camera traps to see which species are coming in the trays.

Anchal: So you put out a tray and, on a camera trap, you see five different small mammals visit it. How do you analyze that data?

Alois: I record which species came, how frequently, and how much time they spend in the trays. I can also see the time the animal entered and the time the animal left, which allows me to calculate the frequency of visits and the time spent in the trays.

Anchal: The camera traps are triggered by the small mammals?



Victor Kasii



Top: Alois holds a rufous elephant shrew (*Elephantulus rufescens*). **Bottom:** a rufous elephant shrew illustrated by Dr. Dino Martins.

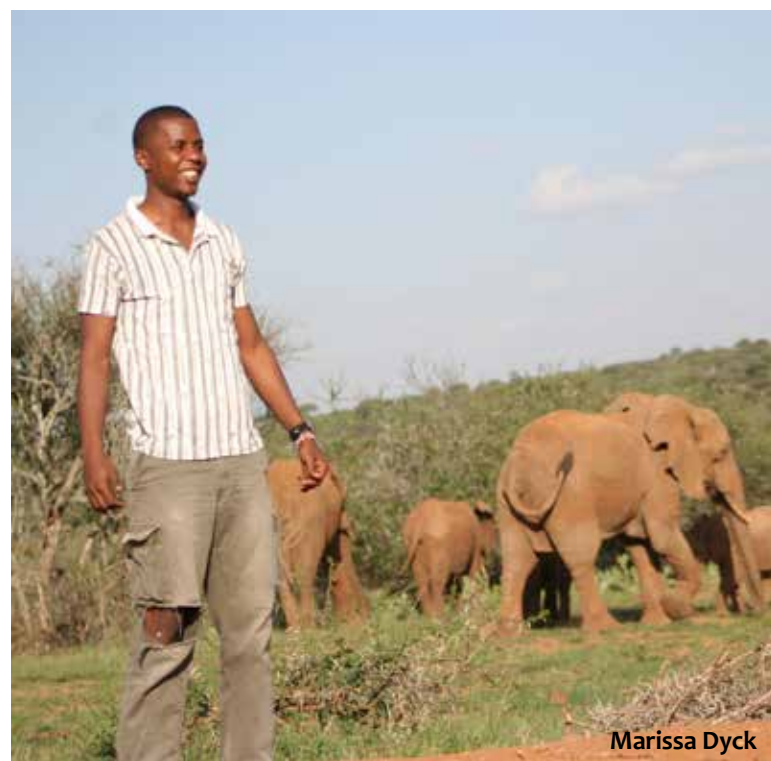
Alois: Yes. They are sensitive, and we put them low to the ground, 2 to 3m beyond the tray, so every time a small mammal moves by it will definitely take a picture. I have lots of pictures of hyenas, mongoose, genets, dik-diks – everything that passes by and triggers any movement gets recorded on the camera.

Anchal: Are you also going to look at possible predator data?

Alois: Since July last year, we started setting up Tomahawks [camera traps] for small carnivores and documented any species that we caught in these plots. I definitely know that there are carnivores and could support the perceived risk of predation.

Anchal: With regards to your question, what have you found out so far from your data?

Alois: I haven't done detailed analyses of the data, but from my observations, I can see differences between some of these species. We captured four main species of small mammals in the UHURU plots: bush rats, gerbils, elephant shrews, and pouched mice. These four, I think, were my main case studies. I can clearly tell that the gerbils and bush rats mostly prefer to feed in open areas; I catch the gerbils in the open areas more than any other species. For the elephant shrew, it's a matter of chance - they do show up in some of the open areas, but not very frequently. And there are very few pouched mice in the open areas.



Anchal: What made you want to study small mammals?

Alois: Before I came to Mpala, I was an intern at the National Museums of Kenya (NMK). There, it was easy to interact with lots of stuffed animals in the Mammalogy section. I can't say that I had a particular interest in small mammals at first, but when I had the opportunity to come to Mpala and started working on this project, I developed an interest in it. Since then, I've worked on small mammals not only at Mpala but also on small mammal sampling surveys and large mammal surveys in the Mount Kenya game ranch. I've also worked on a project in Isiolo County, doing an environmental impact survey for a wind power manufacturing company with a team from NMK. Before you set up such a plant, you need to do an Environmental Impact Assessment

(EIA) that checks across all categories of biodiversity. We did some sampling to determine what species are going to be affected by the plant. I've also done small mammal sampling in Nyeri County, Mukurenji, and Runyenjes. I love working with small mammals - I can work on any kind of mammals, but small mammals for me are on the top of the list. •

Wildlife at Watering Holes



Shared resource, shared disease



Jenna Hulke

Georgia Titcomb measures the pH of a watering hole in central Mpala.

Georgia Titcomb

When I chat with friends and family about what I do, our conversation usually starts like this:

“Tell me, Georgia, what exactly are you doing in Kenya? It must be fascinating!”

Before I answer, I sometimes play a little movie scene in my head of our crew doing fieldwork. John Mantas is staring at a large heap of fresh elephant dung within a plastic PVC quadrat held together with duct tape. I’m squatting, dripping sweat, and smelling of high-zinc sunscreen, looking intently at a piece of canvas for miniscule ticks. Jenna Hulke is carefully taking soil samples and putting them into tiny baggies, and then joining me in the tick search. Godfrey Amooni is meticulously measuring grass. All of us glance up anxiously, looking for sneaky elephants. The picture is pretty absurd.

Instead, I paint a different picture.

“Well, yes! Our project looks at how resource hotspots, specifically watering holes, can cause animals to aggregate and promote disease transmission. We expect that this might vary over climates and seasons, and we may even find interesting differences among wildlife species and diseases.”

No mention of anything gross.

“Cool! How do you even measure that?”

I realize it’s time to divulge a few of the gory details.

“Well, let’s just say it involves a lot of poop.”



Michelle Long

Field assistant John Mantas identifies herbivore dung as part of the surveys. Pictured here, eland dung.



Georgia Titcomb

And worm eggs. And ticks.”

“Ugh. Really?!”

This conversation underscores many of my field experiences in Kenya – they’re a mixture of fascinating adventures and hours of hard work and “disgusting” activities. Our fieldwork is far from glamorous: the tedium of precise, repetitive measurements under the hot Kenyan sun can be frustrating (and even painful, when *Acacia mellifera* thorns maliciously snag you). It also brings humility: when I first started three years ago, I realized that my navigational skills were non-existent, that I knew calculus but couldn’t consistently count to ten, and that I move like a ridiculous inflatable noodle man after failing to spot the golden glint of an orb-weaver’s web before becoming ensnared. If it weren’t for our field assistant, John Mantas, I think I’d still be searching for our plots and trying to lay a straight transect line!

But with these data, we can begin to answer some important questions about our natural ecosystems. Measuring parasites in the environment has been likened to searching for a needle in a haystack. Parasites are everywhere, but their spatial distribution is uneven, which means that we have to sample intensively across the environment. Thanks to work by our project manager,



Georgia Titcomb and Doug Branch

Top: Jenna Hulke collects ticks from a canvas. Bottom: A remote camera trap snaps a shot of impalas and giraffes gathered around one of the 17 watering holes the team studies at Mpala.

Jenna Hulke, we have isolated a range of parasites from soil and water to measure the extent to which water sources can be hotspots of disease risk. Perhaps most importantly, these data provide valuable insights into wildlife health while being entirely non-invasive.

After two years of work, we’re beginning to understand the role of water in aggregating animals and influencing disease transmission, although new and interesting questions constantly arise. How does predation affect water use and parasite exposure among herbivores? How do water and climate affect a network of parasite sharing? Are watering holes hotspots of disease transmission for livestock or humans? Technological advances have enabled us to explore these new questions, and to be creative in our non-invasive studies. Remote camera traps, long-term environmental-monitoring devices, and even genetic sequencing are now accessible tools that can help us to better understand the ecology of hosts and their parasites in Kenya’s iconic oases. And while the fieldwork is still anything but glamorous, it’s incredibly invigorating and rewarding: stopping to admire a herd of elephants playing in the water is every bit as awesome as anyone can imagine. •

Notes from the Field: Where Healthcare has Wheels



Madeleine Sumner

Kenya has the highest unskilled abortion rate in the world. Over 60% of Tharaka-Nithi County residents live on under \$1 US per day. The average family size in Kenya is 5 children, and 1 in 5 children will not make it to their 5th birthday. These are all facts that I had researched before coming to Kenya as part of Princeton's Global Health Program, but it wasn't until I went out with the Communities Health Africa Trust (CHAT) mobile clinic for a 12-day trek that I began to understand public health in Kenya beyond the numbers.

On the first day of the trip, the soon-to-be-familiar yellow mobile clinic truck arrived outside my door at Mpala Research Centre early in the morning. We set off on the long drive to Tharaka Nithi County with our small team: me (the sole *mzungu*, or white person); Sarah, the nurse practitioner; Stefano, our driver; and Paula, a new post-grad employee with CHAT.

We ran the clinic for 11 days straight, falling into a routine. Each morning, I would wake up to light streaming into my tent, the loud babble of Swahili, and the delicious smell of hot tea on the stove. After packing up camp, we would drive to our clinic location and set up, running the clinic from around 10 a.m. to 6-7 p.m. non-stop, depending on the number of patients that day.

My job was running the check-in table, taking blood pressures and temperatures, and gathering case stories and photos of the patients treated. For hours, I sat with the members of the community and talked to them while they waited. The women sat together chatting and idly weaving baskets and rugs, infants strung over their backs and toddlers running around, watched by anyone and everyone. It



Madeleine Sumner



Paula Murira

Top: the CHAT truck heads to a clinic site near Makomango Village. Bottom: Madeleine takes the vitals of a young girl in Marimanti Market.

Paula Murira



Eye problems caused by Vitamin A deficiency are common in Tharaka-Nithi communities. Above, Madeleine helps distribute Vitamin A and de-worming tablets at a local school.

seemed that the whole village would gather outside our yellow truck. When I wasn't working the check-in table, I would head out with the "mobilizers," walking through open expanses of farms to each house in the village, informing people that the mobile clinic was here, and often staying for some time to talk and educate community members about our services, particularly family planning.

I was struck by the sense of community every place I went. Everyone we drove by waved to us and yelled hello, and it seemed that everyone in the village wanted to greet me and hear about my life outside Kenya. Young children ran freely about, climbing onto anybody's lap, and it seemed that the elderly were cared for and known by everyone.

Being so totally immersed in these beautiful, colorful communities also made me see the complex challenges for healthcare in the areas. For some villages, the nearest dispensary is hours of walking away, a trek that many women would make in scorching heat with children strapped to their backs and toddlers holding their hands. Some women told me that walking to the dispensary for a day means one day not harvesting the farm, and one day that her children would go hungry. Even if they made it to these dispensaries, there is no guarantee of being seen or the facility having the medication or counselling they need at an affordable price.

Deep-rooted cultural beliefs also frequently prevent women and men in the area from getting the care that they need. Children are seen as a sign of wealth, and some men are adamantly against family planning, wanting the largest family possible despite living on an income under \$1 US per day. In some areas, beliefs about witchcraft alienate people with brain disorders. The same traditions that create the vibrant and beautifully close community also create more challenges to healthcare delivery.

What I will remember most about this trip though is not the spectacular landscapes, nor even the communities that I visited. I will remember the stories of the people I talked to, the challenges and joys that color their lives.

I will remember Lydia, a single mother of 2 who, upon learning that she was pregnant, burst into hysterical tears, saying that she is unable to support another child alone.

Or Emily, the 15-year-old girl who fell to the ground outside the clinic and had 7 seizures in a row. The townspeople believe she is a witch-child, sent to her parents for their sins, and cannot be touched. She will likely be unable to get the treatment she needs and will suffer repeated brain damage with each seizure.

Photos, from top: a group of young mothers socialize near the check-in area.

Schoolchildren gather to observe the clinic.

A young mother and her son, Clifford, arrive at the mobile clinic.

Or the mother who came to the clinic with her young daughter, who has a stomach mass the size of a beach ball. If she had been able to access healthcare earlier, they might have been able to treat her and remove the mass, but now it is likely too late.

I will remember Anne, another single mother who I talked to for hours, and who, at the end of the day, handed me her 1-year-old daughter and begged me on her knees to adopt her and bring her back to Canada. Tears streaming down her face, she told me that her daughter will die here, because she can't feed her, educate her, or give her opportunities to succeed.

These are the faces, along with countless others, that will stay with me long after I leave, reminding me of the lives that tell the story of public health in Kenya, the people behind the facts and figures. I learned that quality healthcare relies on a deep, immersive understanding of the communities being served, but, more importantly, a commitment to improving individual lives. Behind each number are countless people, countless lives, and it is so important to always remember this, especially in the field of public health. To CHAT, Mpala and the Princeton Global Health program, for giving me the opportunity to have this experience – *Asante Sana.* •



Madeleine Sumner



Madeleine Sumner



Madeleine Sumner

All About Opuntia

Staline Kibet



Zoe Sims

A seminar brought leaders and community members together to discuss invasive Opuntia species and efforts to fight their spread.

The invasive Prickly Pear (*Opuntia stricta*) and Indian Fig (*Opuntia ficus-indica*) currently occupy more than 30% of the land area in Laikipia County, and are spreading a rate of 2km² per year. On June 16, with support from the United Nations Development Programme, Mpala hosted a community seminar for members of Naibunga Conservancy to share their experiences with *Opuntia* species.

Participants discussed the effects of *Opuntia* and learned about biological control efforts in a visit to the Mpala Primary School greenhouse, where students breed cochineal insects to help control the cacti.

The seminar highlighted the ways *Opuntia*'s spread is affecting the Laikipia community. Attendees linked *Opuntia* to a significant decrease in livestock production due to reduced land grazing capacity and impeded feeding. They also cited problems related to the cactus' glochids (barbed spines), which easily detach from the plant and lodge in the skin, causing irritation upon contact. Children, often attracted by the cactus' fruits, come into contact with the itchy spines, and restraining goats or sheep for milking has become more difficult due to the presence of glochids on the animals' bodies. *Opuntia* infestation on pathways has also limited walking at night.

Some community members cited increased human-wildlife conflict as a consequence of *Opuntia*'s spread. Due to the appetite of livestock and children for cactus fruits, *Opuntia* seeds are dispersed near homesteads. This causes dense cactus growth near homesteads and, in turn, attracts elephants – which also feed on the fruits – near people's homes.

This seminar highlighted the community's need for more information and training about *Opuntia* to help take control of its spread. The role of communities in managing and controlling invasive species cannot be over-emphasized. Whether eradicating, controlling, or utilizing the invasive species, effective action requires dialogue and collaboration. Prevention, early detection and response, and incremental progress are key to controlling invasive species – *Opuntia* and otherwise. •



Nancy Rubenstein

Kimani Kuria from Ol Jogi shows Conservation Club students the insects reared in a greenhouse and released to control *Opuntia stricta*.

Four Mpala Researchers Receive Fellowship Awards



Congratulations to four members of the Mpala family who have received fellowships to support their continued studies and research!



Duncan Kimuyu received the Smithsonian Mpala Postdoctoral Fellowship to study mammalian herbivores' abundance and browsing within the Mpala CTFS-ForestGEO plot. Dr. Kimuyu is a lecturer at the School of Natural Resource and Environmental Studies, Karatina University, Kenya. He has a background in conservation biology and is interested in broad aspects of biodiversity conservation in human-dominated landscapes. Dr. Kimuyu has been studying interactions between fire and herbivory, by both domestic and wild ungulates, in the Kenya Long-term Herbivore Exclosure Experiment (KLEE Project) at Mpala Research Center. His research has opened up new ways of thinking about livestock, wildlife, and fire management in savannas.

Sara Weinstein received the Smithsonian Mpala Postdoctoral Fellowship to study toxin resistance in the African crested rat (*Lophiomys imhausi*). Dr. Weinstein recently received a Ph.D in Ecology, Evolution and Marine Biology from the University of California, Santa Barbara, and is now studying host-parasite-poison interactions with Dr. Jesus Maldonado (Smithsonian Center for Conservation Genomics) and Dr. Denise Dearing (University of Utah). Her study species, the only known lethally toxic mammal, defends itself against predators using plant-derived cardenolides, a toxin so deadly that a few drops on a hunter's spear can kill an elephant. Dr. Weinstein's research will examine how genetics and the rat microbiome shape toxin resistance and metabolism.



John Karichu Mwhaki was awarded a scholarship through the Belt and Road Master's Fellowship Programme to fund his Master of Science studies at the University of Chinese Academy of Sciences (UCAS) in Beijing. Mwhaki completed his Bachelors in Biological Sciences at Pwani University, Kenya, in 2016, and, in the fall of 2016, interned at Mpala with Dr. Dino Martins. At UCAS, he will pursue a M.S. in Botany. His research will focus on plant distribution and biodiversity in Kenya's Sacred Coastal Kaya Forests.

Dedan Ngatia received an Mpala fellowship to support his study of domestic dogs in community-owned ranches in Laikipia. In 2015, Ngatia founded the Laikipia Rabies Vaccination Campaign, an annual canine rabies vaccination effort targeting the county's pastoralist communities. His continued research aims to improve understanding of disease transmission at the human-livestock-wildlife interface, and evaluate the impact of LRVC. Ngatia is a National Geographic Young Explorer and Project Manager of the Kenya Rangelands Wild Dog and Cheetah Project at Mpala.



Jennifer Exley

MPALA AT A GLANCE



National Science Week • May 22-26

Mpala researchers, students, and staff presented their work at National Science Week in Nairobi. The annual event is organized by the National Commission for Science, Technology and Innovation, and aims to showcase achievements in science and technology in Kenya and provide a forum for scientists and stakeholders to interact.



Top: Anchal Padukone and Kimani Ndung'u share a laugh with Dr. Michael Lattorff, the new Head of Environmental Health Theme at the International Centre of Insect Physiology and Ecology (ICIPE).

Bottom left: Gikenye Chege discusses Mpala's activities with Principal Secretaries Collette Akoth and Sammy Itemere and NACOSTI Director-General Moses Rugutt.

Bottom right: Researcher Brandon Hays describes his studies of native ant-acacia mutualism and its disruption by invasive big-headed ants.

MPALA AT A GLANCE



Community Conservation Day • June 15

Northern Kenya Conservation Club (NKCC) students, their families, and their communities came together at Kimanjo Resource Center. Through role-plays, dances, and interactive games, students shared what they had learned in the past year.



Victor Kasii



Victor Kasii



Victor Kasii



Victor Kasii

Top left: Kimanjo Secondary students perform a traditional dance. Top right: Mpala Academy students recite a poem about the importance of conservation. Center right: a poster show showcased NKCC projects. Bottom: a crowd gathered beneath a large acacia to view student performances.

MPALA AT A GLANCE



Education and Outreach Highlights

In June and July, Mpala hosted 12 undergraduate interns from Princeton's Global Health Program, Ecology and Evolutionary Biology Department, and the Princeton Environmental Institute. Students worked on research projects, traveled with the Mpala Mobile Clinic, taught in the Northern Kenya Conservation Clubs, and more.



Everlyn Ndinda

Annabel Lee teaches a lesson on mosquito-borne diseases at a local school health club.



Victor Kasii

(From left) Erin Redding, Madison Spinelli, Lily Reisinger and Kate Didion lead an activity at Community Conservation Day.

Summer courses at the Centre included three classes led by the Turkana Basin Institute, a Koobi Fora Field School ecology module, and a Bio+ field class.



Anchal Padukone

Professor Dan Rubenstein shares his research on livestock-wildlife coexistence with students from De Anza College in California, who visited Mpala through a field ecology course organized by the Turkana Basin Institute.

MPALA AT A GLANCE



Education and Outreach Highlights

Students from the Northern Kenya Conservatoin Club at Naibor School'visited Mpala on Setember 8th. The students toured the campus, heard from scientists about their current research, and went on a game drive.



Zoe Sims



Zoe Sims

Left: On a game drive around the Mpala property, students gather at the bus windows to watch giraffes on the move. Right: The class watches hippos in the pool adjacent to the MpalaLive! cameras.

Unity Day • July 4

The Mpala community celebrated July 4th with food, football, and international cameraderie.



Anchal Padukone

The winning football team at Mpala's Unity Day festivities bite into their edible medals.

Welcome, New Mpala Staff!

We are proud to welcome two new members of the Mpala family: Security Manager Maj. Pius Muia, and new Princeton in Africa Fellow Zoe Sims.



Major (RTD) Pius N. Muia joined Mpala in August as Security Manager, bringing over 20 years of dedicated military experience and four years' experience in corporate security. Following his military career, Maj. Muia has worked as a private security consultant and advisor with the Laikipia County Government and with Tullow Oil Drilling Company (TKBV) in Turkana. He holds an undergraduate diploma in Pilot Training, Aviation Safety and Security (USA) and a level six diploma in Security Management (UK). Extensively trained in peacekeeping and humanitarian operations, Maj. Muia is a UN-certified "trainer of trainers" with a focus on capacity-building through resilience and locally-available resources.

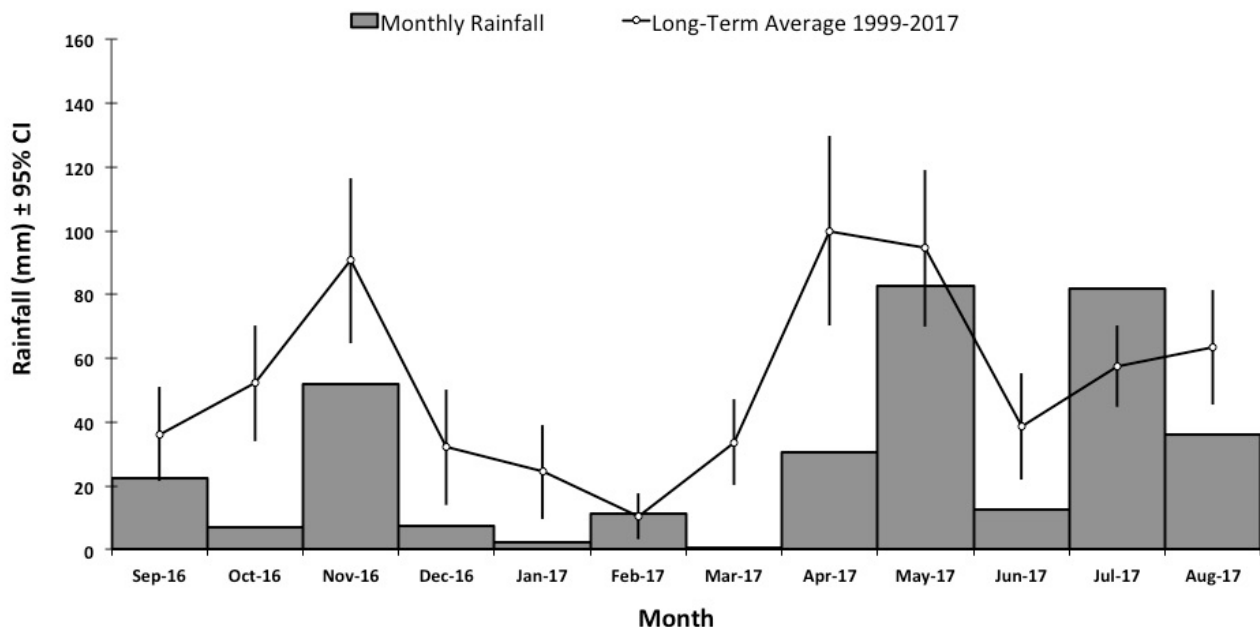


Zoe Sims joins the Mpala team as 2017-2018 Princeton in Africa Fellow. Zoe graduated from Princeton University in June with an Ecology and Evolutionary Biology concentration and Environmental Studies minor. At Mpala, she will help coordinate research, outreach, communications, and education programs. Outside of science, Zoe enjoys distance running, nature writing, and yoga.

Asante Sana to **Anchal Padukone**, who served as the 2016-2017 Princeton in Africa Fellow. Anchal will stay on at Mpala until December 2017, carrying out a research internship under Dr. Dino Martins and helping out with the Laikipia Rabies Vaccination Clinic 2017. We wish her all the best in her adventures to come!

Weather Update

Mpala Research Centre Rainfall September 2016 - August 2017





Fauna of Mpala

A handmaiden moth (*Ctenuchinae*) glints in the sun. Its bright warning colors are evolved to mimic a wasp or hornet.



Eric LaMalfa

A Vitelline Masked Weaver (*Ploceus vitellinus*) surveys the view. Weavers, seed-eating birds with cone-shaped bills, are named for the intricate nests woven by several species.



Damien Farine

To learn more about wildlife at Mpala, check out the Mpala Live! Field Guide:
http://mpalalive.org/field_guide

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