

UNIVERSITY OF WYOMING

Department of Zoology & Physiology
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19 September 2016

Brian Barber, Biodiversity Institute, University of Wyoming
Dino Martins, Mpala Research Centre
Donal Skinner, Department of Zoology & Physiology, University of Wyoming
Beth Wommack, Wyoming Vertebrate Museum, University of Wyoming

Dear Drs. Barber, Martins, Skinner, and Wommack,

From 15-23 August, 10 students from Kenyan universities around the country participated in a week-long field course "Field Methods in Mammalogy" at the Mpala Research Centre (MRC) in Laikipia, Kenya. This course was co-led by scientists from the University of Wyoming, the National Museums of Kenya, and the Smithsonian Institution, with expert help from teaching assistants at the University of Wyoming and Brigham Young University.

The goal of our course was to expose talented young mammalogists to field practices in mammalogy. The course provided unique learning opportunities to Kenyan students that are not currently available at their home institutions. Below are the students and instructors who participated in the course.

Amos Chege, student, Africa Nazarene University and Soysambu Conservancy
Adam Ferguson, instructor, Smithsonian Institution
Violet Gatonye, student, University of Eldoret
Jake Goheen, instructor, University of Wyoming
Kiprop Johnson, student, Egerton University and National Museums of Kenya
Rhiannon Jakopak, teaching assistant, University of Wyoming
Cyrus Kavwele, student, Karatina University and Ol Pejeta Conservancy
Wangechi Kiongo, student, Karatina University and Turkana Basin Institute
Nelly Maiyo, student, University of Nairobi and Ol Pejeta Conservancy
Leo Malingati, student, Egerton University and National Museums of Kenya
Brock McMillan, mwanariadha kutoka nyati, Brigham Young University
Simon Musila, instructor, National Museums of Kenya
Noreen Mutoro, student, University of Nairobi and Action for Cheetahs
Lilian Nyambura, student, Karatina University and Ol Pejeta Conservancy
Harrison Simotwo, student, University of Nairobi

Laikipia, the Mpala Research Centre, and the Ewaso Ng'iro River Camp

Laikipia is comprised of a mosaic of large ranches, small land-holdings, and agricultural parcels in which wildlife, livestock production, and agricultural economies vie for limited resources. Despite being formally unprotected, Laikipia boasts the highest abundances of wildlife in Kenya outside the famed Maasai Mara Reserve, thus providing an excellent system for a course in mammalogical field methods.

The MRC was the logistical hub for the field course. The MRC is situated within the 48,000 acre Mpala Ranch, and provides science facilities and 24-hour security.

Course Description

Our course was designed around the learning outcomes listed below, and consisted of short lectures, discussions, and field techniques.

Learning Outcomes

- 1) Gain knowledge and further appreciation for question formulation and hypothesis testing in field studies.
- 2) Gain exposure to live-trapping and handling of small mammals, mesocarnivores, and bats.
- 3) Gain experience with museum specimen preparation, body and skull measurements, and species identification.
- 4) Gain experience with occupancy modeling, species-diversity estimation, and abundance estimation with distance sampling.
- 5) Appreciate challenges and opportunities of professional and graduate-student life.

Class Itinerary

Date	Activities
Monday 15 August	Drive from Nairobi to Mpala river campsite; Introductions; Night drive and game calling
Tuesday 16 August	"Thinking like a scientist" lecture 1 (identifying research questions/hypotheses); Set small mammal and carnivore traps
Wednesday 17 August	Check and set small mammal and carnivore traps; "Thinking like a scientist" lecture 2 (One Health and disease ecology)
Thursday 18 August	Check and set small mammal and carnivore traps; Occupancy modeling and Program Presence tutorial
Friday 19 August	Check small mammal and carnivore traps; Carnivore handling and immobilization techniques; Museum specimen measurements and preparation
Saturday 20 August	Estimation of species diversity and Program Estimate S tutorial; Bat netting
Sunday 21 August	Line-transect sampling of dik-dik; "Thinking like a scientist" lecture 3 (human-bat coexistence); Bat netting
Monday 22 August	Line-transect sampling of dik-dik; Estimation of abundance and Program Distance tutorial; "Challenges and opportunities for Kenyan graduate students" lecture by Caroline Ng'weno (U Wyoming) and Dedan Ngatia (Karatina U)
Tuesday 23 August	Goodbyes; Drive from river campsite to Nairobi

Funding and Support

This course could not have happened without the generous investment of your time, financial contributions, and in-kind support. It is one thing to recognize that young, talented individuals from Kenya deserve the same investment as western students; it is another to actually make donations to ensure that this happens. The students and I were and continue to be astounded by your generosity. From a personal perspective, this field course was the most gratifying of the six in which I've been involved since 2002. Thank you.

Please do not hesitate to contact us if you have questions or require further information, and thank you again for your support and generosity.

Sincerely yours,



Jake Goheen, University of Wyoming
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On behalf of

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Simon Musila, National Museums of Kenya
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Brock McMillan, Brigham Young University
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Rhiannon Jakopak, University of Wyoming
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Student Quotes and Testimonials

"I enjoyed working with you on all the projects and I am proud to have been a small part of the ongoing projects. All the teachings were insightful, useful to my life and they have provided the hands-on experience required in wildlife management." -- Violet Gatonye

"I can't quite put into words how amazing and informative the training was. I reflect on what a pleasure it was to spend time with you engaging on various activities particularly new to me. The training was a lifetime experience." -- Nelly Maiyo

"I hereby register my appreciation for the incredible work that we managed within a short time. The acquired skills will have multiplier effects as we look forward to sharing the same with other scientists." -- Cyrus Kavwele

"The training could not be any better than it was. I learned a lot from the instructors and I learned a lot from my colleagues. Distance sampling is one of the techniques which had previously confirmed to me that I needed a tutorial. This training turned the tables. I am glad for this most informative training in my career in wildlife management." -- Amos Chege



From left, Amos Chege, Simon Musila, Cyrus Kavwele and Kiprop Johnson work to key out museum skin specimens of bats.



Adam Ferguson demonstrates parasite collection on a white-tailed mongoose. Lilian Nyambura, Harrison Simotwo, Nelly Maiyo, Kiprop Johnson, Violet Gatonye, and Amos Chege observe with fascination.



Jake Goheen explains the goals and logistics of the Ungulate Herbivory Under Rainfall Uncertainty (UHURU) experiment at the Mpala Research Centre. We used UHURU to demonstrate the scientific process of question formulation and hypothesis development. A treatment fence designed to selectively exclude megaherbivores (elephants and giraffes) is in the background.



Noreen Mutoro deploys an eartag with such expertise, one might mistakenly think she works on fringe-tailed gerbils and not cheetahs.



Wangechi Kiongo intently weighs a Hinde's bush rat, one of 10 species of small mammals we captured and processed.



Rhiannon Jakopak, Adam Ferguson, and students prepare an impressive assortment of mammals—including maned rat, northern pouched mouse, striped ground squirrel, and others—for the National Museums of Kenya.



Small mammal trapping is good clean fun, especially when rufous elephant shrews are involved. Kiprop Johnson handles this most charismatic of mammalian microfauna with ease.

We collected data on small-mammal communities to learn about occupancy (species presence/absence) modeling and rarefaction techniques.



Lilian Nyambura is all smiles in handling this (sedated) white-tailed mongoose. Students gained exposure to live-trapping, physical immobilization, chemical immobilization, and disease screening of carnivores, including mongooses and jackals.



Field Methods in Mammalogy Course, 2016. From left, Simon Musila, Romato Manyas, Violet Gatonye, Noreen Mutoro, Nelly Maiyo, Jake Goheen, Cyrus Kavwele, Amos Chege, Wangechi Kiongo, Brock McMillan, Lilian Nyambura, Leo Malingati, Kiprop Johnson, Harrison Simotwo, unidentified Mpala Askari.



Field Methods in Mammalogy Course, 2016. From left, Amos Chege, Simon Musila, Harrison Simotwo, Noreen Mutoro, Wangechi Kiongo, Kiprop Johnson, Adam Ferguson, Nelly Maiyo, Jake Goheen, Violet Gatonye, Brock McMillan, Lilian Nyambura, Cyrus Kavwele, Leo Malingati.