UNIVERSITY OF WYOMING

6 July 2019

Merav Ben-David, UW Department of Zoology and Physiology
Paula Lutz, UW College of Arts & Sciences
Dino Martins, Mpala Research Centre
Deb Olson, Laramie Travel
Sara Robinson, UW International Programs

From May 21 – June 8, personnel from the UW Department of Zoology & Physiology and the Wyoming Game & Fish Department organized a three-week, intensive field course entitled "Ecology and Conservation of African Savannas" at the Ewaso Ng'iro campsite on the grounds of Mpala Research Centre (MRC) in Laikipia County in central Kenya.

The goal of our course was to expose UW students to study formulation, data analysis, and field practices in wildlife ecology. Our course provided unique learning opportunities to UW students that are not currently available on campus. Twelve UW students and three Kenyan students were immersed in the study of the ecology and conservation of savanna wildlife (mammals and birds, principally). Students were exposed to a variety of topics provided by professors and graduate students, a professional wildlife biologist from the Wyoming Game & Fish Department, and local experts in the conservation of endangered species. Students, instructors, and special guests are listed in Table 1.

Table 1A. Students and Instructors, Kenya field course
Jesse Alston, instructor, UW Dept Zoology & Physiology
Anna Cressman, student, UW
Whitley Felver, student, UW
Jake Goheen, instructor, UW Dept Zoology & Physiology
Jordan Hoffmaster, student, UW
Jasper Hunt, student, UW
Ashley Kopacz, student, UW
Makala Knox, student, UW
Samson Mabeya, student, National Museums of Kenya
Jack Marion, student, UW
Nesha Michaels, student, UW
Tony Mong, instructor, Wyoming Game and Fish Department
Frances Ngo, student, UW
Raymond Owino, student, Hirola Conservation Programme
Addison Perryman, student, UW
Miriam Shigoley, student, Conservation Solutions Afrika
Lauren Stanton, instructor, UW Dept Zoology & Physiology
Erica Steyding, student, UW
Tim Uttenhove, student, UW

Table 1B. Special guests, Kenya field course
Benard Amakobe, Zoological Society of London EDGE fellow
Brandon Hays, MSc student, UW
Douglas Kamaru, MSc Student, University of Nairobi
Leo Malingati, MSc Student, University of Nairobi
Sam Mutisya, Ecological Monitoring Unit, Ol Pejeta Conservancy
Dedan Ngatia, Laikipia/Samburu Wild Dog project
Mordy Ogada, Conservation Solutions Afrika

Laikipia, the Mpala Research Centre, and the Ewaso Ng'iro Campsite

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 lacking formal protection, Laikipia boasts the highest abundances of wildlife in Kenya outside the famed Maasai Mara Reserve, thus providing a model for human-wildlife coexistence outside national parks.

The MRC was the logistical hub for our field course. The MRC is situated within the 48,000 acre Mpala Conservancy, and provides 24-hr security and basic science facilities consisting of labs and associated infrastructure.

Course Description

Our course was designed around six learning outcomes and consists of a combination of short lectures, field observations to test and confirm the lecture material, hands-on field techniques, exchanges with people from local villages, student-driven research projects, and wildlife viewing and sightseeing.

Learning Outcomes and Foundations

A. Gain knowledge and further appreciation for the ecology and conservation of savanna wildlife.
B. Appreciate challenges and opportunities inherent to wildlife conservation.
C. Use case studies in savannas to comprehend classic and contemporary issues in the conservation, ecology, and evolution of biodiversity, with emphasis on mammals and birds.
D. Gain exposure to wildlife ecology and management in a developing country.
E. Gain experience in a variety of field techniques for sampling biodiversity, including trapping of small and medium-sized mammals, mist-netting of songbirds and bats, radio-telemetry, and GPS methods.

The course is built around four pedagogical foundations.

(1) Active Learning. One of the shortcomings of undergraduate education in the sciences is that students become adept at passively answering, rather than actively asking questions. This leaves students with the impression that science is simply the accumulation of facts rather than a process through which knowledge is generated. To facilitate active learning, students worked in small groups to initiate and complete independent projects over the 3-week time frame. These projects truly were "independent"; the students generate research questions, designed methods to test questions, and analyzed and presented their results. This year, students developed projects to (a) investigate how fear of predation and plant defense shaped the survival of tree seedlings; and (b) understand whether and how acclimatization to people coincided with 'bolder' personalities of Guenther's dik-dik, an antelope common at MRC.

(2) Hands-on Field Activities. Our course entailed daily, learn-by-doing activities geared toward students majoring in wildlife management and zoology (Table 2). Central to this course is hands-on experience, both in terms of field activities and the practice of doing science.

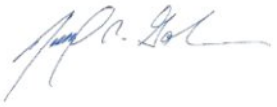
(3) Diversity and Experience of Instructors. Because of the rapport we have developed with landowners in Laikipia and professionals in Kenya in general, our course features discussions and activities with personnel from the National Museums of Kenya, Conservation Solutions Afrika (a local consulting group), Kenyan and UW graduate students, and tribal elders. At MRC, we are able to perform fieldwork and the aforementioned hands-on activities that would not otherwise be permitted.

(4) Reciprocity. Western scientists and educators have an obligation to involve citizens of the countries in which they hold courses, both because it strengthens long-term relationships and because it is the ethical thing to do. Our field course represents one of two modules in a training partnership between UW and young professionals in Kenya. Consequently, three Kenyan citizens joined our 12 UW students, and the resulting exchanges significantly enhanced the course.

Funding and Support
Expenses associated with this course were partly defrayed by the UW Department of Zoology & Physiology, the UW College of Arts and Sciences, and the UW Office of International Programs. The Mpala Research Centre graciously and fully defrayed expenses associated with three Kenyan students. As always, the staff at the Ewaso Ng'iro campsite were second-to-none, and were responsible for keeping us safe and well-fed. We especially thank Dino Martins, Cosmas Nzomo, Fardosa Hassan, Aziz Ekuam, Agnes, and Moses for their assistance and hospitality.

Please do not hesitate to contact me if you have questions or require further information.

With thanks and gratitude for your support,



Jake Goheen, Associate Professor of Zoology, jgoheen@uwyo.edu

Table 2. Course schedule and itinerary, 2019.

Date	Duration	Activity	Extra Special Fun
22-May	afternoon	arrive to MRC, safety briefing	
23-May	morning evening	lecture on ant-acacia mutualism trap setting/distance sampling	drinks on lookout rock
24-May	morning afternoon evening	trap checking/distance sampling lecture on ungulates and body size trap setting/distance sampling	drinks at hippo pools
25-May	morning afternoon	trap checking/distance sampling group projects discussion	night drive
26-May	morning afternoon evening	group projects discussion bird netting and ringing independent projects	
27-May	morning afternoon evening	bird netting and ringing independent projects trap setting/distance sampling	soccer at MRC village
28-May	morning afternoon	trap checking/distance sampling wildlife orphanage in Nanyuki	drinks at baboon cliffs while watching hyenas eat an elephant carcass
29-May	all day	radio-tracking of African wild dogs	
30-May	morning afternoon evening	drop-netting lecture on animal communication independent projects	soccer at MRC village
31-May	all day	lecture on rhino conservation; radio-tracking of lions	night drive
1-Jun	morning afternoon	drop-netting independent projects	
2-Jun	morning afternoon	data analysis independent projects	soccer at MRC village
3-Jun	all day	visit to Muthira manyatta and school	

4-Jun	morning afternoon	lecture on wildlife management independent projects	drinks at baculi dam
5-Jun	all day	unspeakable amounts of rain	
6-Jun	morning afternoon evening	finish independent projects lecture on Kenyan conservation goat roast	
7-Jun	all day	Aberdare National Park	
8-Jun	morning afternoon	Aberdare National Park drive to Nairobi	

An aardwolf skulks around its den. Aardwolves are members of the hyena family that feed exclusively on insects. It is thought that they are mimics of their larger, more dangerous cousin, the striped hyena. If true, this would be the only known example of mimicry in a pair of mammals.

Despite the squeals it is emitting, Jasper "Eland" Hunt, Jordan Hoffmaster, Frances Ngo, and Lauren Stanton enjoy holding a Guenther's dik-dik hostage after removing it from a drop-net baited with salt. Guenther's dik-dik are about the size of a house cat, form monogamous pairs, and defend 2-acre territories. In Laikipia, dik-dik number roughly 120 individuals per km^2, a very dense population for an ungulate. Our class made new discoveries about personality types of dik-dik.

Midway through our course, a bull elephant broke its leg and died in a gorge, creating quite a smell. Students sit atop baboon cliffs to watch a clan of spotted hyenas feast on the carcass.

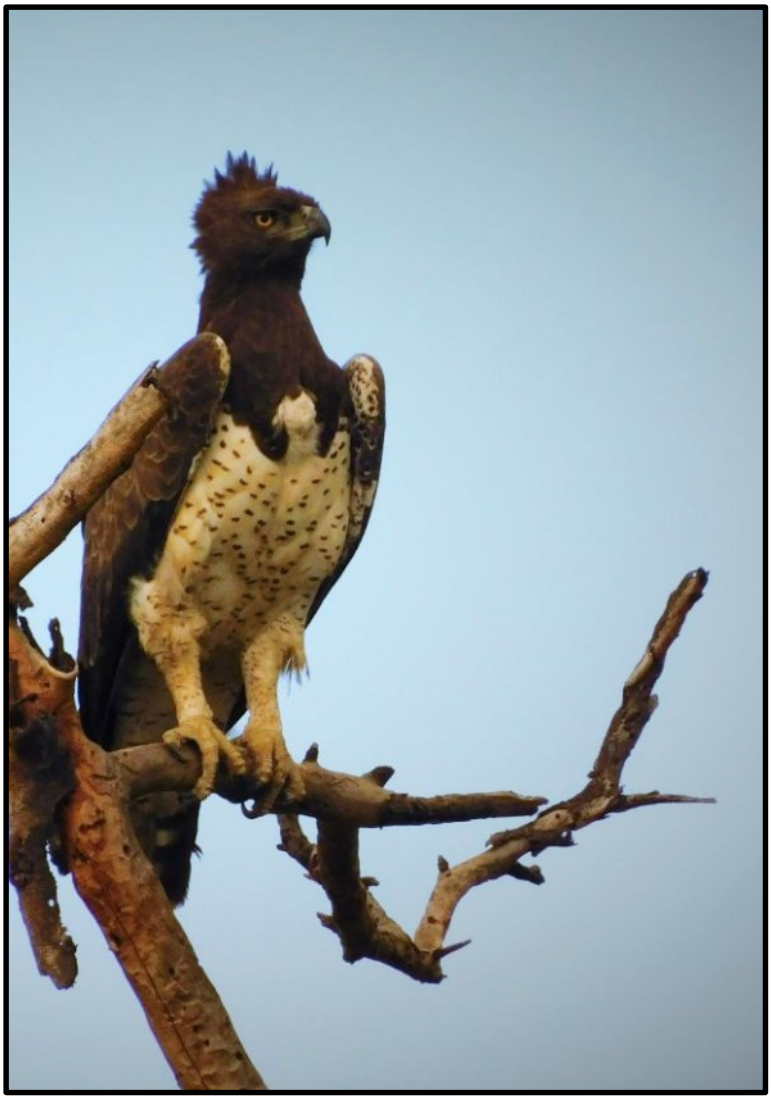
At 4-5 grams, African pygmy mice are among the smallest (and cutest) members of Class Mammalia.

A spotted hyena absconds with a choice part of the elephant carcass.

The World Needs More Mammalogists™. Clockwise from bottom left: Nesha Michaels, Ashley Kopacz, Addison Perryman, Tim Uttenhove, Samson Mabeya, Miriam Shigoley, and Leo Malingati check Sherman live-traps for rodents, shrews, and elephant shrews.

A pair of lesser striped swallows nested in our mess hall throughout the course. We saw >50 species of birds in three weeks, the majority of which were spotted around our campsite.

Erica Steyding and Jesse Alston establish a mist net to catch bats, while Tony Mong excels in his supervisory role.



Left: martial eagles are the largest raptor in Laikipia, feeding mainly on hares, monkeys, and dik-dik. This one nested a stone's throw from our campsite.

Below: Ashley Kopacz and Raymond Owino delight in handling a yellow-bellied house bat.

Black rhinos are globally endangered and are somewhat shy, so they can be difficult to find. Our class had incredible luck seeing both black and white rhinos at Ol Pejeta Conservancy.

If I can't see you, you can't see me. An elephant hides from our watchful eyes in Aberdare National Park.

Left: Benard "Scopus" Amakobe expertly weighs and bands a feisty Von Der Decken's hornbill.

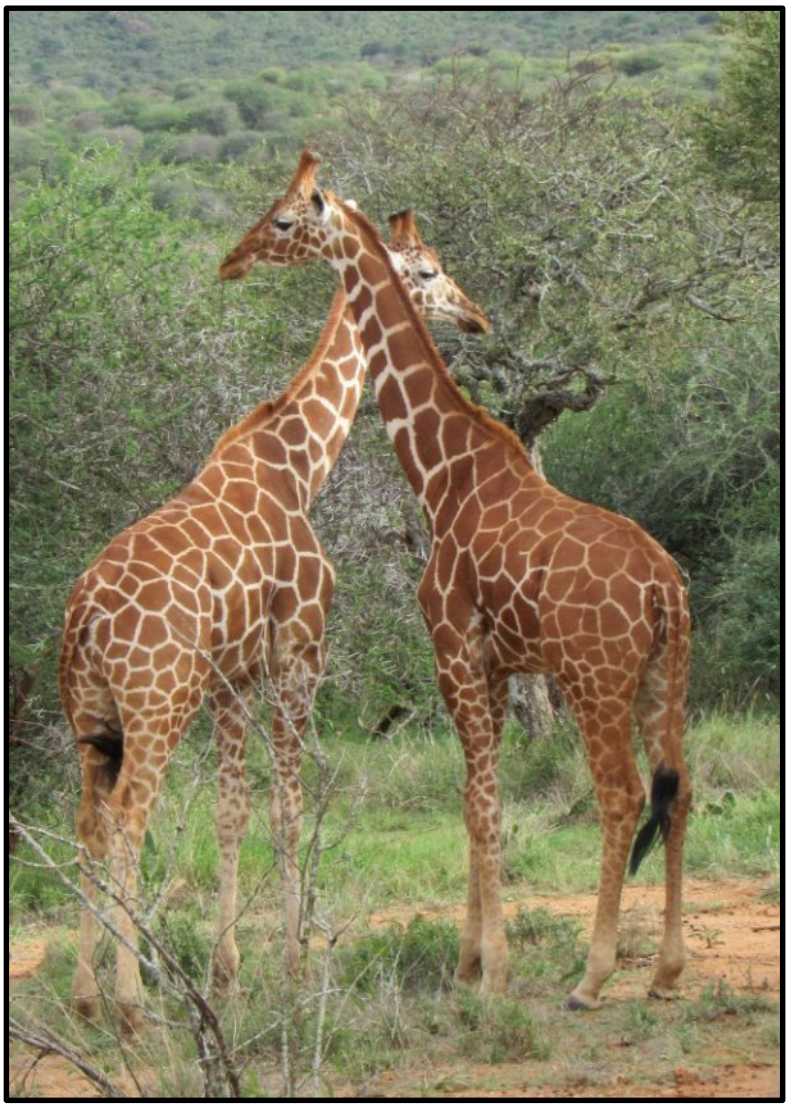
Above: Frances Ngo has herself a hearty chuckle just before releasing a Speke's weaver from a cage trap.

Enthusiasm for our course was so high that we sometimes drove for hours without noticing the truck door was open.

Samson Mabeya, Whitley "Close Talker" Felver, Miriam Shigoley, Tim Uttenhove, Lauren Stanton, Erica Steyding, and Anna Cressman pause for a photo op on the zeroth latitude.

Common eland are in the heavyweight class of high-jumpers, and can clear 2.5m fences. Old bulls (like this fellow above) tip the scales at just under a metric ton, making them one of the heaviest (if not the heaviest) member of the cow family in Africa.

Two warthog boars have a tussle. Warthogs rest on their front knees to graze, and piglets are born with callosities already formed.



Left: Giraffes are relatively abundant in Laikipia; we saw them on most days of the course.

Above: It's all fun and games until somebody has their prescription sunglasses stolen by a blue monkey. Jack Marion (left) and a (very short-term) friend.

Left: Good clean fun is being had by Tim Uttenhove and a rufous elephant shrew. Elephant shrews are more closely related to elephants than shrews, although their closest living relative is the aardvark.

Below Left: Dedan Ngatia tracks an elusive pack of African wild dogs through Ol Jogi and Chololo Ranches. This pack did not want to be seen; finding them took all the livelong day.

Below Right: African wild dogs are among the most endangered carnivores on Earth, and are the second rarest canid in Africa (behind Ethiopian wolves). The population of African wild dogs in Laikipia and Samburu Counties is (to the best of our knowledge) the only population in the world that is growing.

Elephants were numerous on Mpala, especially during the first two weeks of our course. Because they require large amounts of water, and because most of Laikipia was unseasonably dry in May, large groups (>50 individuals) of elephants would come from long distances to drink at the Ewaso Ng'iro bordering our campsite.

Douglas Kamaru shows Ashley Kopacz, Nesha Michaels, Jordan Hoffmaster, and Makala Knox how to find kill sites of lions from GPS telemetry clusters at Ol Pejeta Conservancy.

A lion on Ol Pejeta Conservancy.

Above: An agitated northern white-faced owl, in broad daylight.

Right: A greater kudu, handsomest and most photogenic of the African ungulates.

We spent a morning at the Mount Kenya Wildlife Conservancy and Orphanage, which houses a captive breeding and reintroduction program for mountain bongo. In this photo, Jasper Hunt, Whitley Felver, Erica Steyding, Jordan Hoffmaster, Jack Marion, and Tim Uttenhove are wildly entertained as an ostrich has its way with Makala Knox's hair.

A photograph of a primate, by a primate, watching primates look for primates.

The truly exquisite Ewaso Ng'iro campsite at Mpala Research Centre.

Group photo at Muthira manyatta.

Left: A candid moment with instructors for the 2019 Field Course in Ecology and Conservation of African Savannas at Chania Falls, Aberdare National Park, where it was very cold.

Left-Right: Jesse Alston, Lauren Stanton, Jake Goheen, Tony Mong.

Below: The 2019 Field Course in Ecology and Conservation of African Savannas at Clifford's Kopje, Mpala Conservancy.

Left-Right (Front): Erica Steyding, Tony Mong, Makala Knox, Addison Perryman, Ashley Kopacz, Miriam Shigoley, Frances Ngo, Whitley Felver, Anna Cressman, Raymond Owino.

Left-Right (Back): Jasper Hunt, Tim Uttenhove, Jesse Alston, Jack Marion, Jake Goheen, Nesha Michaels, Jordan Hoffmaster, Lauren Stanton, Samson Mabeya.