An Internship with the Smithsonian’s Global Health Program in Kenya

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The Global Health Program works with international partners to combat threats to wildlife, human, and ecosystem health and survival by addressing these challenges at their source: the human-wildlife interface. GHP is based upon the One Health platform, which recognises that the health of all species is intertwined and closely dependent upon each other.
This summer I was incredibly fortunate to have the opportunity to spend 11 weeks at the Mpala Research Centre working as an intern for the Smithsonian’s Global Health Program. The funding for this internship was generously provided by the Smithsonian UK Charitable Trust.

The Global Health Program builds upon the ‘One Health’ platform which recognises that the health of all species is intertwined. The team works internationally to detect and fight disease at the human-livestock-wildlife interface. My role was to assist Smithsonian Global Health Programme veterinary fellows on collaborative projects that related to human, wildlife, and domestic animal health in the Laikipia region.

I arrived on the 1st August 2018, the same date as a group of 19 students from George Mason University in Washington DC. This group were working to assist Dr. Shields, a veterinarian with the Smithsonian’s Global Health Program, to carry out ongoing vector-borne disease research.

Fundamental to this research was the collection of considerable numbers of ticks. Following a short training period, we were sent out into the field in search of these organisms. The collection method involved dragging large, square pieces of white cloth that the ticks would latch onto over varied terrain, and then checking the drags periodically. We sampled all around Mpala; across the Klee plots (Kenya Long-term Exclosure Experiment), around the research centre and even gathered ticks from cattle, goats, and camels in local villages. Acting as a collective, we were able to collect more than 1,500 ticks in a week—a task that would take an individual a number of months to do alone.

The sampling for this vector-borne disease research was not limited to tick collection. In the evenings we would set up ‘light traps’ (netting devices fitted with a battery operated bulb and suction fan) to catch mosquitos both at Mpala and surrounding sites, including the Ewaso Ng’iro River. We even strapped on ghost-buster style ‘vacuum aspirators’ to suck up mosquitos - no corner of the research centre was safe!

Evenings were spent in the laboratory processing and preserving the samples. We used dissecting microscopes to clearly identify the markings on the tick’s exoskeleton. This then enabled us to classify ticks into species and gender for preservation. These samples will ultimately be transferred to the Smithsonian’s Walter Reed Biosystematics Unit where both tick and mosquito samples will be screened for various infectious agents.

Two other Oxford students on Smithsonian internship programs were also based at Mpala over summer. After the George Mason group departed, I worked closely with them learning first how to set up camera traps, and then how to interpret and statistically...
analyse resultant data. The research looked to compare large herbivore and carnivore distribution beside and away from roads and kopjes. I became an expert at ungulate and carnivore dung recognition (an unexpected qualification!) from carrying out the numerous dung transects that were essential to this research. This expertise was then furthered by my work with Mpala’s resident science fellow, whom I assisted twice weekly with the faecal sampling of large mammal herbivores. Affectionately termed ‘poop patrols’, this in-field sampling involved 6am and 6pm trips all across Mpala in search of fresh faecal matter from impala, Thompson’s & Grant’s gazelles, oryx, and Grevy’s- essentially a perfect excuse for a sunrise and sunset game drive!

During this time, I was also working closely with Dr. Kamau, the resident Smithsonian Veterinarian at Mpala, to assist with her on-going research. This began with a literature review for a project looking at the use of camels as a surveillance tool for wildlife health and human health. I was responsible for sharing papers with her that used animal species for surveillance or as disease sentinels.

As Dr. Kamau is a KWS certified veterinarian, I was extremely fortunate to be able to assist on a number of wildlife veterinary cases with animals that back home I’d never even see, let alone be able to help. I was involved in huge a variety of cases, from monkeys with insect bites, to bloodhounds with mysterious eye growths, and even a young rhino with stomach distention!

As well as this, I was incredibly lucky to be part of the team in attendance of four successful elephant immobilisation operations with Dr. Kamau and KWS. One such procedure involved the dramatic rescue of a baby elephant with a forelimb entangled in a snare. The baby was in amongst a large herd of wild elephants and the calf was constantly protected on all sides by the family. This made it extremely difficult for us to access the calf to deliver treatment. Indeed, the bond between calf and mother is so strong that in an attempt to protect the calf, the mother even charged one of the veterinary vehicles. What had seemed like a straightforward plan actually took nearly four hours to execute, despite the treatment itself taking only eight minutes! At one point the rangers were even forced to fire shots in the air in an attempt to disperse the herd. Fortunately, the treatment was successful and the calf has since been repeatedly sighted running happily alongside its mother and the rest of the family herd. The other two cases involved Dr. Kamau darting and treating a 15-year-old elephant for a broken leg, and another older female elephant with a large abdominal mass.

Mpala is bordered on one side by a wildlife conservancy named ‘Ol Jogi’. For the first month I spent as intern Ol Jogi was a mysterious place— all we really knew as students was that it contained a luxury manor for high paying guests and that it was home
to both black and white rhinos. As such, security levels were rumoured to be extremely high - the most Mpala students could expect to see of the conservancy were the Eland-shaped gates visible from the Nanyuki road. Therefore, when I discovered that the Smithsonian Global Health program was working to build the relationship between Mpala and Ol Jogi, and further that I would have the opportunity to spend 2 weeks staying there, I was very, very excited.

At the beginning of September, Dr. Nofs (the Smithsonian Veterinarian who was newly based at Ol Jogi), Dr. Kamau and I set off to commence our adventure over at Ol Jogi. The conservancy is beautiful - the drive in alone is a 5* safari experience. The clinic and vet house are set in the middle of the pyramid side of the conservancy and are surrounded on all sides by wild savannah that stretches as far as the eye can see – an isolating but unique experience. The upstairs balcony overlooked a watering hole and every morning, armed with binoculars, we would see everything from giraffes down at the salt lick, to rhinos on the driveway, to Grevy’s zebras gathering at the watering hole, or even hear the territorial roaring of male impala.

Also visible from the balcony was the vet clinic. This has been in existence for over 45 years, yet for the past twenty has been largely out of use - venturing inside was a trip back in time. It was our job to go through the entire clinic including a pharmacy, laboratory and surgery, and inventory everything we discovered. This daunting task was rendered significantly more enjoyable by the 2-month old orphaned cheetah cub temporarily residing in the guest bedroom of the house.

After two weeks of hard work detailing the clinic, as well as assisting Dr. Nofs and Dr. Kamau on the stream of cases that would trickle through the clinic in the mornings, it was very satisfying to see the progress we had made. I am excited to see the direction that this partnership between Mpala and Ol Jogi will take in the future.

Once back from Ol Jogi, the major project going on at Mpala was the 2018 Laikipia Rabies Vaccination Campaign (LRVC). There are over 2,000 human deaths from rabies recorded annually in Kenya and as the disease has no cure, vaccination is by far the best way to prevent the rabies virus. In 2017, 9300 dogs and cats were vaccinated over six consecutive weekends across 20 locations in Laikipia. This year, the team are working to build further on that, with the goal of vaccinating > 10,000 animals. As Dr. Kamau is closely involved with the campaign, I was able to attend multiple planning meetings both at the Laikipia Wildlife Forum and at Mpala. It was interesting to learn more about the managerial and financial aspects of such a large-scale veterinary project and to hear the different opinions of the numerous stakeholders involved in this ambitious venture.
One of the highlights of the program for me was the opportunity to live at Mpala during my internship. The Centre is at the forefront of cutting-edge research in wildlife conservation and health. As a student interested in both of these fields, it provided me with a unique learning environment. Where else could you discuss collective decision making in Vulturine Guinea Fowl over a lunch-time chapatti, or the best methods to trap African Crested Rats over a cup of Kenyan Chai Tea?

I will remember this summer not just for the once-in-a-lifetime work opportunity, but also for the chance to interact with and learn from undergraduates, PhD students, field assistants, professors, and staff alike. I will look back on countless sundowners, climbing (most the way up) Mount Kenya, quiz nights in the local town, visits to Nairobi, a Major Lazer Concert, hiking and fishing in the Aberdares, touring a bongo conservancy, movie nights, evening bonfires, visiting the coast, and best of all playing soccer and just being generally silly with the children from the village. My time at Mpala has been a perfect blend of experience in infectious disease research, as well as advancing my understanding of applying a One Health approach to wildlife conservation.

I am extremely grateful to Dr. Shields for providing such a fantastic internship through the Global Health Program, and to Dr Kamau for her continued help and support throughout my time at Mpala. I would also like to thank the Smithsonian UK Charitable Trust for their generosity in providing the funding for this internship. Without their sponsorship I would never have been able to undertake this incredible experience.