RESEARCH PROGRAMME OVERVIEW
Updated December 2018

This document outlines research projects currently run by LWT that are open to volunteers and/or undergraduate placement students. Graduate students (MSc/MRes/PhD) are also welcome to join these existing programmes or they can propose their own research questions. A list of suggested questions not currently being researched is available on request – please contact lilongwewildlife@gmail.com.

SUBJECT	PROJECT	BACKROUND	RESEARCH AIM	ACTIVITIES	Volunteers	Placement students	Post-grad students
ELEPHANTS	**Elephants for Landscapes** Vwaza Marsh WR, April to Nov (ongoing)	VMWR is part of the Malawi Zambia Transfrontier Conservation Area (TFCA) which forms a key international migratory habitat connecting Malawi and Zambia, encompassing an area of 30,621km$^{2.}$ The TFCA is critical to the conservation of elephant populations between Malawi and Zambia providing a wildlife corridor facilitating traditional movement, migration and gene flow. Currently nothing is known about the status of elephant in northern Malawi and estimates of resident versus migratory elephants are unknown. In addition, seasonal movements are not quantified hindering conservation management. Data from this project will inform the LWT Wildlife Enforcement project which aims to quantify the nature and impact of wildlife crime and trade on elephant populations occupying northern Malawi.	We are assessing the status, distribution and movement patterns of elephants occupying the Transfrontier Conservation Area in Nyika NP & Vwaza MWR.	- Large mammal population monitoring driving and foot transects - Individual elephant identification for development of ID database - Herd counts - Diet analysis through dung and seed collection - Data entry	√	√	√
PRIMATES	**Primate Release Program**	LWT has conducted the Primate Release Program since 2013 in Kasungu NP. This year we have extended our program to	To assess the effectiveness of primate releases on animal welfare by	- All day follows of the released vervet troop - Tracking using radio telemetry	√	√	√

	Vwaza Marsh WR, Mar-Aug 2019	Vwaza Marsh WR. We aim to assess the success of welfare releases of yellow baboons (*Papio cynocephalus*) and vervet monkeys (*Chlorocebus pygerythrus*) that have been rescued and rehabilitated at the LWC. The aim of the releases is to improve animal welfare. We conduct extensive research pre- and post-release to inform processes.	recorded pre- and post-release behaviours and welfare indicators.	- Detailed behavioural observations - GPS recording - Individually recognizing vervet monkeys			
	Searching for Samangos Various sites, Apr-Oct 2019	Understanding the genetic responses of wildlife to anthropogenic changes is key to effective conservation planning. The number of subspecies of samango (*Cercopithecus spp.*) monkeys is disputed, though genomes of several subspecies have recently been assembled facilitating genomic research on this group. The genetics, ecology, distribution and ecology of the Malawian samango monkey population is currently unknown, limiting conservation management. This is the first samango research in Malawi. Results will be used to inform conservation management for this species group.	We are assessing occupancy and density of samango monkeys at various forest sites across Malawi, and conducting vegetation and GIS surveys to identify forest patch and habitat metrics. We are using molecular and ecological methods to assess the genetic impacts of habitat fragmentation and degradation on these monkeys. We aim to confirm the taxonomic status of the samango monkey subspecies in Malawi.	- Foot transects for population censusing - Vegetation plot surveys - Setting bait stations to collect hair samples for genetic analysis - Measuring hair bands - Collecting fecal samples - Taking photographs for morphometric descriptions	√		√
	Baboon Hybrids Vwaza Marsh WR, Apr-Nov 2019	Baboons are well known to hybridize between species, however this only occurs in a few areas where species overlap. Malawi is known to have yellow baboons (*Papio cynocephalus*) only, but our site in Vwaza Marsh WR is suspected to have both yellow and kinda baboons (*Popio kindae*) based on preliminary visual observations. This are of Malawi has never been studied for baboons and provides a gap in the scientific literature.	We aim to assess the genetic makeup of the species of baboon in Vwaza and monitor the growth, development, and reproductive successes of the baboon populations.	- Semi-habituation of the troops of baboons - Taking photographs for morphomtric comparison and description - Identifying individual baboons and creating a database for long-term monitoring - Collecting faecal samples	√	√	√
	Captive Studies Wildlife Centre, Lilongwe Year round	Any number of captive studies can be done at LWC. There is no ongoing research program there or research staff. As such, these placements are only for independent students.					√

VETERINARY SCIENCE- Clinical Projects in One Health	**African Swine Fever (ASF)** Kuti WR May 21st– September 30th 2019	ASF is an economically important disease of domestic pigs and wild suids and is enzootic to many African countries, including Malawi. It is highly contagious among domestic pigs and outbreaks often result in mortalities approaching 100%. Wild suid hosts in Africa remain asymptomatic. Many aspects of the sylvatic cycle are unknown, and the contribution of wild suid host and ticks as reservoirs and vectors of the disease varies markedly across regions.	Establish prevalence of ASF in *Ornithodoros* ticks at pig kholas, warthog burrows, and bushpig sleeping sites and evaluate the potential for ASF transmission from wild suids to domestic pigs around Kuti WR	- Walking transects to identify locations of warthog burrows - Use of camera traps to identify warthog burrows and bushpig habitats - Use of GIS - Field collection of ticks - Morphological identification of collected ticks and storage for future molecular and serological study - Working with a community liaison officer to characterize the human-animal interface as it pertains to warthog and bushpig presence and health in surrounding communities	√		√
	Toxocara in antelope Kuti WR May 21st– September 30th 2019	Toxocara is a genus of roundworm that has not been reported in antelope. However, toxocara has been observed in wildebeest fecal samples at Kuti WR. The most likely species is T. vitulorum, which is usually found in cattle and other bovids (ie buffalo). It is known to be a problem on high production beef ranches and dairies in Southern Africa. It does not usually cause disease in adults, but can be fatal in calves. Effect on wild ruminants is unknown.	Assess prevalence of toxocara in antelope at Kuti WR and domestic bovids in and around the reserve. Assess potential health effect on positive animals. Investigate possible transmission pathways from domestic bovids to wild antelope in the reserve. Determine species and strain of toxocara specimens.	- Fecal parasitology of impala, wildebeest, sable, eland, - Fecal parasitology on cattle, - Survey of cattle owners in/around Kuti WR about general health of their cattle (with liason officer) - Opportunistic necropsies of antelope and bovids	√		√
	Zebra IDs Kuti WR May 21st– September 30th 2019 (year round?)	Every zebra has a unique stripe pattern	Keep up to date photo registry of zebra in the reserve for: - Monitoring individuals with health issues, such as disease, injury, or snare - Identify when an animal goes missing (ie. poaching) - Project pioneering spatially explicit model using camera trap grid capture-recapture data to estimate density	- Zebra photo surveys, identifying individuals and logging data	√	√	
	Vervet and baboon	Vervet monkeys (*Chlorocebus pygerythrus*) and yellow baboons (*Papio cynocephalus*) are	Investigate gastro-intestinal parasitism of	- Collection and analysis of fecal parasitology of baboons and	√		√

	strongyloides Kuti WR May 21st–September 30th 2019	known to carry a number of zoonotic pathogens. Contact between human and wild monkey communities is inevitable, and creates the potential for zoonotic and anthroponotic transfer of disease. There is consequently strong regional and international interest in establishing baseline health data for vervet and baboon populations, assessing the associated risks to human health, and identifying critical control points for risk reduction. At present, almost nothing is known about the disease status of wild vervets and baboons in Malawi. The *Strongyloides* species' S. *fuelleborni* and S. *stercoralis* can result in significant morbidity in human populations, and have been identified in wild monkeys in several African countries. *S. fuelleborni* is thought primarily to be a parasite of non-human primates but has also been identified in humans. This species has a predilection for children under the age of four, causing a potentially fatal condition known as "swollen belly syndrome." *S. stercoralis* is thought primarily to be a pathogen of humans, but rarely has been identified in non-human primates	wild vervets and baboons in central Malawi, in particular, gastrointestinal nematodes of the genus *Strongyloides,* identify *Strongyloides* species and strains, evaluate impact on human and non-human primate health, and investigate potential routes of inter-species transmission. This research will help inform community-based conservation strategies and direct veterinary and human health interventions to areas of need.	vervets. Storage of strongyloides samples in ethanol for later speciation. - Tracking of baboons and vervets to establish home ranges and activity outside of the park - Surveys of people living in/around Kuti WR about primate activity outside the reserve, and general human health			
	Baboon-human conflict Kuti WR May 21st - Sept 30th 2019	Baboons are a major source of human-wildlife conflict at Kuti WR. Crop raiding near certain stretches of fence-line have resulted in retaliation from farmers. Baboon population density is very high at Kuti WR, and this may be related to lack of large predators in the reserve.	We are investigating welfare-friendly methods of baboon population control (vasectomy) and crop-raiding determents. To monitor the outcome of these interventions, we must establish and continue to monitor population parameters and behavior of the reserve baboons.	- Tracking baboon troops to establish and monitor home ranges, population density, population demographics, troop movement leaders, alpha males, and activity outside the WR - Community surveys about baboon activity outside the park	✓		✓
	Camera trapping and aerial survey for species density estimates	Knowledge of population density is fundamentally important to wildlife management and conservatios. New innovative models in camera trapping are offering a low-cost solution that generates accurate and precise results for conservation	Use camera traps grid and a suite of Bayesian spatial capture-recapture models to estimate mammal species density, comparing results against concurrent	June-August: maintenance of camera trap grid and zebra photo-registry August-September: aerial transect surveys with Mavic 2 Pro October: waterhole count 24 hours	✓		✓

	Kuti WR May21st - Sept 30th 2019	management. Piloting/validating these methods will provide a critical framework for monitoring wildlife.	traditional survey methods: drone aerial survey, waterhole count, WR citizen science game count, zebra photo-registry. We target five species central to conservation and human-wildlife conflict in Malawi, zebra, sable, impala, warthog and bushpig.	November: Kuti WR's regularly scheduled annual game count			