



EXPEDITION FIELD GUIDE & MANUAL: ENONKISHU CONSERVANCY KENYA

Version 2023

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DAY TO DAY PLAN

	Morning	Afternoon	Evening
Sun	Meet in Nairobi 08:00, travel to expedition base	Arrival, orientation, introductions, risk assessment, background to research activities	Presentation: Background on conservancies / Enonkishu
Mon	Training: Fauna & flora, data collection & entry (including app use), equipment use	Training: Orientation, driver training for drivers; mammal mapping practise	Workshop: Key species identification.
Tue	Camera trap deployment, waterhole training	Camera trap deployment Waterhole observations	Optional night survey drives on demand, otherwise free time
Wed	Work: Flexible schedule of (1) transects, (2) mammal mapping, (3) camera trapping, (4) waterhole observations, (5) data entry, picture and sign archiving.		
Thu			
Fri			
Sat	Work: Flexible schedule of (1) vehicle and foot transect, (2) mammal mapping, (3) camera trapping, (4) waterhole observations, (5) data entry, picture and sign archiving.		
Sun			
Mon			
Tue	Finish waterhole observation	Training: Environmental education and plan next day	
Wed	Environmental education day local students		Data clean-up & preliminary analysis
Thu	Camera collection and picture archiving	Camera trap picture archiving. Camera collection.	Camera trap results Other preliminary findings & summary of research
Fri	Depart to Nairobi 09:00, arrive 14:00 – 17:00 (depending on traffic)		

Training | Work | Play | Education | Presentations | Other

General timings

06:00	Breakfast	Dining hall
06:30	Meet, short briefing, pack for the morning	Dining hall
06:45	Teams depart for fieldwork (mark in logbook)	
11:00	Teams return from fieldwork, data entry (mark in logbook)	Safety check-in time
12:30	Buffet lunch	Dining hall
13:00	Meet, short briefing, pack for the afternoon	Classroom
14:00	Teams depart for fieldwork (mark in logbook)	
18:00	Teams return from fieldwork (mark in logbook)	Safety check-in time
18:30	De-brief session, plan for next day, names on board	Classroom
19:00	Dinner	Dining hall
After	Optional presentations, videos, etc.	Classroom
19:30	Night vehicle transects leave	
22:00	Night vehicle transects return	Safety check-in time
22:30	Quiet round base	

Remember to stay flexible as things will change

GENERAL FIELD SAFETY PROCEDURE

1. Always fill in the log book when leaving base so that we know what you are doing where and when you intend to return.
2. Always carry in each group (a) this sheet, (b) the mobile phone sheet, (c) at least one mobile phone. Make sure devices are switched on, fully charged and loaded with airtime.
3. Stick to your route and return time. If you are going to be late, call staff or someone else who will adapt your return time. You may have to relay a message across the study site until someone at base gets it and can adapt the logbook.
4. If you are more than an hour over your return time, we will send search parties out to look for you (the first place we will head for is the route you have specified on the logbook). Please make sure you are back in time or send a message if you are delayed so that no unnecessary searches are initiated.

If you have an accident/emergency, those able to should administer first aid. If you are in a functioning vehicle, take the casualty back to base immediately. Try to contact staff on the way so that they can take action as necessary. If you do not have a functioning vehicle or are on foot, but have mobile phone, try to contact staff or anyone else you can raise and ask for assistance (you may have to ask them to go for help or relay the message). If none of this is possible, help the casualty to the best of your ability and have at least two fit people walk to base, but only if (a) one of them is a ranger (in which case you can walk back at any time of the day) or if it is full daylight and you stay on the vehicle tracks for the whole trip (in which case two participants or two can walk). If not, stay put and await rescue. If you are unable to contact anyone, then it will be up to you to carry out an assessment. It is essential that you do this as calmly as possible and decide the best course of action, which will not make the situation worse. In most cases this will mean you will stay put, as this gives us the best chance to find you quickly (one reason to stick to your route always and fill in the logbook), but extreme situations may require extreme measures. You should never leave a casualty alone and make sure they are kept warm and/or in the shade and comfortable. Make sure you have a GPS location for the casualty.

Standard return times

Morning	11:00
Afternoon	18:00
Night	22:00

Important phone numbers

Johnny Adams (expedition leader)	
Roland Arnison (expedition scientist)	
Rebekah Karimi (project manager)	+254 (0)741 403 867
Leshan Nampaso, MTC Volunteer Coordinator	+254 (0)795 104170
James Maina, Operations Manager	+254 (0)725 226 999
Adam Bannister, Wild Hub manager	+254 (0)780 105100
Diana Bannister, Wild Hub manager	+254 (0)745 720362
Everyone else's numbers	See mobile phone numbers sheet

NORTHERN MARA CONSERVANCIES BACKGROUND

Kenya has lost nearly 70% of its wildlife during the past 30 years through loss of space and connectivity and the increasing development pressures and impacts of climate change. Conservancies offer hope. A wildlife conservancy is land managed by an individual landowner, a body or corporate, group of owners or a community for purposes of wildlife conservation and other compatible land uses to better livelihoods. In Kenya, conservancies are a recognised land use under the Wildlife Act of 2013, making them an attractive land use option for communities and landowners as they offer improved land and resource rights and access to incentives.

The expedition study areas in 2022 are Enonkishu and Ol Chorro Conservancies and Mbokishi Conservation Area. In 2019, in partnership with Biosphere, Enonkishu instituted a wildlife monitoring regime that has effectively been adopted by rangers and management. Because of this success, the 2023 expedition aims to scale up the monitoring to Ol Chorro, the oldest conservancy in Kenya and in Mbokishi Conservation Area, which was formed in 2021 (but also continue some monitoring in Enonkishu). These protected areas are secured year to year by renting the land from Maasai title-deed owners, who as conservancy members abide by land-use regulations (restricting permanent structures, arable farming, fences, utilisation of natural resources, and regulating the number of livestock). It will be exciting to evaluate the differences between old and new protected areas. In Mbokishi, the wildlife monitoring conducted this year is considered baseline, as the area's wildlife is similar to what existed in Enonkishu Conservancy at its inception in 2014.

The rangers within Ol Chorro Conservancy have years of experience but only limited training on collecting wildlife monitoring data. In Mbokishi Conservation Area, a very new conservation space, some of the rangers are trained, but likely have never used a smart phone app to record wildlife data. The main objective of expanding this citizen science project into Ol Chorro and Mbokishi is to scale up a standardised monitoring programme, which can track annual changes in wildlife numbers and inform livestock owners about how many livestock can coexist with the wildlife population.

Through Biosphere Expeditions' help, wildlife monitoring is now well established on Enonkishu. In neighbouring areas, wildlife monitoring has been sporadic and demonstrated varying degrees of effectiveness over the years. The initiation of structured long-term monitoring in Ol Chorro and Mbokishi will be an important component of monitoring the ecosystem at a larger scale.

Tourism operators across the northern conservancies have recently developed a code of conduct applicable to the areas that we will be working in. The current agreement with Biosphere Expeditions to work in the area has been long standing (over the span of Covid-19 restrictions), and over that time period, the northern Mara conservancies have gone through a transition, incorporating more regulations to ensure the wildlife is not disturbed by the tourism industry that supports it. Enonkishu has requested special permission for Biosphere Expeditions vehicles to be allowed access under certain restrictions, which are:

- Citizen scientists are essentially researchers, rather than tourists.
- Vehicles are not game viewing vehicles, will not behave as such and carry a clear RESEARCH VEHICLE marking.
- Citizen scientists are not to interfere with the game viewing experience of tourists from partnering operators. If a Biosphere Expeditions vehicle comes across a predator or interesting event during a transect, they should record the information as appropriate. As soon as a tourist vehicle approaches, move on to make way for tourism vehicles.
- In general, Biosphere Expedition vehicles must make way for tourism vehicles and must not interfere with tourism operations in the area.

It is essential that all expedition vehicles and participants adhere to these rules.

PROJECT GOALS

1. Expand a monitoring regime that can be utilised by conservancy rangers and staff to adequately assess wildlife population changes within Enonkishu and Ol Chorro Conservancies and Mbokishi Conservation Area.

Activities: (a) mammal mapping through foot transects in settlement areas, (b) day and night vehicle transect, (c) camera trapping, (d) day and night waterhole observations

Rationale: In order to monitor mammalian biodiversity adequately, baseline data need to be established. Within Enonkishu, this monitoring regime has been successfully implemented by rangers and management. The purpose is to expand monitoring into neighbouring protected areas.

2. Investigate interference competition behavioural data between and among species near water sources.

Activities: (a) day and night waterhole observations, (b) camera trapping.

Rationale: Climate change has had drastic effects on the weather variability across Kenya. The Mara-Serengeti area has experienced droughts and floods, exacerbated by deforestation and clearing of land from overgrazing and overharvesting resources. Investigating behavioural data of species interactions around water sources could demonstrate the stress related to resource competition, in terms of water availability. This is a secondary objective, which will be pursued as possible.

3. Develop and deliver an environmental education programme for and with Futures in the Wild to encourage local Kenyan students to pursue conservation-minded practices and careers.

Activities: (a) Develop a field trip programme for MTC to host local primary and secondary school students, (b) instil pride and disseminate environmental consciousness amongst young Kenyans.

Rationale: The way to make real changes in society is by influencing children through awareness and education to be advocates for the environment.

4. Data capture

We use CyberTracker software to facilitate data capture in the field. If you have an Android phone, please download and install CyberTracker here: <https://www.cybertracker.org/>. Please bring a charge cable with a USB connection to connect to laptops for the upload of the apps, and download of data. iPhones and other operating systems are incompatible with CyberTracker.

More data captured in the field means less time having to do data entry. In addition, errors are minimised (less typing of species names, simply select from a list); and the GPS of the phone is good enough in most instances to capture your location.

We also encourage the download of the [BirdLasser](#) app, which in addition to its utility for recording bird species also has a useful function that allows users to grab a GPS location from Google Maps. [iNaturalist](#) can be used to capture a variety of taxonomic groups, including flowers, insects, snakes.

Remember to use Airplane mode to save battery power! A powerpack can be useful too.

SAFETY WITH WILDLIFE

All animals

It is very important that you are quiet, stay close to the rest of the group and be very vigilant of your surroundings.

Never approach animals.

Never run (unless advised by your ranger) and do not make sudden movements.

Do not panic.

Always follow the advice of ranger and staff.

Elephant

Look to assess whether the herd is spread, what direction they are heading and where you are in relation to where they are trying to go.

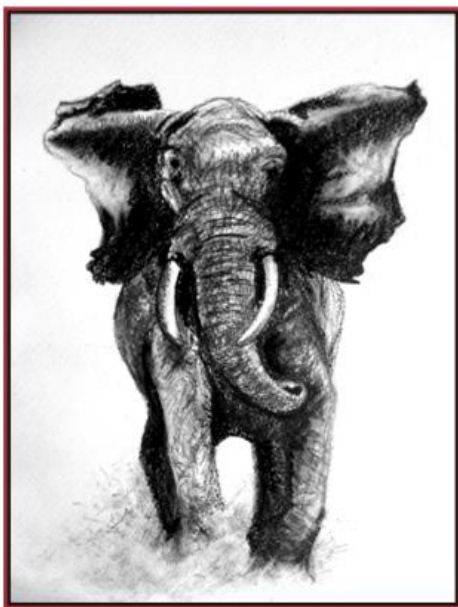
Look for females and young; remember they get angry and scared when separated and are more likely to charge.

Bunch together with all other members of the group, DO NOT spread out; now is not the time to go for a pee!

Check to see if you are upwind or downwind of the elephants (downwind is always better).

Watch the behaviour of the elephant(s); look out for the key behavioural warning signs (rocking front foot, flapping ears, etc. – see below)

Bear in mind we may get mock (hopefully not real) charges, in which case the ranger will advise how to react. During a mock charge, the animal is warning you to leave his/her personal space. In this event, you may have to run, throwing your bags as you go to distract the animals, and may need to make for a tree to hide behind or climb.



Elephant mock charge



Elephant standing tall

Warning/mock charge: Rushing towards person(s) or vehicle(s), then the elephant stops abruptly, standing tall with ears spread, kicking dust with a fore foot and possibly swinging the trunk towards the

opponent or vehicle. May be accompanied by trumpeting or air-blasting. Warning charges can often transition into real charges and should be taken very seriously. In response to a mock charge, leave the area you are occupying immediately, quietly and quickly.

Real charge: Rushing towards person(s) or vehicle(s) with ears not fully spread (for greater speed). Trunk usually tightly curled up, head held low, and tusks pointing towards opponent. A real charge is fast, abrupt and silent, so pay attention and respond to early warnings before the elephants feel the need to charge. In response to a real charge: DO NOT RUN. You will not be able to outrun a charging elephant. Instead, hold your ground, making yourself big, arms up and shout at the elephant to stop.

Buffalo

Buffalos do not mock charge and give no warning at all. The best way to survive a buffalo charge is to avoid one altogether. Make sure that you are always accompanied by a ranger who knows how to track (and stay away from) these animals.

Behaviour guidelines as for elephant.

Big cats

Pay attention to your surroundings. When a lion is angry or feeling threatened, it will sweep its tail from side to side. If it is hunting, it will keep its tail stiff and twitch it from time to time. They also mock charge, gruff and paw at the ground to determine whether you are a threat or prey.

Stand still! Even if a cat charges you, do not run and resist the urge to point or stare at it. Running will trigger the cat's hunting instinct, while pointing and starting will make the cat think that you are challenging it.

If you have frozen and the cat is not approaching, but not leaving either, then start to back away slowly while still facing the animal, but not looking directly at it. If it starts to move, then freeze immediately.

If you see stalking indications, then raise your arms above your head and wave them and most importantly shout at the cat. This makes you appear bigger and more of a threat rather than prey.

Code of conduct with predators

When viewing predators from a vehicle, there should only be five vehicles at a sighting at any given time. If more cars are waiting for viewing, they must wait 100 meters away. If data can be captured from 100 metres away, do so and move on. If there are vehicles waiting, make way for them immediately after data capture. Vehicles should maintain 20 meters between the vehicle and predator. If a predator intentionally approaches your vehicle, start the engine and back away slowly. Do not make a circle around the predator. Always give them a route to retreat from vehicles. If the predator is hunting, do not follow. Stay stationary with engine off until the kill is secured. If the animal is calling, turn off the engine and reduce all noise to ensure the audibility of their call to others.

ACTIVITIES OVERVIEW

Mammal mapping (foot patrol)

In order to create a spatial map of abundance and distribution of mammals (and optionally birds), as much of the conservation areas as possible will be covered by vehicle and on foot. There is also a competitive element to this activity: the more records, the better! All large mammals at all times should be mapped. The person in a team to spot the animal(s) first records the species. Teams of citizen scientists will be assigned to 'inventory' certain areas. The areas of focus for 2023 will be settlement areas where we are unlikely to directly observe animals, but want to log their presence, even if those areas are only frequented at night. You can also collect and/or take photos of sign (tracks, scats, etc) in order to build the training library for the rangers and visitors to the conservancy. Foot patrols will be guided by rangers and could last 3-4 hours. Group size is 2-4 citizen scientist + rangers.

Safety

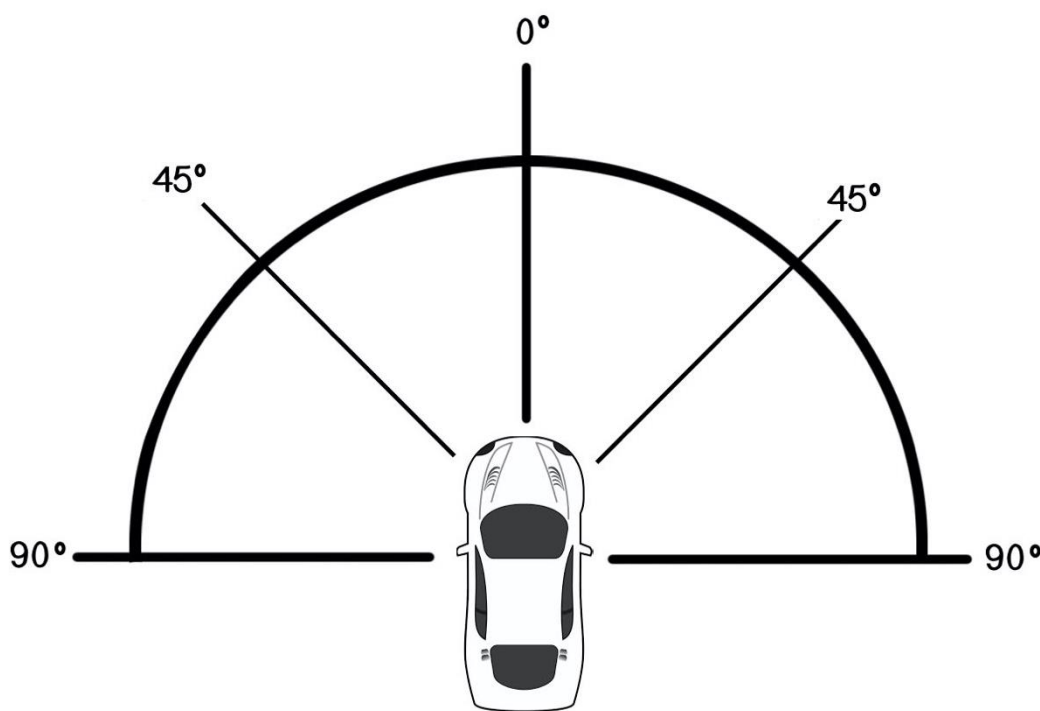
- Stay together, quiet and vigilant
 - Follow instructions of ranger at all times
 - When encountering potentially dangerous animals (elephant, buffalo, cats), watch their behaviour closely, make no sudden movements, stay in eye contact with your ranger and follow their instructions
 - Never run; an animal that sees a creature running will presume that you are prey, or are dangerous, and may try to attack you
 - Never underestimate the speed at which wild animals can run; while hippos and elephants may look sedately lazy, they can attack at high speed
 - Human noise will disturb the animals, either making them run away, or get angry; if you need to communicate at all, do so in a whisper
 - Do not smoke, eat or drink anything other than water
 - Never try to interfere – in any way – with the animals you encounter; this includes trying to change their behaviour or position for a good photo shot and feeding them.
-
- Wear neutral-coloured clothing that does not stand out; keep noise to a minimum
 - Take your time and collect data only on direct wildlife observations. Be vigilant, walking slowly to secure not only the next footfall, but also looking up to be alert for dangerous wildlife (e.g. buffalo, elephant).
 - When an animal is sighted, stop walking and wait silently. Check for all other group members and make sure your team is standing bunched together and not spread out
 - Record data as quickly, quietly, and accurately as possible so as not to disturb or influence the target animal's behaviour and position.
 - Individuals are considered to be in a separate group (and therefore a separate sighting and record on the data sheet) when distance from the last animal seen in the previous sighting is 25 m along the transect from the next sighting.
 - Do not handle any carnivore scat without gloves. If in doubt, wear gloves.
 - Collect data according to datasheet and instructions therein
 - For anyone interested in birds, please use the BirdLasser mobile app. A training session will be provided as to its use. Bird monitoring is entirely optional.
 - A GPS (or smartphone), rangefinder and compass are required to record data for this activity.
 - Binoculars will assist with identification and group counts; a camera will be useful for species identification or confirmation if no ranger or guide is with you. Spotting scopes are also useful.

Day & night vehicle transect

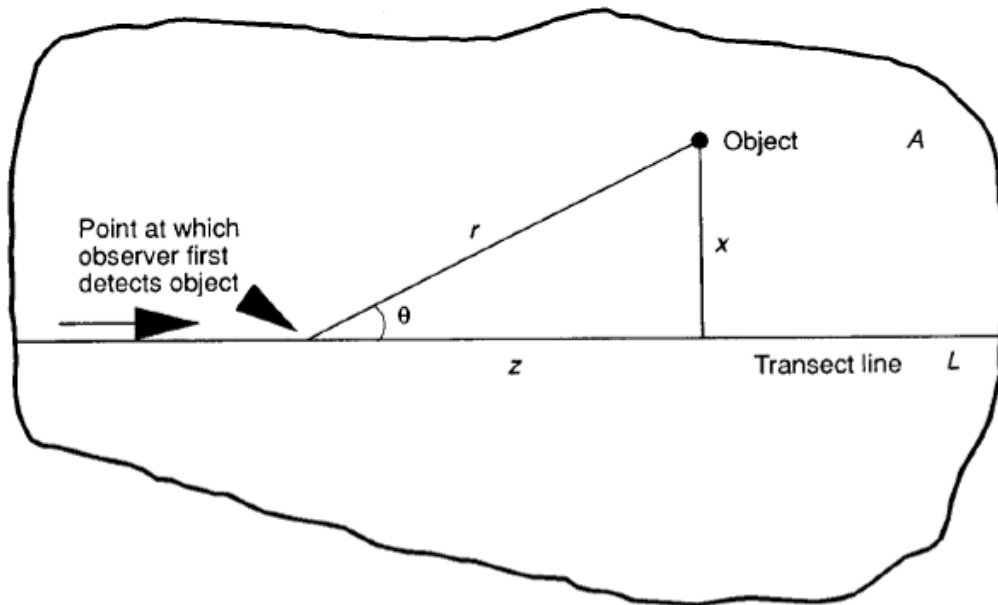
There are set vehicle transects of 10-20 km length in the conservancy and driving one should take about 2 h + getting there and back. They are basically game drives with a purpose, where you record all large mammals and a few target bird species you observe. Over time, this allows us to estimate population distribution and density using a method called distance sampling. Results can also give us estimates of prey availability for carnivores and preferred habitat for various species. Group size is 3-4 citizen scientists (one of them as the driver) + 1 ranger.

Safety

- Speed during transect drive 10-20 km/h (30 km/h in conservancy in general)
 - Driver – slow down and accelerate slowly
 - Passengers – hold on and mind branches and other obstructions on the way
 - Follow instructions of ranger at all times
 - When encountering potentially dangerous animals (elephant, buffalo, cats), watch their behaviour closely, make no sudden movements, stay in eye contact with your ranger and follow their instructions
 - Never try to interfere – in any way – with the animals you encounter; this includes trying to change their behaviour or position for a good photo shot and feeding them.
-
- All large mammals are recorded during the transect; stop and record all large mammals you see from both sides of the vehicle, from 90 degrees to either side to the front of the car (see below)
 - When a group or individual is encountered, observe them until you have accurate data; work together to do this
 - Do not harass animals or interfere with their behaviour
 - Once you have as much information on the sighting as possible, drive to the closest point on the transect to the ORIGINAL location of the animal/s, then record the perpendicular distance from you to the centre of the group using the rangefinder.



Count animals in this space only.



Basic measurements that can be taken in line transect surveys (such as foot patrols). Here an area of size A is sampled by a single line of length L . We are interested in distance x (shortest distance from transect line to object).

Camera trapping

We will set and retrieve camera traps, and analyse the pictures they take, in an effort to assess biodiversity within hotspots the study area during all hours of the day. Camera traps are extraordinary useful for species richness inventories, especially of rare, nocturnal and elusive species. Results can also give us estimates of prey availability for carnivores and preferred habitat for various species. Camera trapping activities include setting a camera trap, changing batteries, retrieving a camera trap or just changing its SD card. Group size is 1-2 citizen scientists (one of them as the driver) + 1 ranger as required.

Safety

- Maximum speed in the conservancy 30 km/h (during driving transects 10-20 km/h)
- Be extra vigilant and responsible for your own safety
- Follow instructions of the ranger at all times
- When encountering potentially dangerous animals (elephant, buffalo, cats), watch their behaviour closely, make no sudden movements and remember your safety training
- Never try to interfere – in any way – with the animals you encounter; this includes trying to change their behaviour or position for a good photo shot and feeding them

Pre-deployment

Ensure each camera trap has enough battery life for its intended time in the field (if you are not planning on changing batteries whilst the camera is in the field).

Check each camera trap has a labelled SD card and that the SD card and the camera are working before deployment. Do this at base before you leave.

Check date and time signatures are correct. Note: If you take out the batteries on some models, this will reset the time and date.

If your camera traps are labelled (e.g. BE16) and the camera trap has a Station ID function, then make sure all labels correspond with the Station ID on the camera.

Check that all cameras are set to the same parameters and that the chosen parameters are the right choice for your chosen animal (e.g. a large time delay between photos will be no good if you are trying to capture images of a large group).

Choosing a camera trap site

Select sites that your target species are known to use (e.g. for large carnivores most roads and tracks are heavily used whilst the opposite is true for ungulates). Where possible, confirm the presence of your target species through tracks, scat, calls, etc.

Try to determine the travel path of the target animal – pick a site where the target animal's travel path is limited to the area that can be photographed by the cameras.

If you are looking to identify individuals (e.g. leopard, hyaena), then make sure your camera traps face directly on to the trail you are focusing on. Poorly chosen sites or poor setting will result in unusable images for your study.



Camera trap images showing good (left) and bad (right) camera trap placement for individual identification.

Try to avoid areas of excessive sunlight. Passive camera traps will be affected by the ambient temperature and may not trigger when an animal walks past.

Try to avoid sites with lots of vegetation and moving branches/grass. Whilst this can be cut back, it is always best to avoid disturbing a site as much as possible. The more vegetation there is, the higher the chance that it will falsely trigger the camera. Over days this can lead to thousands of images to go through and use up battery life very quickly.

Once you have selected a site, clear any vegetation that is likely to trigger the camera (large blades of grass, branches over the sensor).

Deploying camera traps

Cameras should be set back at least two metres from the nearest point where a target animal might travel across the sensor. This allows for clear, focused pictures and a large enough field of detection from the sensor. The longer the target animal is in the detection zone, the less chance of missing a photograph.

Depending on your target animal, set the camera trap sensor to the appropriate height. A good rule of thumb is waist height for general use.

Use freshly cut sticks and branches to help prop up and secure the camera to the tree trunk or other anchor. A well-placed twig placed between the camera housing and the tree trunk can help adjust the angle in which the sensor is pointed (always use live wood to brace cameras and adjust camera angles, since dead wood is too brittle).

Test the aim of both cameras by crossing in front of them. Do this on both the edges and the middle of the path. Most camera trap brands come equipped with an indicator light that will light up when the camera's sensor detects you. Approximate a target animal by walking in a crouch and then walking in a more relaxed fashion. Make sure that every conceivable angle at which the target animal can pass in front of the camera is tested and that in each instance a photograph is triggered.

Before arming your camera, double-check all your parameters and time/date. Make sure you have an SD card in the camera and that it is not set to lock.

Once you are finished setting up, record parameters as per the datasheet.

Finally, make sure you arm the camera before leaving the site; it can be easier to forget than you think! Always do this last or you will end up using battery life and SD card memory whilst setting up your site.

Checking camera traps

Camera traps should not go longer than two weeks without being checked. This allows a reasonable number of photos to be collected without disturbing the site regularly.

Camera traps can either be checked remotely in the field using a laptop or by swapping SD cards in the field. If you are swapping SD cards in the field, ensure that you know which SD card came from which camera.

Use every camera trap check to ensure the parameters and time/date are still correct and swap batteries if needed.

If you are checking camera traps in the field using a laptop, then use this opportunity to change anything about the camera positioning from the images downloaded (height, distance to path etc.).

Day & night waterhole observations

Participants will spend time at selected waterholes within Ol Chorro and Mbokishi to record which species and how many animals come to drink. A shift length is 3-4 hours between 06:00-10:00, 10:00-14:00, 14:00-17:00 and 17:00-20:00 once per week (two per expedition group). For a shift, travel to the assigned waterhole and sit quietly in the vehicle, record what you see (or don't see!) every 5 minutes. Group size is 2-4 citizen scientists (one of them as the driver).

Safety

- Maximum speed in the conservancy 30 km/h (during driving transects 10-20 km/h)
 - If you have a ranger with you, follow their instructions at all times
 - If not, be extra vigilant and responsible for your own safety
 - Stay inside the vehicle. If a comfort break is needed, be vigilant of your surroundings before disembarking the vehicle. Perform your ablutions directly behind the vehicle. Do NOT seek out bushes.
 - When encountering potentially dangerous animals (elephant, buffalo, cats), watch their behaviour closely, make no sudden movements and remember your safety training
 - Never try to interfere – in any way – with the animals you encounter; this includes trying to change their behaviour or position for a good photo shot and feeding them
 - Be courteous to tourists and always give them way and the best sighting.
-
- Remain quiet for the duration of your shift, only discussing data in hushed voices
 - Do not wear white or bright clothes in the hide and keep white datasheets in the clipboards as flashes of white or bright colours will startle or scare off animals
 - Do not wear perfume, insect repellent, deodorant, freshly washed or sweaty clothes: noise, smell, movement and bright/unusual colours will all put animals off coming to the waterhole
 - After dark, the waterhole should be scanned every five minutes, with additional scans if activity is detected
 - Use only red filter spotlight or night sights in order to minimise disturbance
 - Collect data according to datasheet and instructions therein

Environmental education

For one day during the expedition, we will all host local students on the conservancy. During the morning hours, we will take them out into the conservancy to see wildlife first hand. For many of them this will be their first “game drive” experience and you will be their drivers and guides (by then you should be familiar with the conservancy and most of animals on site). After a lunch at the expedition base, we will engage the local students in common issues within conservation activities. It will be up to you to plan and deliver an afternoon of educational activities depending on your skills and areas of interest (we will of course provide advice and tips).

- Suggested activities: playing educational games that highlight the importance of sustainable rangeland management, or the trophic cascade which occurs when carcasses are poisoned, or the bioaccumulation of plastic particles from litter
- A practical lesson should also be taught such as human-wildlife conflict mitigation methods to keep livestock safe from carnivores or crops safe from elephants; the expedition scientist can advise citizen scientists on how best to present the lesson to the students in a creative way
- Each session should take a different approach to the school field trips which will build options for school activities as MTC continues to engage the local community.

TELLING MALE FROM FEMALE IN STUDY ANIMALS



Reedbuck

Female: no horns

Male: horns, usually larger body size



Impala

Female: no horns

Male: horns, usually larger body size



Waterbuck

Female: no horns

Male: horns, usually larger body size



Eland

Female: smaller dewlap, smaller horns

Male: larger dewlap, horns are thicker and more prominently ridged, larger body size



Thompson gazelle

Female: Thin, straight, short horns

Male: Large, curved horns



Grant's gazelle

Female: Smaller body, shorter and more slender horns

Male: Larger and heavier body, longer and thicker horns



White-bearded wildebeest

Female (right): Smaller horns

Male (left): Heavier horns, growing from a heavier base and extending further sideways than their ears; visible penis sheath

Difficult to tell apart



Topi

The female is usually lighter in colour than the male but both have similar body and horn size

Very difficult to tell apart



Hartebeest

Female: Slender horns, smaller

Male: Thicker horns, larger



Zebra

Female (right): Wider and longer black stripe or triangle near base of tail covering both vulva and anus

Male (left): Narrow black stripe running vertically between hind legs; thicker neck



Giraffe

Female (right): Smaller and lighter in colour tufted horns (except old females)

Male (left): Larger, bald, thicker horns; lump on the forehead



Buffalo

Female (right): Smaller head, neck and horns

Male (left): Larger heads, thicker necks, heavier horns; in old bulls, the bosses join across the head



Leopard

Female (right): Smaller body size, petite head

Male (left): Larger body size, thicker neck



Elephant

Female: Smaller body size, more angled forehead, nipples



Male: Larger, taller and twice as heavy, typically thicker tusks, more rounded forehead

TARGET BIRD SPECIES



Ostrich
(male black, female grey)



Kori Bustard
(world's heaviest flying bird)



Martial eagle
(Africa's largest eagle)



Black-chested snake-eagle
(smaller, white belly)



Bateleur
(distinctive with black body and red face)



Secretarybird



Augur buzzard
(has a red tail)



Tawny eagle (Very large brown eagle)



Southern ground hornbill



Grey-crowned crane



Hooded vulture



White-backed vulture

NOTE:

Other vulture species occur, but are very rare.

If you see a vulture, please take some photos. Vultures are in decline across Africa as they are poisoned by poachers and their body parts are used in the 'muti' trade.

OTHER SPECIES OF INTEREST



Crested porcupine



Honey badger



Civet cat



Common genet



African wildcat



Serval



Banded mongoose



Slender mongoose



Dwarf mongoose (always in groups)



Marsh (or Water) mongoose (solitary)



White-tailed mongoose



Caracal



Springhare



African hare



Aardvark



Pangolin (extremely rare)



Vervet monkey



Sike's monkey (rare)



Black and white colobus monkey

HABITAT TYPES



Dense lowland forest

Code DF

Forests in lowlands and along river, large trees, high canopy. Mainly Euclea, Croton, and Acacia trees.



Dense forest in valleys of hills

Code DV

Large trees of the Ficus, Euclea, Rhus and other groups. High canopy, in the valleys of steep hills.



Dense shrub

Code DS

Croton tarchonanthus shrub, mainly on rocky soil on hillslopes. Very dense and low canopy.



Disturbed areas

Code DA

Bare soil, medium bare soil or invasions of herbaceous pioneer species (*Solanum*, *Lantana*, *Ricinus*, *Opuntia* spp.)



**Open shrub /
grass or forest
edges**

Code OS

Patchy *Croton
euclea* or other
shrubs. Open
grassy areas
between shrub
stands, low
canopy, young
plants.





**Grassland /
glades**

Code G

Open areas with
just grass or very
occasional, single
trees (*Acacia*,
balaneites) .





Wetland

Code W

Waterlogged, vegetated areas, river-like branching forms, water-dependent reeds and grasses.

