





## Table of Contents

1.0 Organisation Background Overview .....	3
1.1 Habitat Conservation .....	3
1.2 Primate Conservation.....	3
1.2.1 Road traffic management .....	3
1.2.2 Electrocutation management.....	4
1.2.3 Snaring of primates .....	4
1.3 Education Programme .....	4
1.4 Research.....	4
2.0 Animal Welfare .....	6
2.1 Rescue.....	6
2.1.1 Incident Report Form .....	6
2.2 Reporting to KWS .....	6
2.3 Reporting to PASA .....	8
2.4 Collection of skeletons .....	9
2.4.1 Cleaning of skeletons .....	9
2.5 Rehabilitation.....	10
2.5.1 Short-Term Care .....	10
2.5.2 Long-Term Care.....	10
2.6 Release.....	11
2.6.1 Colobus monkeys .....	11
2.6.2 Sykes and vervet monkeys .....	11
2.7 Release.....	14
2.7.1 Release day .....	15
2.8 POST RELEASE.....	16
2.8.1 Monitoring .....	16
2.8.2 Daily data collection .....	18
2.8.3 Supplementary feeding .....	19
2.9 Intervention/Problems.....	20
2.9.1 Intervention .....	20
Troop Split.....	21
2.9.2 Other Considerations.....	21
2.9.3 Release of galagos.....	22
3.0 Finances and Operations.....	22



## 1.0 Organisation Background Overview

Colobus Conservation is a not-for-profit organisation based in Diani Beach, Kenya. The organisation works in partnership with local communities to promote the conservation of the Angolan black and white colobus monkey (*Colobus angolensis palliatus*), along with other endemic primate species, and the unique coastal forest habitat on which they depend. Colobus Conservation programmes focus on habitat conservation and community linkages as well as human/primate conflict management, welfare, education and research. The objectives and work of Colobus Conservation are recognised internationally by AZA Colobus Species Survival Plan (SSP), Pan African Sanctuary Alliance (PASA) accreditation and are supported by well-known conservationists Jonathan and Angela Scott through their role as Patrons. The following are thematic programmes that the organisation is implementing to achieve set objectives:

### 1.1 Habitat Conservation

Deforestation is the leading cause of the rapidly declining numbers of colobus monkeys across their range. With over 80% of the coastal forests already lost due to human activities, Colobus Conservation are actively combating this in several ways;

- ▶ Colobus Conservation facilitates a forest education workshops, annual tree sale events, annual tree planting in schools, Diani Hotels, residential homes and river banks Kwale.
- ▶ Monitoring of the survivorship and growth rates of indigenous tree saplings that are planted through our programme every July.
- ▶ Developed a tree nursey to propagate indigenous tree seedlings for reforestation and demonstration purposes.

### 1.2 Primate Conservation

Human-primate conflict management is targeted in the Diani area of Kwale County. This location is Colobus Conservation's focus area as it contains Kenya's second largest population of Angolan colobus monkeys.

- ▶ Colobus Conservation works closely with Kenya Wildlife Services including participating on the KWS committee, the *National Primate Task Force* overseeing primate issues across the country.

#### *1.2.1 Road traffic management*

Twenty-nine colobridges have been installed over the Diani's beach road to provide safe crossing havens for arboreal monkeys. These canopy bridges reduce the number of primates at risk to vehicle injuries and death.



- ▶ A small team of trained Colobus staff dedicate a day a week to maintain all colobridges along Diani's beach road. On average each bridge requires maintenance and/or rebuilding approximately once per year.

### ***1.2.2 Electrocutation management***

Colobus Conservation work closely with Kenya Power, the government parastatal that distributes electricity across the country. In collaboration with the Departments of Health and Safety, and Integrity and Ethics for the country, some areas (Diani) considered primate electrocution hotspots have been insulated.

Besides power line insulation, Colobus collaborates with KPLC to trim overgrown tree branches close to the power lines. This helps deter monkeys from jumping onto lines when trying to move from canopy to canopy. Though, this is a short-term mitigation.

### ***1.2.3 Snaring of primates***

Wire snares are set by poachers to capture Suni antelope for bush meat. Ground dwelling primates of Diani are also at risk of being caught in these snares. To mitigate against snaring of wildlife, Colobus Conservation, in collaboration with Kenya Wildlife Services (KWS) carries out de-snaring activities which consists of walking through targeted areas of snaring activity, dismantling and removing snares.

## **1.3 Education Programme**

Weekly education workshops are hosted at Colobus Conservation centre, teaching children and teachers about the beauty of the wildlife surrounding them and the importance of the forest. In addition, Colobus Conservation has an information and education centre, which is also open to the public to visit during a guided Eco-tour. Every year we receive an average of 1000 school children from 33 schools in Kwale County.

## **1.4 Research**

Key conservation issues are addressed by working in partnership with national and international universities and other research bodies and by promoting information sharing. Some of research thematic areas are:

- ▶ Diet and spatial ecology of yellow baboons (*Papio cynocephalus*) in a human-dominated environment in Diani, Kenya. Principle researcher being Ben Canellys, an MSc student from Oxford Brookes University.
- ▶ Evaluation of the Colobus Conservation enrichment program for multiple species of pre-release non-human primates, Kenya. Principle researcher being Samantha Palmer, an MSc student from Oxford Brookes University.
- ▶ Survivorship, demographics and seasonal trends among electrocuted primate species in Diani, Kenya. Principle researcher being Alice Slade, an MSc student from University of Bristol.
- ▶ Distribution and conservation status of the Angolan black and white colobus monkey in





Tanzania. Principle researcher being Pamela Cunneyworth.

- ▶ Annual census of Diani's diurnal primates: Each year Colobus Conservation carries out an annual census of the four-monkey species in Diani: colobus, Sykes, vervets and baboons. The outcome of the 2016 census indicates that in spite of massive development in the area, the population numbers of each species are stable;
- ▶ Please note, the census area was increased in 2016, beginning from the Kongo Mosque up to Pinewood Beach Resort. In previous years the census started at Southern Palm Hotel.
- ▶ The colobus subspecies in Diani is only found in Kenya and Tanzania. Though we estimate that there are 30,000 individuals remaining, there is some confusion on the location of the Diani subspecies in Tanzania. In fact, in some locations, another subspecies may be present instead. Team Colobus is currently undertaking a genetic study to determine the distribution of colobus in Tanzania in order that we can give a more definitive population size.

NB/ for every researcher to be able to proceed with their research activity is based on approval from Colobus Conservation, his/her university, KWS and NACOSTI. Below are the procedures will follow to acquire researchers permit.

### **KWS Affiliation Letter Procedure (\$120)**

Email research proposal to Thadeus Obari  
tobari@kws.go.ke

and inform him you are wanting an affiliation letter for Nacosti Research Permit.

He will then ask you to submit the following documents to enable KWS process your application:

1. Dully filled in and signed **APPLICANTS DETAILS FORM** (download from the KWS website)
2. Introduction letter from ypur University
3. Dully filled in and signed **INSTITUTION OF AFFILIATION FORM** (must be signed by an official from Colobus Trust and your supervisor)
4. Research Project Proposal
5. CV
6. Copy of Passport

Log onto the KWS website: [www.kws.go.ke](http://www.kws.go.ke) to download the documents. While on the website, click on 'Kenya Wildlife Service', then 'Conservation research'. Scroll down the menu and click on 'Conservation research forms' to view the 10 attached documents. Download and fill in only those forms relevant to your research project. See some of the attached documents that are for information to researchers. Once completed, e-mail the documents to Thadeus for processing. You will be charged research affiliation fees of **USD 120** for the research affiliation letter.

### **Nacosti Research Permit Procedure (\$350)**



- Set up an account online with Nacosti  
[https://oris.nacosti.go.ke/modules/registration/individual\\_foreignier.php](https://oris.nacosti.go.ke/modules/registration/individual_foreignier.php)

Follow instructions online.....

### **Nacosti Visa Process (\$150)**

- Complete the immigration form (in office at CC) – ensure EVERY SECTION is SIGNED and stamp it
- Take the required documents as indicated on the form including:
  - University letter indicating student status
  - KWS affiliation letter
  - Nacosti documents inc permit
  - Applicant affiliation letter
  - Letter from CC stating research approval and length of research
  - Also take a copy of CC’s charity status letter – this is essential although not indicated on form.
    - Take 2 passport photos, your passport and a photocopy of your passport
    - Take a bankers draft for 15000 Ksh (\$150) payable to: the principle secretary, ministry of interior and coordination of national office

Go to the main immigration office. Do not go in the 1<sup>st</sup> door, go in to the second set of doors. You will see a counter in front and to the left and a doorway in front, go through that doorway and turn left down the corridor. Go in to the third door on the left and present them with your completed immigration form.

They will check all your documents and pass them to someone else. It is a long process, be prepared to wait!!!

When they are happy, they take your documents and give you a receipt. You have to take this to the other immigration office.

Go out the main gate, turn right and walk to the roundabout (a few minute walk). The immigration office is on this roundabout next to an insurance shop. Go up stairs to the 4<sup>th</sup> floor and present your receipt. They will now write up the details in your passport and stamp it.

Nacosti Bank Details:

Bank            Kenya Commercial Bank  
Branch        Kipande House-Nairobi  
Account No:   **11 04 16 25 47**  
Account Name: **National Commission for Science, Technology and Innovation**

**(Please see attached a previous permit received from NACOSTI)**



## 2.0 Animal Welfare

Animal welfare comprises of rescue, rehabilitation and release. These animals are usually victims of pet trade, road traffic accidents, poaching for both bush meat and pet trade, electrocution, orphaned and abandoned individuals. The aim of their rescue and rehabilitation is to provide them with a second chance in life.

### 2.1 Rescue

In cases where primates are found or brought to Colobus Conservation that cannot survive in the wild, they enter our rehabilitation and release program. Methods for rescuing primates are outlined in the manual Field Methods.

#### 2.1.1 Incident Report Form

Each individual brought to Colobus Conservation is given a unique number based on the date it was reported with a letter designation according to its species. For example, C22052016 is a Colobus monkey reported on 22nd May 2016. If two or more individuals of the same species come in on the same day, a suffix of a, b, c etc is added to the end of the number accordingly (i.e. C22052016a for the first Colobus case that day; C22052016b for the second Colobus case that day).

Prefixes in the numbering protocols are noted as follows:

C: Colobus

S: Sykes

V: vervet

B: baboon

G: galago

O: other (all non-primate species)

For each individual an Incident Report Form is filled in. See *Appendix 1* for this form. These forms are kept in the veterinary clinic until the case has been concluded at which time the information is added to Colobus Conservation's computer database and the form is filed appropriately in the office.

In call, out cases where an individual is not found, an Incident Report Form is not completed due to the high rate of misinformation on species type, age and problem from the public.

It is important that all the information is collected and recorded on the Incident Report Form including clear and full description of the incident and all measurements and the weight.

**If a case is responded to by a veterinarian they must fill in the appropriate section of the incident report sheet, then sign and stamp their comments. All veterinarians attending to cases on behalf of Colobus Conservation must be registered with the Kenyan Veterinary Board.**



## 2.2 Reporting to KWS

As soon as possible, all animal welfare cases (including non-primates) that involve the collection of a live animal are to be reported to the KWS, Head Veterinarian, currently Dr. Francis Gakuya. KWS do not need to be informed of animals that are already dead at the point of collection or those that are not captured. Scan the animal welfare incident sheets and email to:

[gakuya@kws.go.ke](mailto:gakuya@kws.go.ke) (Dr. Francis Gakuya)  
[dndeereh@kws.go.ke](mailto:dndeereh@kws.go.ke) (Dr. David Ndeereh)  
[mohammedumlai@gmail.com](mailto:mohammedumlai@gmail.com) (Dr. Mohamed Umlai)

Copied to: [pam@colobusconservation.org](mailto:pam@colobusconservation.org)  
[animalwelfare@colobusconservation.org](mailto:animalwelfare@colobusconservation.org)

Major changes to the treatment of animals or death of an individual is to be reported to the above people as soon as possible after the incident.

**Euthanasia:** If euthanasia is recommended by the veterinarian, a phone call or email to Dr. Francis Gakuya is necessary prior to the administration of the drug. If this is not possible given the circumstances, reporting must be done as soon as possible after the case is concluded.

## 2.3 Reporting to PASA

As a member of PASA, we are obliged to report incoming welfare cases. Currently, these are being done on a tablet supplied to Colobus Conservation by PASA.

***Death in animal welfare cases-*** In the cases where the animal has died either in the wild and the body retrieved or has died at Colobus Conservation, an Incident Report Form is filled in. The following must only be done on individuals that have died.

***Body measurements*** - Body measurements are taken in a standard method. These are depicted in the photos for the different species. Please note any unusual characteristics such as thumbs on Colobus monkeys

Appendix 2 shows standardised body measurements.

***Determining reproductive state of females*** - Please note that in sub adult and adult females, it is important to determine the reproductive state of the female.

***Sexual swelling state*** - To determine the external state (swelling/non-swelling) of the genitalia, take the measurements and record the description of the vulva of all the sub adult and adult females as noted on the Swelling State Form.

***Reproductive state*** - To determine cycle state, the veterinary technician should remove the ovaries and proximal portion of the uterus and photograph at close range. Note on the Incident Report Form whether or not the follicles are maturing.

If the female is pregnant, remove the foetus, weigh and record on the Incident Report Form.





## 2.4 Collection of skeletons

Colobus Conservation is in a unique position of having access to skeletal material of six primates. At present only, the skeletal material of Colobus monkeys is collected, but the following methods are applicable for all species.

- 1) Ensure the body has been fully processed i.e., incident report sheet complete and all necropsy and sample collections have been completed.
- 2) Place the body in a specially designed bag. The bags are made at KFI supermarket using heavy duty plastic mosquito net, which does not readily decompose. There must be only one body per bag and ensure the body is removed from all coverings i.e. plastic bin bags or towels.
- 3) Inside each bag place the body's unique reference code so the skeletal remains can be identified once exhumed. The reference code should be written in large letters, using a dark coloured permanent marker and then laminated. It is essential that the code is fully laminated otherwise the code will spoil.
- 4) Secure the top of the bag with a cable tie. Ensure the cable tie is tight so it does not become loose during decomposition and the bones fall out of the bag when exhumed.
- 5) Bury the bag in one of the 10 graves on CC land. Ensure there is adequate soil on top of the body to prevent smells and that numerous heavy stones are placed on top of the soil to prevent them being dug up by dogs.
- 6) Exhume the body after a minimum of 8 months and clean.

### 2.4.1 Cleaning of skeletons

1. The most important consideration is to keep the skeletons separate from other skeletons and organized – only work on ONE skeleton at a time.
2. It is also important to keep the bones out of reach of any monkeys, dogs etc., so all cleaning must be done in the quarantine kitchen and the doors and windows must be closed when no one is present
3. Ensure the ID code (on a laminated piece of paper) is cleaned up and stored with the bones
4. Use a series of plastic buckets,
  - a. one bucket with dirt and the mesh bag,
  - b. one bucket with soapy water,
  - c. and a third bucket for clean bones
5. **For cleaning:** All of the bones are pretty resilient and can be cleaned with soapy water and tooth brushes. Start with the mesh bag in a plastic bucket, and remove bones one or a few at a time and place in the soapy water bucket. It's easiest to start with the long/larger bones first. It works best to hold the bones under water with one hand and scrub with the other. Most of the dirt should come off, but it is not a big deal if some remains in the little crevices.
6. The skull and jaw requires some special attention. The teeth may fall out easily if scrubbed too hard with the brush. If this happens (not a major problem), it is important to try and recover the teeth and store them together (i.e., have a zip bag labelled "upper jaw teeth" and one labelled "lower jaw teeth" for each monkey). Therefore, clean the skull and jaw separately, so if teeth do fall out it is easy to label them upper jaw or lower jaw.



7. Once the bones are washed, gently pad dry them with a towel and then they need to spend at least 24 hours drying before they are stored in zip bags and/or plastic bins. Each body will be in three bags, one for the upper jaw/skull and teeth, a second for the lower jaw and teeth and a third from the rest of the skeleton. Ensure each bag is labelled with the correct ID code in permanent marker.
8. Depending on how much experience you have had with bones it can be tricky to identify bone vs. rock or other materials. To safe guard against disposing of good bone material follow the rule "when in doubt, keep it." Some bones of the wrist and ankle are about the size of pea, 7 bones in each ankle and 8 in each wrist, so be careful and observant when sifting through the material

## **2.5 Rehabilitation**

When individuals are brought into Colobus Conservation's care, they go through their rehabilitation and are released back into their home environment. Individuals may be housed for the short-term for those that are sick or injured. Others, such as orphans or ex-pets, need longer care before release. Please note that the procedures developed are different between Colobus, Sykes and vervets, and galagos – being three different processes.

### ***2.5.1 Short-Term Care***

Captive care is carried out within the policies, procedures and methods of the accompanying manuals: Field Methods, Veterinary Care, Captive Care Weaned Primates and Cage Enrichment.

When individuals have regained their health, it is critical to release them back to their home group. If the home group is unknown given the circumstances of the animal welfare incident, the individual must be released at the location that it was found. At the point of release make allowance for proximity to the road, electricity cables and other notable dangers. Alternatively, the release can be made to the closest group of that species to the incident site. If this option is chosen, the field assistant needs to watch the interactions during and after the release, ensuring that behaviours are shown that are typical among group members.

### ***2.5.2 Long-Term Care***

Long-term care occurs in situations of orphaned unweaned individuals, immature individuals without a known provenance, or ex-pets of any age. Ex-pets generally have behavioural issues and they are lacking in wild feeding skills. They are generally unsuitable for release when they first reach Colobus Conservation.

Individuals under these circumstances enter our long-term captive care program that has been designed to develop skills that will eventually allow a wild release. These individuals are put into a single species group and released on the property of Colobus Conservation, as a stable group. They are supplementary fed and monitored according to the methods below.



## 2.6 Release

### 2.6.1 *Colobus monkeys*

To date hand reared, orphaned Colobus have not been successfully released back to the wild. The points below are currently considered important to make future releases successful.

In situations where the re-introduction of a Colobus monkey into a wild group is to be carried out, it is essential that as early as possible in the Colobus hand rearing life it must be exposed to tree climbing and wild foods (forest school) and made constantly visible to the home troop which it will eventually be exposed to, which in most cases should be the home troop where long term follows can be carried out.

Important aspects to the rehabilitation are:

- Day time spent in forest school, with ideally night time spent in the rehab enclosures;
- Teaching via appropriate calls and interactions that baboons, dogs and eventually humans are to be avoided.
- Exposure to the wild troop is opportunistic based on when they are on-site. Once completed and successful, or not, methods of what happened will be written.

The orphaned Colobus monkey is to be integrated into one of the two Colobus Conservation's home troops. A full understanding of their behavior pre- during- and post- re-introduction is valuable to highlight issues as they arise, advise on methodology and inform on alterations for future such re-introductions.

### 2.6.2 *Sykes and vervet monkeys*

As Sykes and vervet monkeys are similar in many respects, they are dealt with together here.

#### **Stage One: Habitat Assessment and Release Site Selection**

The most important criterion upon which a release site needs to be assessed is its ability to provide sufficient nutrition and predator safe sleeping sites throughout the year to support released animals (Britt, *et al.* 2004). Ideally, this requires detailed knowledge of the natural diet and sleeping site selection of the species to be released (Britt, *et al.* 2004). This base line data has been collected for the vervet and Sykes populations of Diani and is currently under analysis.

When selecting a release site consideration must be given to the future plans of the area. Diani is entirely in private ownership, divided into numerous sub-plots that are owned by commercial traders and local residents. Once potential release sites have been identified, discussions with the relevant land owner(s) will occur to investigate the future plans for the site. If a site is due for development or sale at any point in the future it will be ruled out as an area for our consideration.

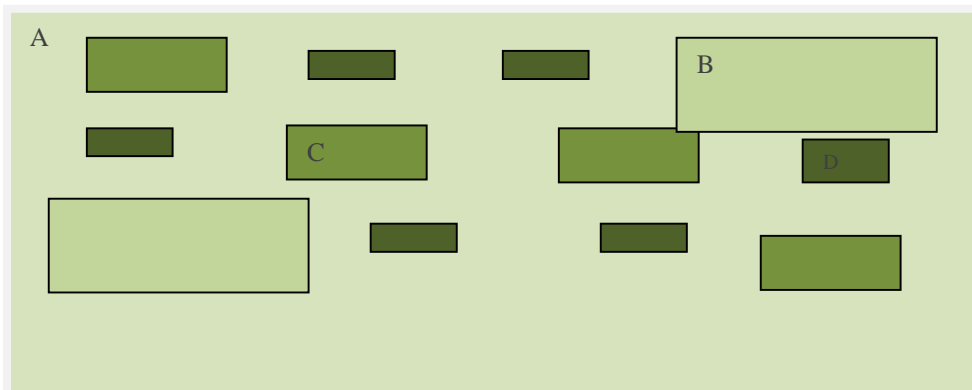
Once a release site has been selected and meets all the requirements a pre-release habitat survey of the site takes place following the methods below. This habitat survey is repeated, in the same month, using the same plots one-year post release. Results from the two surveys are compared to



indicate what impact the release monkeys are having up on the environment and to monitor any detrimental effect this may have up on other species at the site and increase understanding of the sites carrying capacity.

Initially, each plot within the release site will be selected at random and for each subsequent survey the same plots must be revisited. For tropical forests, modified Whittaker plots have been proposed for multi-scale sampling (Stohlgren and Chong; 1997, Ganzhorn, 2003). Nested subplots of different sizes within a larger plot allow the development of species to area curves and estimation of the number of species in a larger un-sampled area.

An initial large plot, 50m x 20m (1000m<sup>2</sup>) denoted as A (see fig 2.4) will be surveyed and all trees  $\geq 30$ cm DBH will be recorded, noting species, percentage of canopy cover, crown width, tree height, DBH and bole height. Within plot A further twelve rectangular plots with side ratios of 1:2 will be surveyed at varying sizes reflecting different vegetation stratum of the forest. Two 'B' plots of 7.07m x 14.14m (100m<sup>2</sup>) will be surveyed and all trees  $\leq 30$ cm  $\geq 10$ cm DBH will be recorded, noting species, percentage of canopy cover, crown width, tree height, DBH and bole height. Four 'C' plots of 2.24m x 4.47m (10m<sup>2</sup>) will be surveyed and record all bushes, shrubs and trees  $\leq 10$ cm DBH, noting species, percentage of canopy cover for the trees or percentage of ground cover for the shrubs and bushes, tree height and DBH. Finally, six 'D' plots of 0.71m x 1.41m (2m<sup>2</sup>) will be surveyed and record the herbaceous vegetation, noting species and percentage of ground cover. This method will be repeated eight times within the release site. See appendix 4 for data sheets.



Demonstration of the lay out for each Whittaker nested plot.

### **Stage Two: Rehabilitation of Release Animals**

Preparation for release occurs throughout the rehabilitation period though some specific training sessions occur in the final months prior to release as discussed below.

#### **Predator Awareness Training**

The primates subject to reintroduction into Diani need to be aware of, and able to respond appropriately to, four main predators: snakes, domestic dogs, baboons and humans. All predator awareness training is conducted in the three months directly prior to release, to ensure that any learning is retained and that habituation does not occur from repeated exposure. Research assistants will monitor each of these interactions from the viewing windows. Any response observed in the focal animals will be ranked from 1 – 5, where:



- 1 – No response (continuation of current behaviour / change to another non-predation related behaviour)
- 2 – Curiosity towards predator, including visual attentiveness and approach
- 3 – Alarm calling in response to other's doing so
- 4 – Alarm calling and appropriate positioning, i.e. tree climbing
- 5 - Initiate alarm calling and moving to appropriate position

These rankings will then be used to rate the troop as a whole for predator awareness, by taking a mean average. Individual rankings of 3-5 will be considered satisfactory, if combined with an overall group ranking of 4-5 for each predator presented. If the pre-release troop all respond satisfactorily on the first exposure no further training will be provided. If a few individuals did not respond satisfactorily to the first exposure the training can be repeated not less than one week later, for a maximum of three exposures.

Where an individual or groups response to a model predator is deemed repeatedly unsatisfactory, its presentation is to be paired with the appropriate alarm call. Vervet monkeys have species-specific alarm calls and responses. Any playback of alarm calls that is required will incorporate the correct call for the model predator presented, ensuring that the response displayed is also species-specific. Conversely, Sykes monkeys do not have a known species-specific alarm call except to crowned hawk eagles (*Stephanoaetus coronatus*) (Marler, 1973). In cases of predator responses, they either threat display by branch shaking or sit very still and flat against the trees, hiding in the foliage.

*Snake:* Model snakes will be presented to the monkey troops, hidden within their enclosure during the morning cleaning routine.

*Dog:* The pre-release troop will be exposed to a live dog, which, due to the cage design, cannot come in to direct contact with any of the monkeys, limiting the chance of attack or disease transmission.

*Baboon:* During visits by the wild baboons, the pre-release monkeys will be observed and scored, as above, for the appropriate predator response. Wild monkeys in Diani, generally vacate the area when baboons enter, moving to a different section of their territory. Using methods presented by Griffin, *et al*, (2009), if once released, the troops do not show appropriate reactions when wild baboons are encountered, the species-specific alarm call will be played and, if required, the researchers will chase the monkeys from the area.

*Humans:* The primary concern for human/primate contact is association of humans with food which potentially may lead to release primates approaching and threatening humans who are carrying food, ultimately resulting in euthanasia due to human/wildlife conflict. From the moment the monkeys enter the pre-release enclosure all direct contact with humans is stopped. During feeding periods, any monkey who attempts to take food directly from the carer is sprayed with water, which is an effective aversion technique.

In order to instill a level of human avoidance in general and not just related to food, the steps taken for dog training will be repeated using humans who will enter the anti-cage of the enclosure (the





human is therefore kept protected from attack). Care will be taken to expose the monkeys to humans from a range of ethnic origins, ages and both genders. If the monkeys approach the human (and others on the outside, if required) will shout, bang and chase the monkeys away.

### **Wild Foods**

Pre-release monkeys will be encouraged to begin foraging on naturally occurring resources, via specifically selected environmental enrichment and provisioning of wild leaves, fruits and flowers from the day they enter the rehabilitation enclosures. Prior to release close monitoring will occur from the research team, noting individuals' reactions to the wild food source, which individuals are eating the food and the individuals that are relying solely on human provisioned food. This information will be particularly important when introducing the animals to fall back foods during periods of food scarcity as it is essential that all individuals feed from this source.

### **Troop Cohesion**

Three months prior to reintroduction, the release troop will be finalized (subject to removal of any individuals deemed to be unsuitable following pre-release training) and no additional individuals will be introduced. Troop selection will be influenced by individuals who are showing appropriate responses to predator awareness training, wild food selection, combined with creating a troop representative of wild troop composition for each species. This three-month period prior to reintroduction will allow the group to settle and stabilize, form hierarchies and social bonds (Earnhardt, 2010). Group cohesion for each pre-release troop will be assessed using wild social dynamics as a representative baseline, taking in to account limitations enforced due to the confinements of the pre-release enclosure. Social networks will be created, based on grooming, play and proximity. Each pre-release enclosure allows individuals to be more than 5 meters away from the focal animal and still be in visual contact. Individuals will also be able to move into neighboring enclosures, increasing this distance further and has the addition of visual barriers.

In the month prior to release each individual, as well as the troop as a whole will be assessed for their suitability to be included in the release program. Appendix 3 details the individual assessment form and the criteria for being accepted for release, these include feeding on wild foods, appropriate reaction to predator species and cohesiveness to the troop. Individuals who are not suitable for release will be removed from the troop for continued rehabilitation and hopeful inclusion on future releases. In addition, daily activity budgets, including proximity data will be collected, using the same methods and data collection sheets as designed for the post-release monitoring, to allow for comparison of time budgets pre- and post-release and changes in hierarchy.

One week prior to release day each monkey will be given a final health check where any outstanding vaccines will be administered, internal and external parasite treatments given, individual I.D.s assigned (most likely with ear tags) and radio collars fitted to appropriate animals if budgets allow. Unless enough funding can be located to radio collar each individual, selection for collars will be based on those individuals noted as integral to the group ('high centrality', Kasper & Voelkl 2009) or high vulnerability, e.g. low-ranking members.

## **2.7 Release**

Release day will be scheduled for a period that offers optimal resources and minimal resource competition for the monkeys being released. Therefore, release is anticipated that troops will be released annually in May, one month after the on-set of the long rains when numerous trees are in full fruit and flower, insect numbers are high and plentiful water is available.



Released primates will be monitored for a one-year period, ensuring that the research team can monitor the animals through the toughest point of the year (January-March dry season) when fall back foods are most important. This will enable assessment as to whether wild food pre-release exposure could be improved. Supplementary feeding will be provided for the first four-eight weeks post release, with quantities given reducing weekly to slowly wean the release troop off provisioned food. Intervention in the case of illness or injury and support from predators will be given, when required, throughout the year. After this time, they are subject to the same assessment as all wild primates involved in a welfare event.

Over the course of the first-year post-release the contact time the research team will spend with the release troop will gradually reduce with the aim to create a self-sustaining troop over a gradual process of reduced support. Table 1 details this decline.

Table 1. The research schedule for the release troops

Time Frame	Data Collection
Month 1-3	The release troop will be monitored daily from dawn until dusk, comprising of a morning and evening census, two focal sessions, one morning and one afternoon
Month 4	The release troop will be monitored for five full days (dawn to dusk), conducting the research as detailed above, and two half days of monitoring, conducting the research as detailed above, but with only one focal session, from dawn until lunch or lunch until dusk. These partial days allow the primates time to acclimate to, and interact with their environment on their own, slowly decreasing their dependence on the human research team
Month 5	The release troop will be monitored for three full days (dawn to dusk), and four half days of monitoring, from dawn until lunch or lunch until dusk.
Month 6	The release troop will be monitored for seven half days, from dawn until lunch or lunch until dusk, collecting data as detailed above
Month 7-9	The release troop will be monitored for five, reducing to 3 half days per week.
Month 10-12	The release troop will be monitored for two half days per week (one morning and one afternoon) to allow focal follows and feeding ecology during the dry season to occur, with an additional one contact per week for the purpose of conducting only the census

### 2.7.1 Release day

- Release day should be planned for two weeks after the start of the short or long rains (April or November).
- The release should take place on a Sunday as this is a day with reduced human traffic through the property.
- It is likely that wild vervets will be on the property at the time of the release but if possible, release when they are not present. Baboons should not be present when the monkeys are released.
- Last checks of individual health condition are to be conducted in the morning by the release team.



- After the monkeys have been fed and watered, the troop will be released by one person, quietly opening the enclosure door. No fuss or cheering is to be made.
  - Only members of the reintroduction team are to be present at the time of release.
  - Human numbers are to be kept to an absolute minimum.
- A door of the rehabilitation enclosure is to be left open in case any individual chooses to return and use the enclosure as a safe refuge. The door needs to be loosely tied to prevent the door opening fully and allow baboon access. A gap adequate for the largest release animal is the maximum that is required.
- Researchers are to follow the monkeys throughout the day and leave them only as they are settling down for the night in their sleeping trees. Full research monitoring protocol to be conducted throughout the day.

## **2.8 POST RELEASE**

### ***2.8.1 Monitoring***

Ideally, the release troop should be monitored for 12 months post release, initially visited daily by two researchers according to the schedule below. This schedule can be adjusted according to the conditions of the release troop, as not all troops will adapt in the same manner, some requiring more monitoring time and others requiring less monitoring time. Group and individual acclimation to the wild will be monitored very closely in the beginning stages of the release to determine when is an appropriate time for the research team to begin reducing some from the monitoring.

*Months 1-3:* The release troop will be monitored daily from dawn until dusk, comprising of a morning and evening census, two focal sessions (morning and afternoon), collecting data on behavior, feeding ecology, day and home range and proximity.

*Month 4:* The release troop will be monitored for five full days (dawn to dusk), conducting the research as detailed above, and two half days of monitoring, conducting the research as detailed above, but with only one focal session, from dawn until lunch or lunch until dusk. These partial days allow the monkeys to acclimate to, and interact with, their environment on their own, slowly decreasing their dependence on the human research team.

*Month 5:* The release troop will be monitored for three full days (dawn to dusk), and four half days of monitoring, from dawn until lunch or lunch until dusk.

*Month 6:* The release troop will be monitored for seven half days, from dawn until lunch or lunch until dusk, collecting data as detailed above.

*Month 7-9:* The release troop will be monitored for five, reducing to 3 half days per week.



*Month 10-12:* The release troop will be monitored for two half days per week (one morning and one afternoon) to allow focal follows and feeding ecology during the dry season to occur, with an additional one contact per week for the purpose of conducting only the census.

**NB.** Ideally, primate releases should only be conducted when an adequate research and release team is in place for post-release monitoring. However, in 2015 after a prolonged period of low volunteer and researcher numbers due to travel security warning a vervet release was required for the well-being of the individual. Minimum post-release monitoring was set at twice daily census and health checks to be conducted by trained staff members for the first three months, reducing in intensity as per the monthly schedule above.

- At NO TIME (except in intervention – see below) should there be any form of contact between Colobus Conservation personnel and monkeys. If a monkey approaches a researcher, staff or volunteer it should be firmly and efficiently chased away. Some effective methods:
  - Using a spray bottle to spray monkey with chili water;
  - Using a stick/piping to scare away monkeys without contact;
  - Threatening to throw small stones at the individual - no stone should ever be aimed and thrown at a monkey.
- All personnel must be especially careful not to leave food lying around in non-monkey proofed areas. Areas of particular problem are:
  - The veranda – no food, snacks or orphan meals to be left anywhere on the veranda. All items must be returned to their correct storage place immediately;
  - The monkey kitchen – the monkey kitchen and vet clinic door must be kept locked at all times to prevent the release troop access to the area;
  - The burn pile - no food waste is to be placed on burn pile until it is due to be burnt. In between 'burn days' store food waste in the garbage area in the designated bins.

Under no circumstance should:

1. Any release animal be given food to distract them while captive monkeys are fed or food delivered to site. If there is a problem monkey, alert management;
2. Allow the release group to enter any house. All on site personnel are responsible for the prevention of this.

Personnel must be aware of their proximity to the release troop:

- A minimum distance of 3m must be adhered to at all time, increasing to 5m by 6 months post-release;
- If an individual approach a researcher within this distance it is the researcher's responsibility to reposition themselves to a 3m distance;
- It is appreciated that during times of dispute or fast movement this will be difficult, however, every effort must be made;



- Tour guides are responsible for ensuring correct behaviour of tourists around the monkeys during their visits.

Personnel must be aware of the affect their actions have upon the troop:

- As a researcher it is essential that you do not bias the behaviour or movement of the troop. It is therefore recommended that the above minimum distances are adhered to;
- In addition, make every attempt to move alongside the troop rather than in front (leading) or behind (herding);
- By moving alongside, it will also allow the troop to turn and flee, without coming into close contact with the researchers.

### ***2.8.2 Daily data collection***

A census will be taken of the release troop at the beginning and/or end of every focal day. The aim of the census is to note the presence/absence of troop members, allowing for births, deaths, immigrations and emigrations to be systematically recorded.

In addition, the field team will monitor the descent or ascent time of the troop to and from their sleeping site. Each morning as the monkeys descend from their sleeping site, the time and I.D. of each individual as they leave the sleeping tree will be recorded. These data will provide the average daily descent time of the troop in terms of first and last to descend and the time taken for the whole troop to vacate the sleeping site, also indicating which troop member(s) lead these movements. The same process will occur in reverse each evening and the time, each monkey ascends the sleeping site will be recorded. This information will be invaluable in assessing the progress, cohesion and natural behavior of release troops and ensuring that basic survival techniques such as ascending to sleeping sites is occurring at a time and speed corresponding to the wild troops. Based on previous experience of release troops monitored by the author, once the alpha male had been killed the troops where consistently late descending and ascending their sleeping sites. The late ascent in the evening is believed to have unnecessarily exposed the troop to predation by leopard, resulting in the death of two individuals. Due to the recording of descent and ascent time, the census will be the first research activity during morning research periods and the last during afternoon research periods.

The final part of the census will be a once weekly health score index for each individual, where:

- 1 – Individual in poor health or condition, has severe wounds or parasite overload
- 2 – Individual in below average condition, underweight, dull eyes and patchy coat, low number of parasites
- 3 – Individual in average condition, average weight, no parasites visible
- 4 – Individual in above average condition, good body weight, thick coat, no parasites
- 5 – Individual in excellent condition, good body weight, thick glossy coat with no patches

Any individual scoring two or below will be assessed for intervention requirements and where possible treated within the troop, allowing it to remain wild. See Appendix 5 for an example of the data sheet.





### 2.8.3 Supplementary feeding

- Supplementary feeding is designed to ease the transmission of captive to wild life. As such the amount given needs to be gradually reduced, so to wean the monkeys off the dependent feeding routine that they have been used to.
  - Week 1 – For the first week post release all monkeys should be supplementary fed once daily and watered provided if appropriate – food supplied at 75% the captive quantities.
  - Week 2 – Provide 50% of normal quantities of food once daily and water as appropriate.
  - Week 3 – Provide 50% of normal quantities of food every second day and water as appropriate.
  - Week 4 – Provide 25% of normal quantities of food every second day and water as appropriate.
  - Week 5 – Provide 25% normal quantities of food twice a week and water as appropriate
  - Week 6 onwards – Terminate supplementary feeding, monitor individual's conditions, ensure that sufficient wild foods are available and the monkeys are feeding for themselves adequately in the wild. If this is not the case, supplementary feeding should continue until such time that the monkeys are coping sufficiently in the wild.

#### ***Dependency on supplementary feeding should not be created, so care must be taken.***

Daily Animal Care staff (not volunteers) are responsible for distribution of supplementary feeding. Coordinate feeding times and locations with the release team or management in the absence of researchers.

Supplementary food must not contain highly desired fruits, such as banana, mango, and papaya. The aim is that the release monkeys only access this support if required. So, by making the food less appealing only those individuals that need a 'top up' will eat. Supplementary food can consist of vegetables including cabbage, squash, spinach, green beans, cassava, sunflower seeds etc.

Supplementary food must be cut into the smallest possible sizes (no large chunks). This will allow the food to be scattered more widely, reducing competition between release troop individuals and increasing equal access regardless of individual troop status.

The environment is also a factor to be considered in the reduction of supplementary food. The monkeys must be weaned off the supplementary before the dry season begins to take effect on the vegetation, otherwise the monkeys will be left with no supplementary food and little wild food to counter balance this.

In the final stages of feeding all supplemental fruits and vegetables should be stopped. Sprinkle only a small quantity of sunflower seeds.

The timing and method of supplemental feeding should consider the following:



- Feed at different times and different locations each day to prevent a routine forming.
- During the first week feed at the release site (in the vicinity of the rehab enclosure), so the monkeys view the enclosures as a safe, friendly place. This will allow for greater ease in trapping an individual for intervention if required.
- As soon as it is apparent that the monkeys move in and out of the cage without fear, begin feeding them farther away from the release site, only occasionally feeding there to continue reinforcement of the safe, friendly atmosphere of the cages.
- Scatter food over a wide area to avoid fights and intra troop aggression, using the ground.
- Scatter food in a sheltered area, such as the nature trail or tree covered garden area to protect monkeys from predators whilst feeding.
- DO NOT feed when any wild troops are present. Even if it means feeding does not occur that day.
- STRICTLY NO HAND FEEDING
- DO NOT allow the monkeys to see staff distributing the food. Scatter the food quickly, discretely and in a location out of view of the monkeys, to prevent association and food aggression towards personnel.
- DO NOT feed the monkeys close to any house.

## 2.9 Intervention/Problems

### 2.9.1 Intervention

- Staff and researchers should only intervene in life threatening circumstances, and should not intervene in natural inter-group or intra-group unless fights become life-threatening.
- Intervention is justified in emergencies, including:
  - **Predators** – intervention is required if predators are near the release monkeys and they are not showing the appropriate response (this includes cars and electricity cables – the research team should play the alarm call and actively herd the troop away from the danger).
  - **Con-specifics** - in the first four weeks post release physical intervention between the release troop and wild monkey troops is acceptable if required. However, by one-month post-release this intervention needs to reduce unless it scales to attack and individuals are physically injured.
  - **Severe loss of fitness/injury** – any individual that is badly injured or suffering from a severe lack of fitness (malnourishment, dehydration, etc.), is to be captured and returned to Colobus Conservation for care.
  - If the individual is fit and healthy within a reasonable time frame, they may be released back to their troop, if recovery takes a longer period they will be retained and prepared for later release



- Close monitoring of any re-release individual is required to ensure they are still cohesive with the troop. If not, recapture will be considered.

**NOTE: NO PRIMATE SHOULD BE RELEASED ON ITS OWN. IN THE CASE WHEN MORE THAN ONE INDIVIDUAL IS RETURNED TO THE CAGE, UPON RE-RELEASE, THEY MUST BE INTRODUCED BACK TO THE ORIGINAL GROUP RATHER THAN RELEASED AS A SECOND GROUP.**

N.B. The aim of the soft release is to slowly wean the release troop from human care. By two months post release the troop is left for one morning and one afternoon period per week. The troop need to know how to respond to wildlife interactions without the researchers or staff assistance so they are prepared for unguided meetings with the wild vervets or baboons.

### **Troop Split**

- If the troop splits – one researcher to follow each troop
- If not possible, the group with the most individuals or more vulnerable individuals (i.e. infants, juveniles) should be followed
- The situation must be monitored and assessed

### **Individual Split**

- Researchers and staff should make every attempt possible to locate and reunite lost individuals with the rest of troop. Leading the lost individual to the troop by foot.
- If an individual continually becomes lost from the troop (3 or more times), it should be assessed if the individual needs to be pulled from the field and returned to Colobus Conservation. If pulled, every attempt should be made to integrate the monkeys into another troop to be released at a later date, where he/she may form a stronger group bond.
- If an individual(s) is separate from its troop, but there is a wild troop of the correct species around in the area give the individual(s) a few days and observe whether he/she (they) are trying to integrate into the wild troop. In which case do not try to re-unite the individual(s) with its release troop, as they are likely not lost, but trying to emigrate into another troop. The survivability of such individuals needs to be monitored.

### **2.9.2 Other Considerations**

- All eco-tours must be informed of the release and the proximity of the release troop BEFORE leaving the information centre.
- The release troop is NOT part of the eco-tour experience and you must not promise the tour the chance to see the release troop. Neither should you actively seek out the release troop during a tour. However, if the release troop is in the area normally used by an eco-tour then the tour may observe them at an appropriate distance.



- They must be informed that under no circumstances are they to approach or solicit contact with the individuals nor do they run away from the troop if they approach – both actions could lead to attack.
- All tours are guided and each guide must carry their water spray and act as the defense between the release troop and the tourists.
- Tour guides and tourists can carry 1m lengths of conduit piping to be used to deter individuals if they try to approach too closely. The piping is held out by the human to create a barrier between themselves and the monkey while constantly moving away. The monkey should not be hit with the piping.
- The research team will also be present and aid in this process, but the behaviour of the tourists is for the tour guide to control.

### ***2.9.3 Release of galagos***

#### ***The methods for releasing galagos are currently being developed.***

To date the successful release of hand reared galagos back to the wild has not been achieved by Colobus Conservation. An extremely soft release of one individual was attempted. The individual was supplementary fed and allowed to 'come and go' from their orphan care area as they chose. However, on reaching maturity received a number of very severe attacks from wild individuals and eventually put in an enclosure. Methods similar to this did result in the successful release of a galago within Diani but in this case the individual was female not male, which may have been the influencing factor. This was not witnessed or recorded by CC personnel.



### **3.0 Finances and Operations**

Colobus Conservation does not receive funding support from central or local government and therefore relies solely on grant applications and donations from individuals and organisation to cover operational and staff costs. As such funding is currently the biggest constraint on the range and depth of project implementation and limits the activities the organisation can undertake. The organisation receives donations and grants from other organisation, some of them are:

- International Primate Protection League (IPPL), USA
- Safarilink Aviation, Kenya
- Columbus Zoo, USA
- San Antonio Zoo, USA
- Woodland Park Zoo, USA
- World Wildlife Fund for Nature (WWF)
- Pittsburgh Zoo, USA
- Numerous individual donations from local, national and international supporters and business.