



Annual Primate Census Report 2019



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Primate census survey Overview.

Colobus Conservation's Annual Primate Census is carried out each year in October and this information is critical for Colobus Conservation to monitor the changes in the population of each diurnal primate species. Two types of census are undertaken. The first census consists of line transects throughout Diani counting colobus, Sykes and vervet monkeys. The second census is for baboons. Each baboon group is visited and repeated counts are done.

Primate Census Background.

October marks the middle of the dry season meaning increased visibility due to dry and reduced foliage, without it being unpleasantly hot to conduct transects during the mid-day heat. The whole of Diani and its remaining forest will be surveyed, following the main road as the central marker. Each side of the road will be systematically surveyed from north to south, starting at Kongo River and ending at Pinewood Hotel. The east side of the road is limited by the ocean and the west side surveyed to a distance of approximately 200m from the road (we aim to survey to the depth equivalent to the Forest Dream Road, but this is highly dependent on access in certain areas).

Five to eight teams, comprising of two members (at least one member must be a trained staff member who has conducted the census previously, accompanied by another trained staff member or trained volunteer), will conduct the census, walking each side of the road and leap frog over each other, as shown in the diagram. It is often required for teams to move to the opposite side of the road in order that the teams move down the road at the same speed. Colobus Conservation's vehicle with the Conservation Manager sits on the side of the road and drives slowly down with the teams collecting the datasheets after every plot is completed. The Conservation Manager works out double counts at this time and requests, if necessary, a team to go and verify a sighting or directs the teams to the next plot to ensure that the census is done effectively. The census will run from 06.30 - 17.30 for an estimated three consecutive days, breaking for lunch 12.30-1.30 pm each day.

Pre-Census Training.

A training workshop on primate census survey was held a week prior to the actual census to synchronize survey methods and help new team members familiarize themselves with the target species. In summary, these were the training objectives:

- i. Identify the four types of monkeys within Base Titanium ecosystem
- ii. Sex and age of colobus monkeys
- iii. Understand primate survey methodology: forest survey method.

A total of six teams were formed with each having at least two individuals, a team leader, first and second observers (*appendix 1*). A team leader is supposed to be a staff member who has previously participated in census with ability to accurately spot, sex and age monkeys. The training was facilitated by Fredrick Onyancha, the Conservation Manager. Pictures and videos of the target monkey species were displayed on the monitor to showcase unique features that different species and age classes. For instance, colobus monkey infants are born white in contrast to adult colours of black and white. They remain white for the first six weeks. Between the sixth week and the tenth week, the infant turns grey.

Male: The adult male is bigger in size, the epaulet fur is longer, possess a scrotal sack and copulating organ, the callosities are continuous, a white line that runs from the callosities to the scrotum and possess long canines.

Female: The adult female is smaller in size as compared to the adult male, shorter epaulets, possess mammary glands, callosities are dissected into two with a white patch in front of the genitals, possess shorter canines as compared to adult male colobus.

Primate survey exercise.

The first census was held between 29th September and 2nd October, 2019 from Kongo River to Pinewood Resort and Hotel on both sides of the Diani Beach Road (Plate 1). The teams survey properties in an East to West direction transects stopping occasionally to listen to movement and calls of monkeys. All monkeys that were spotted along the transects were recorded and GPS points taken. On exiting a plot, teams reported to the Conservation Manager to check for double counts before sending them to the next property.

The second census is for baboons and was conducted between 3rd and 7th October, 2019. Each baboon group is visited and repeated counts are done until consistent counts were recorded.

Primate Census survey Results & Discussion.

Wildlife population experience significant or insignificant fluctuations over time and space¹ as a result of both intraspecific and interspecific, environmental and anthropogenic factors². Thus, it is necessary for wildlife managers to conduct monitory surveys for decision making. Colobus Conservation has conducted annual primate census for the last two decade to assess the population trends of Sykes, baboons and vervets in Diani. This is critical for decision making of the management and conservation of monkeys in human-dominated set ups.

The general trends indicate that the population of Sykes, vervets and baboons has been on a steady increase while that of colobus monkeys is observed as declining (Figure 1). It is important to note that *Colobus angolensis palliatus* is threatened nationally due to habitat fragmentation and degradation³. Thus, the declining population might be as a result of the impacts of the anthropogenic activities in and around the Diani Beach Forest. Over the last two decades property and home owners have cleared portions of the indigenous Diani Beach Forest to pave way for hotels and residential homes. This has lowered the forest canopy cover and foraging grounds available to the arboreal and folivorous species such as Black and White colobus monkeys⁴.

In 2018, two census surveys were carried out that is in January(2018A) and October (2018B). The January survey was a repeat of 2017 census which was deemed invalid for Sykes, colobus and vervets due to dataset inconsistencies. This did not apply for the baboons, whose census is conducted separate from the other species. Other notable observations are the relative higher Sykes count of 2013. It is outlier in relation to the entire data set dataset taking into account that the general trend indicates a gradual not exponential increase. Finally, there was a slight increase in colobus population as from January (308) - in October (341), 2018 – (371) October, 2019.

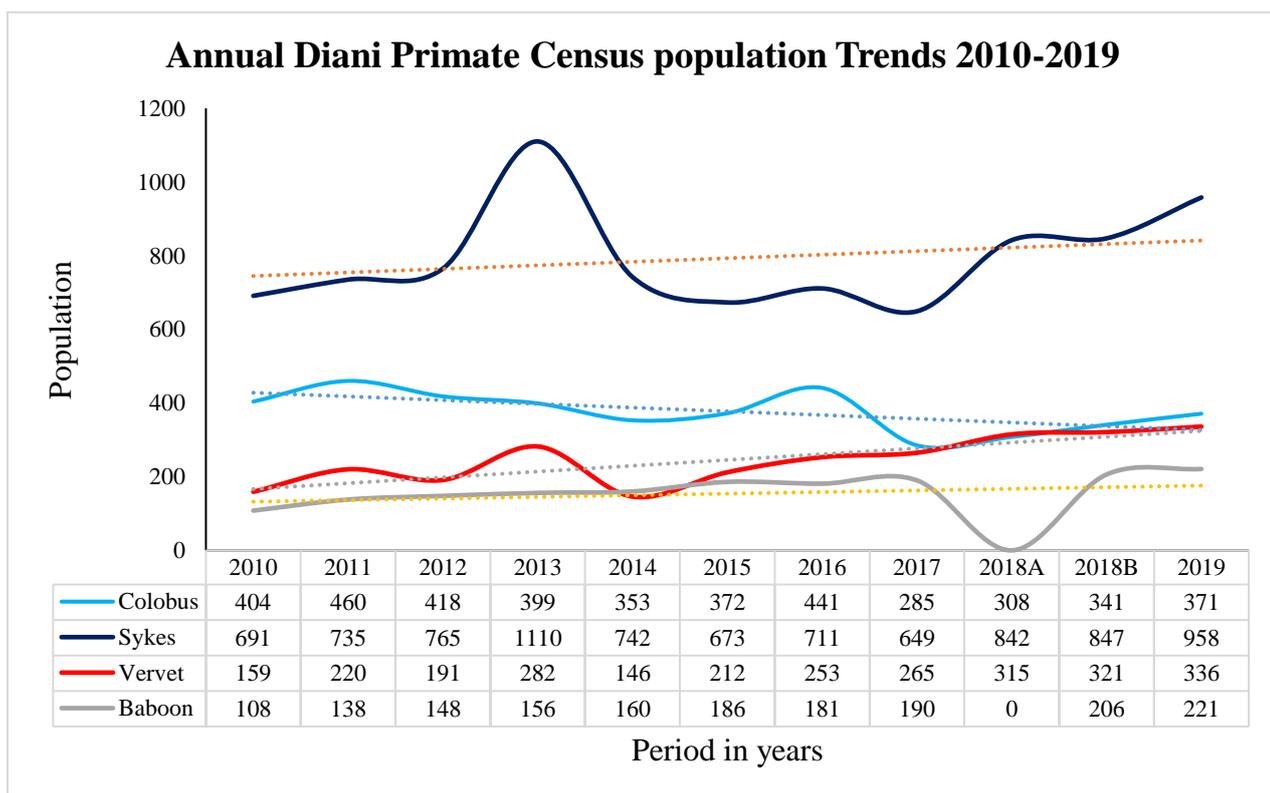


Figure 1: Annual Diani Primate Census population Trends over the last 10 years

¹ Chapman, C. A., Bortolamiol, S., Matsuda, I., Omeja, P. A., Paim, F. P., Reyna-Hurtado, R. & Valenta, K. (2018). Primate population dynamics: variation in abundance over space and time. *Biodiversity and conservation*, 27(5), 1221-1238.

² Patterson, L., Kalle, R., & Downs, C. (2018). Factors affecting presence of vervet monkey troops in a suburban matrix in KwaZulu-Natal, South Africa. *Landscape and Urban Planning*, 169, 220-228.

³ McDonald, M. M., Johnson, S. M., Henry, E. R., & Cunneyworth, P. M. (2019). Differences between ecological niches in northern and southern populations of Angolan black and white colobus monkeys (*Colobus angolensis palliatus* and *Colobus angolensis sharpei*) throughout Kenya and Tanzania. *American journal of primatology*, e22975.

⁴ Dunham, N. T. (2017). *Feeding ecology of black and white colobus monkeys from south coastal Kenya: the influence of spatial availability, nutritional composition, and mechanical properties of food items* (Doctoral dissertation, The Ohio State University).

Milestones achieved

- ✚ Survey was conducted on both sides of the Diani Beach Road in a record three days.
- ✚ Six survey teams were mobilized for the survey, two of the team leaders were former volunteers who participated in the Primate Newborn Survey.
- ✚ The primate census survey exercise was supported by Base Titanium's environmental Department.
- ✚ The Department sent two of its employees to take part in the survey as part of the exchange program and cross learning.

Challenges Experienced

- ✚ Restricted access to some properties thus missing out on potential troops.
- ✚ Bureaucratic security protocols derailing the survey exercise besides interfering with the survey procedures.
- ✚ Heavy downpours during the 2019 survey exercise. Provision of raincoats would solve this.
- ✚ Some of the trained local surveyors failed to show up for the survey thus interfering with the survey team structure.

What should be done better!

- ✚ Timely delivery of meals in line with the census program. The survey takes a break of 1 hour 30 minutes from 12.30 pm to 2.00 pm.
- ✚ Enough and event suitable meals should be prepared and deliver with necessary accompaniments. In this regard, use of hot beverages such as tea in the morning is ideal as opposed to sodas. Sodas and biscuits would be recommended for the hot afternoons.
- ✚ Team leaders to be given enough airtime prior to the survey day for communication and coordination
- ✚ Train more locals to take part in census as part of our CSR as opposed to outsourcing to cut on travel expenses.

Appendix 1: List of surveyors during the Annual Primate survey 2019.

Team	Name	Census Role	Position	Organization
	Fredrick Onyancha	Coordinator	Conservation Manager	Colobus Conservation
Team A	Mwitu Khalifani	Team Leader	Ass. Programmes Manager	Colobus Conservation
	Monica Makenzi	1 st Observer	Staff	Base Titanium
	Louise Franklin	2 nd Observer	Fundraising Consultant	Colobus Conservation
	Saidi Kivugo	2 nd Observer	Staff	Base Titanium
Team B	Simon Mungai	Team Leader	Assistant Animal Welfare Manager	Colobus Conservation
	Eng. Johnstone Nyanyuki	1 st Observer	Volunteer/ Engineer	Ministry of Transport & Infrastructure, Nairobi.
	Erick	2 nd Observer	Volunteer/ Gym Instructor	Ukunda/ Community
Team C	Dempsey Mai	Team Leader	Former Research Intern	Colobus Conservation
	Brilliant	1 st Observer	volunteer	Community
Team D	Ted Nderitu	Team Leader	Former Volunteer	Colobus Conservation
	Cynthia Mungai	1 st Observer	Former Intern	Kenyatta University
	Martin Wamalwa	2 nd Observer	Staff	Colobus Conservation
Team E	Allan	Team Leader	Staff	Colobus Conservation
	Cynthia Mungai	1 st Team Leader	Former Intern	Kenyatta University
	Louise Franklin	2 nd Observer	Fundraising Consultant	Colobus Conservation
	Kyohei	1 st Observer	Volunteer	Volunteer
	Antonio Mwangi	2 nd Observer	Volunteer	Community/ CC
Team F	Janeserah Mukundi	Team Leader	Animal Welfare Manager	Colobus Conservation
	Steve	1 st Observer	Student volunteer	Chuka University



Plate 1: From top left- survey teams taking break, bottom left -Team C seeking access to a property opposite Neptune Hotel; and right top and bottom- all teams pose for a photo at CC on conclusion of the 1st census on 3rd October, 2019.