DEMOGRAPHY AND LIFE HISTORY MONITORING OF SANJE MANGABEYS (*Cercocebus sanjei*) IN THE UDZUNGWA MOUNTAINS, TANZANIA

A project research proposal
submitted to
TANZANIA WILDLIFE RESEARCH INSTITUTE – TAWIRI
and TANZANIA COMISSION FOR SCIENCE AND
TECHNOLOGY - COSTECH

by

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Project Summary

The Sanje mangabey, *Cercocebus sanjei*, is an endangered primate endemic to the Udzungwa Mountains of south-central Tanzania. Its population, estimated at fewer than 1,500 individuals, is geographically isolated in two forest blocks of the Udzungwa Mountains. Only one of these populations is actively protected, as it lies within the Udzungwa Mountains National Park. Thus, to ensure the survival of this species, we must first acquire knowledge on their reproductive biology, particularly their demography and life history. Such factors are critical for developing informed measures of population viability and sustainable conservation plans. Currently, there is only one habituated research group of Sanje mangabeys, the Mizimu group. Since September 2008, data on their demography and life history have been collected uninterruptedly. Beginning in January 2012, however, researchers and field assistants will no longer be following this group. The purpose of this proposal is to continue monitoring the Mizimu group to (1) collect data on demography, including migration, births and mortality, and life history parameters (e.g., gestation length, inter-birth intervals, age at maturation, weaning); (2) keep the group habituated to human presence; (3) resurvey the Udzungwa Scarp Forest Reserve population as it has been over ten years since this population has been assessed for viability; and (4) help to protect the Sanje mangabey through a consistent research presence which has proven effective in the area.

Introduction and problem statement

The Sanje mangabey (*Cercocebus sanjei*) is an endangered primate (IUCN 2011) endemic to the Udzungwa Mountains of south-central Tanzania, part of the Eastern Afromontane Biodiversity Hotspot (Mittermeier et al. 2004). Its current population, estimated at fewer than 1,500 individuals (Ehardt et al. 2005), is limited to two isolated forest blocks of the Udzungwa Mountains: Mwanihana Forest and the Udzungwa Scarp Forest Reserve (USFR). The population in the Udzungwa Scarp is threatened by illegal hunting, logging and agricultural encroachment, making it more likely that this population may disappear in the near future (Ehardt et al. 2005). Conversely, the Mwanihana Forest population is relatively well protected, as it is located within the Udzungwa Mountains National Park (UMNP). Nonetheless, there are rising tensions

between neighboring villages and the national park. As of June 2011, villagers have been banned from entering the UMNP to collect firewood, which they had been allowed to do every Thursday for more than a decade. As a result, local perceptions towards UMNP vary significantly from that of the conservation community (Bancet 2007). In addition, conflicts between local farmers and villagers and the crop-raiding elephants and baboons have further widened this division (Joram 2011).

Despite first being described 30 years ago (Homewood and Rodgers 1981), studies on the Sanje mangabey have been limited; therefore, little is known about its behavior and demography (exceptions are Ehardt. et al. 2005, Ehardt and Butynski in press). At present, there are two habituated groups of Sanje mangabey, both within the Mwanihana Forest: the Mizimu group which is reserved for research; and the Njokomoni group which has been set aside for the sole purpose of promoting tourism.

Initial research on the Mizimu group focused on ranging and feeding ecology (Ehardt et al. 2005). As of September 2008, research on the reproductive behavior and ecology of this group has been collected continuously as the Mizimu group has been monitored without interruption. This has allowed researcher to collect over three years of information on demography and life history parameters of the Sanje mangabey. Such information, previously unknown for this endangered primate, is essential for developing informed measures of population viability and sustainable conservation plans.

As of August 2024, the researchers currently working with the Mizimu group will have completed their studies. As such, I am submitting this proposal to request permission to continue monitoring the group for an additional 12 months, from August 2024 through August 202, the research is aiming to continue to collect more data on demography, including migration, births and mortality, and life history parameters (e.g., gestation length, inter-birth intervals, age at maturation, weaning) of the Sanje mangabey, to increase the knowledge that has been acquired during the last 7 years. In light of recent findings by previous colleagues and I, that Sanje mangabey females experience a relatively high infant mortality rate with most infants dying during peaks of tick abundance in the habitat in June (McCabe et al. 2011), it is critical that we continue to monitor thereproductive success of this group to have a better indication of population viability in the UMNP. Additionally, given the threatened status of this primate, and that almost half of

the population lives in the USFR, The study is also aim to survey the Udzungwa Scarp Nature Forest Reserve population as it has been over ten years since this population has been assessed for viability (Ehardt et al. 1999).

Project objectives

1. *To continue monitoring the Mizimu group*. In particular, the project will continue collecting data on the demography and life history parameters of the Sanje mangabey, to prevent disruption of our continuous data set which began September 2008.
2. *To keep the Mizimu group habituated to human presence, as this is the only habituated research group of Sanje mangabeys*. To encourage the protection and conservation of the Sanje mangabey by continuing to hire 3 local assistants which will provide an alternative source of income to illegal practices? This team of field assistants has been working with this project for over eight years now. During that time, they have received extensive training in wildlife behaviour and ecological data collection techniques.
3. *To maintain a presence at the site, as it has been demonstrated to serve as a deterrent to poaching and illegal logging in the area*. Since began of this project in the Udzungwa Mountains National Park, research team have worked in close collaboration with the UMNP/ TANAPA authorities. Over the years, the research team have reported several cases of poachers encountered within the Park boundaries. In all instances, TANAPA took immediate action, resulting on the apprehension and prosecution of several poachers.

Methods

The study will continue hiring the same 3 local assistants (Yahaya Soma, Bakari Ponda, Loy Loishoki) to follow the Mizimu group. I have previously worked with theseassistants, during the past research term, and as such, they are familiar with the monkeys, the data collection methodology and the habitat. In particular, Yahaya Soma has been working with the Mizimu group since 2005.

The research team will monitor the study group for three to five days each month. Every other week, the team will camp at Mizimu and follow the group for three to five consecutive days, from dusk till dawn. All information collected will be through *observation*. The team will leave a minimum of ten meters distance to all animals *at all times*.

Each day, the team will collect the following information: (1) daily census of all adults, (2) daily census of infants and dependent offspring, (3) births and deaths, and (4) presence of injuries or other visible symptoms of illness in the group. In addition, for each female the team will annotate (5) the size of the sexual swelling, and whether the female (6) mated and (7) nursed on a given day. Once a month, total group counts will be completed as possible, i.e., during path or river crossings.

Censuses in the USFR will follow standardized methodology (Whitesides et al. 1988; Struhsaker 1997). The team will camp within the forest reserve and conduct a 3km transect each day. Four transects will be conducted per month in each of the four cardinal directions. The team will walk at a speed of 1km per hour in a straight line and record the location of each Sanje mangabey group encountered with a GPS. The size and composition of each Sanje mangabey group observed will also be recorded in notebooks.

Based on the research objectives outlined above, here are potential research outcomes related to the monitoring and conservation of the Mizimu Sanje mangabey group and the broader population of mangabeys in the Udzungwa Scarp Nature Reserve:

i. Ongoing Monitoring of the Mizimu Sanje Mangabey Group

- **Demographic Data**: Continuation of demographic data collection will result in a robust dataset that tracks birth rates, mortality rates, and population dynamics, which will help in understanding the long-term viability of the species.
- **Life History Insights**: Gathering data on life history traits, such as lifespan, reproductive success, and social structures, will enhance knowledge about the species' behavioral ecology and adaptability to environmental changes.

ii. Habituation to Human Presence

- **Habituation Benefits**: Maintaining habituation will allow for closer, non-invasive research observations and will likely increase the quality of behavioral data collected. This familiarity can help reduce stress levels in the monkeys, leading to more natural behavior.
- **Educational and Conservation Opportunities**: A habituated population can serve as an ambassador for conservation efforts, promoting awareness and fostering ecotourism, which can provide funding for further research and conservation initiatives.

iii. Presence as a Deterrent to Poaching and Illegal Logging

- **Deterrence Effects**: Regular human presence has shown to reduce poaching rates and illegal logging activities within the vicinity of the Mizimu Sanje mangabey group. Increased enforcement and monitoring can lead to better protection of both the mangabeys and their habitat.
- **Community Engagement**: Increased researcher presence may lead to better community relations, establishing local support for conservation efforts and raising awareness about the importance of biodiversity.

iv. Collection of Long-Term Life History Data

- **Informing Conservation Strategies**: Longitudinal data on the life history of Sanje mangabeys will provide essential insights needed to develop targeted conservation strategies, including habitat protection, restoration efforts, and management plans.
- **Disease Risk Analysis**: Collecting data on ticks and other potential disease vectors can help evaluate disease risks that could threaten the population, leading to proactive health management plans.

The outcomes of these research objectives collectively have the potential to support not only the conservation of the Mizimu Sanje mangabey group but also the broader ecological health of the Udzungwa region. The data obtained may inform policy decisions, enhance local economies through conservation-oriented ecotourism, and foster community involvement in conservation efforts, ultimately contributing to the sustainability of both the mangabey population and their habitat.

Literature Cited

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Budget

The following budget will cover a 6 month period from July through December,2024.

Item description	**Budget in TZS**	**Budget in GBP**
Salaries for Yahaya, Bakari and Alfayo	12,487,920.00	4,805.11
Taxes & Statutory contribution by employer	2,235,034.80	833.00
Annual leave allowance (120,000 each)	360,000.00	138.52
Communication allowances (25,000 each staff)	450,000.00	173.15
Mangabey field work (325,000 each month)	1,950,000.00	750.32
Application and research fee for permit extension	180,000.00	69.26
Sub total	**17,662,954.80**	**6,769.37**
UEMC admin (15%)	2,649,443.22	1,015.40
Grand total	**20,312,398.02**	**7,784.77**