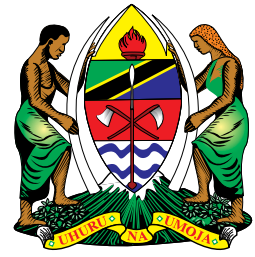




Tanzania Chimpanzee Conservation Action Plan 2018-2023





This plan is written in collaboration with various institutions that have interest and are working tirelessly in conserving chimpanzees in Tanzania.

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COOPERATION AND COLLABORATION FOR DEVELOPMENT OF THE PLAN

The development of this action plan was a product of thorough planning, hard work and collaboration between government and nongovernmental partners. The following partner institutions supported and collaborated with TAWIRI for the successful development of this plan:

	<p>Tanzania Wildlife Management Authority P.O. Box 2658, Morogoro, Tanzania. Dar-es-Salaam Road, Kingolwila Street, TAFORI Building. dg@tawa.go.tz www.tawa.go.tz</p>	<p>Tanzania Wildlife Management Authority was established in 2014 to manage game reserves and game controlled areas and all other wildlife outside protected areas.</p>
	<p>Tanzania National Parks Contact: P.O. Box 3134 Arusha, Tanzania Tel:+255 27 2503471/2501930 dg@tanzaniaparks.go.tz www.tanzaniaparks.go.tz</p>	<p>Tanzania National Parks (TANAPA) was established in 1959 to manage and regulate the use of areas designated as national parks.</p>
	<p>United States Agency for International Development. 686 Old Bagamoyo Road, Msasani. P.O Box 9130 Dar-es-salaam, Tanzania. Tel: +255 222294490 www.usaid.gov/tanzania</p>	<p>Founded in 1961, USAID leads international development and humanitarian efforts to save lives, reduce poverty, strengthen democratic governance and help people progress beyond assistance.</p>
	<p>The Jane Goodall Institute Contact: P.O. Box 70728, Dar-es-salaam, Tanzania. Tel: +255 222775236 www.janegoodall.org</p>	<p>The Jane Goodall Institute for Wildlife Research, Education and Conservation was established in Tanzania in 1977.</p>

Preface

Wild chimpanzee conservation in Tanzania has been a long-standing government agenda due to emerging threats that affect chimpanzee viability in the country. The government in collaboration with long-term chimpanzee researchers based in Gombe and Mahale Mountains national parks provided the basis for upgrading these areas into national parks based on identified needs for conserving the decreasing number of chimpanzees along with other wildlife found in the ecosystems. Furthermore, between in the 1960s and 1970s, the government of Tanzania demonstrated support for chimpanzee conservation by endorsing the introduction of captive chimpanzees of West African origin to Rubondo Islands National Park, which remains one of the best examples for great ape reintroduction into the wild and new habitat that is different from its origin.

While there are three national parks dedicated to for chimpanzee conservation in Tanzania, the protected chimpanzee populations within Mahale and Gombe are increasingly becoming isolated from those outside these parks as surrounding forests become fragmented due to human activities. The government recognises the role played by various stakeholders in the conservation of the chimpanzee population living outside protected areas within the Greater Mahale, Greater Gombe and South Tanganyika (Luafi/Kalambo Forest), where threats to chimpanzees are on the increase. The management approach of these areas was based on ecosystem-based conservation action plans (CAPs), developed for specific target areas especially within the Western Tanzania landscape(s). The government through its departments and institutions in the Ministry of Natural Resources and Tourism that include WD, TAWIRI, TANAPA and TAWA, together with NGOs/CBOs and partners in conservation have recognized the rationale for scaling up management and coordination of chimpanzee conservation by facilitating the development of the first national action plan for chimpanzee conservation in Tanzania.

At present, the country's chimpanzee population is estimated at 2,500 individuals, most of which as mentioned earlier are found outside the protected areas that are under constant pressure from surrounding communities to convert forest into agriculture, for charcoal making, for establishing new settlements as well as unsustainable extraction of timber and firewood. In this plan, stakeholders have identified threats that lead to the destruction of chimpanzee core habitats and have developed a list of strategies and activities that need to be implemented to ensure ecological restoration that will improve the health of the chimpanzee population. The plan also indicates the role of different actors in achieving its implementation to guarantee long-term chimpanzee conservation.

Since some chimpanzee populations in Tanzania (area north of Gombe National Park) are known to move across the Tanzania - Burundi border, it is important to initiate transboundary collaborations between the two countries for better conservation of the chimpanzees in both countries.

A Word From the Minister of Natural Resources and Tourism

This ministry realizes the need to address the threats facing chimpanzees of Tanzania in order to enhance the long-term conservation of this endangered species. Knowing the threats that chimpanzees face and the fact that they are one of our flagship species, my ministry will ensure that chimpanzees receive the protection that they deserve and the attention that will promote their existence so that they continue to support the national economy and local economies where they exist especially outside the National Parks.

We therefore call for partners and stakeholders to work together to save chimpanzees found in protected areas, on general land, in forest reserves and on village land as well as those on public land.

I hereby declare that I endorse the listed strategies and related activities outlined within this plan and call upon all stakeholders to support its implementation.

On this 19th day of June, 2018



Dr. Hamisi Kigwangalla (MP)

Minister of Natural Resources and Tourism

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List of Abbreviations and Acronyms

CBO	–	Community-based Organization
CBSG	–	Conservation Breeding Specialist Group
DED	–	District Executive Director
DLUFP	–	District Land Use Framework Plan
DW	–	Director of Wildlife
EARTH	–	Evaluation and Research Technologies for Health, Inc.
FBD	–	Forestry and Beekeeping Division
FOS	–	Foundations of Success
FZS	–	Frankfurt Zoological Society
GGE	–	Greater Gombe Ecosystem
GME	–	Greater Mahale Ecosystem
GRASP	–	Great Apes Survival Partnership
ICDPs	–	Integrated Conservation Project
IGA	–	Income Generating Activities
JGI	–	The Jane Goodall Institute
LPZOO	–	Lincoln Park Zoo
MoLHHSD	–	Ministry of Land, Housing and Human Settlement Development
MMCRP	–	Mahale Mountains Chimpanzee Research Project
MMNP	–	Mahale Mountains National Park
MNRT	–	Ministry of Natural Resources and Tourism
MNSU	–	Minnesota State University
MP	–	Member of Parliament
MWCS	–	Mahale Wildlife Conservation Society
NEMC	–	National Environment Management Council
NGO	–	Non-Governmental Organization
PA	–	Protected Area
PSG	–	Primate Specialist Group
RAS	–	Regional Administrative Secretariat
RI	–	Rubondo Island
ST	–	Southern Tanganyika
SUA	–	Sokoine University of Agriculture
TANAPA	–	Tanzania National Parks
TAWA	–	Tanzania Wildlife Management Authority
TAWIRI	–	Tanzania Wildlife Research Institute

TFS	–	Tanzania Forest Service Agency
TNC	–	The Nature Conservancy
UDSM	–	University of Dar es Salaam
UNEP	–	United Nations Environment Programme
UPP	–	Ugalla Primate Project
USAID	–	United States Agency for International Development
USFS	–	United States Forest Service
USFWS	–	United States Fish and Wildlife Service
WCS	–	Wildlife Conservation Society
WD	–	Wildlife Division

CHAPTER ONE

Introduction

1.1 Overview

Chimpanzees (*Pan troglodytes*) and bonobos (*Pan paniscus*) are the closest living relatives of modern humans. The former were once widespread in western Tanzania, which represents the eastern and southernmost extension of their range (Butynski 2001). Tanzania is also home to the world's most intensively studied chimpanzee populations in Gombe and Mahale national parks. Over the past decades, chimpanzee numbers have gradually declined, and they are now estimated to be around 2,500 chimpanzees (Moyer *et al.* 2006; Stewart & Piel 2014). According to surveys on the population of chimpanzees outside of Gombe and Mahale national parks in the 1960s (Kano 1972) and 2000s (Yoshikawa *et al.* 2008), the number of chimpanzees fell by half from approximately 1,300 to 700. The remaining chimpanzee population and their habitat are now facing numerous threats, calling for deliberate conservation strategies.

Wildlife Division (WD), Tanzania Wildlife Research Institute (TAWIRI), Tanzania National Parks (TANAPA) and Tanzania Wildlife Authority (TAWA) are the government authorities with sole responsibility for managing the nation's wildlife resources. Together they represent the key authorities to execute and oversee the implementation of this action plan, in partnership with other government departments, NGOs, CBOs and local communities.

This Action Plan contributes to the implementation of the 2007 Wildlife Policy and the 2009 Wildlife Conservation Act that recognize the country's commitment to protect and conserve wildlife with emphasis on endangered, threatened, endemic species and their habitat. This plan thus simultaneously serves as:

- a) **A Tanzania Chimpanzee Conservation Action Plan:** This document provides an assessment of the high-level targets, threats and strategies necessary for chimpanzee conservation nationally.
- b) **A Template for Chimpanzee Conservation Project Planning:** This document provides a standard template for designing, managing and monitoring conservation projects at regional and local scales. Systematic use of this template both enables national-level information to inform regional and local projects as well as regional and local information to be aggregated into national-level planning efforts.

1.2 Structure of the Plan

This plan consists of five chapters:

- Chapter one describes the planning context and process, the basic biology and conservation needs of chimpanzees, and outlines the vision, scope and targets for this work.
- Chapter two presents details of the distribution and status of chimpanzees and their habitats in Tanzania.
- Chapter three provides a description of the threats to chimpanzees.
- Chapter four outlines the key strategies that need to be undertaken to counter these threats and restore chimpanzee and habitat viability.
- Chapter five provides a guide to ongoing implementation and adaptive management of this plan.

1.3 National Planning Context and Process

The development of conservation plans in Tanzania has been a continuous process undertaken by the government in collaboration with conservation and development partners. This plan in particular follows the category of species protection plan that intends to develop a road map for the next five years to conserve the eastern chimpanzees that are found in Tanzania. The plan acknowledges different and pragmatic initiatives that were taken by various organizations in the conservation of chimpanzees at the ecosystem level. These include ecosystem-based conservation action plans to guide strategic restoration and maintenance of the Greater Gombe (2005) and Masito-Ugalla (2009) ecosystems led by the Jane Goodall Institute (JGI). The other initiative is the Greater Mahale Ecosystem Biodiversity Plan that was led by Frankfurt Zoological Society (2007), which mainly targeted elephants and chimpanzees' habitat and connectivity. These plans aimed to address project objectives at both a local and regional level.

In 2010, a workshop was organized by the JGI and was attended by local and international institutions to discuss the development of a conservation action plan for chimpanzees in Tanzania. They included the Ministry of Natural Resources and its institutions (WD, TAWIRI, TANAPA), district and regional governments of Kigoma and Rukwa (now Katavi and Rukwa); IUCN, UNEP-GRASP, JGI, FZS, WCS, TNC, and other NGOs and academic institutions. The workshop agreed to develop a national chimpanzee conservation action plan for Tanzania and came up with various proposals.

In 2016, a technical workshop organized by TAWIRI in collaboration with the JGI and other conservation partners developed this draft and incorporated some of the proposals/ideas from the 2010 workshop in developing the First Tanzania Chimpanzee Conservation Action Plan 2018-2023. This plan covers the entire range of the eastern chimpanzees in Tanzania including other sub-species of chimpanzees not originally from Tanzania but introduced in the Rubondo Islands National Park.

1.4 Vision, Scope and Targets for this Plan

Terms at a Glance - Vision, Scope and Focal Conservation Targets

Vision Statement provides an inspirational overview summary of what the national chimpanzee conservation plan is trying to achieve.

Our **Scope** describes the broad focus of the national chimpanzee conservation plan across the chimpanzees entire range in Tanzania.

Focal Conservation Targets are the specific species or ecosystems that the national chimpanzee conservation plan is trying to conserve. In animal species conservation planning, it is often helpful to distinguish between the animals themselves and their habitat needs.

Vision Statement: *By 2023, the ecological and cultural diversity of chimpanzees in Tanzania is conserved in viable populations across their range, managing linkages between populations to ensure the maintenance of genetic diversity.*

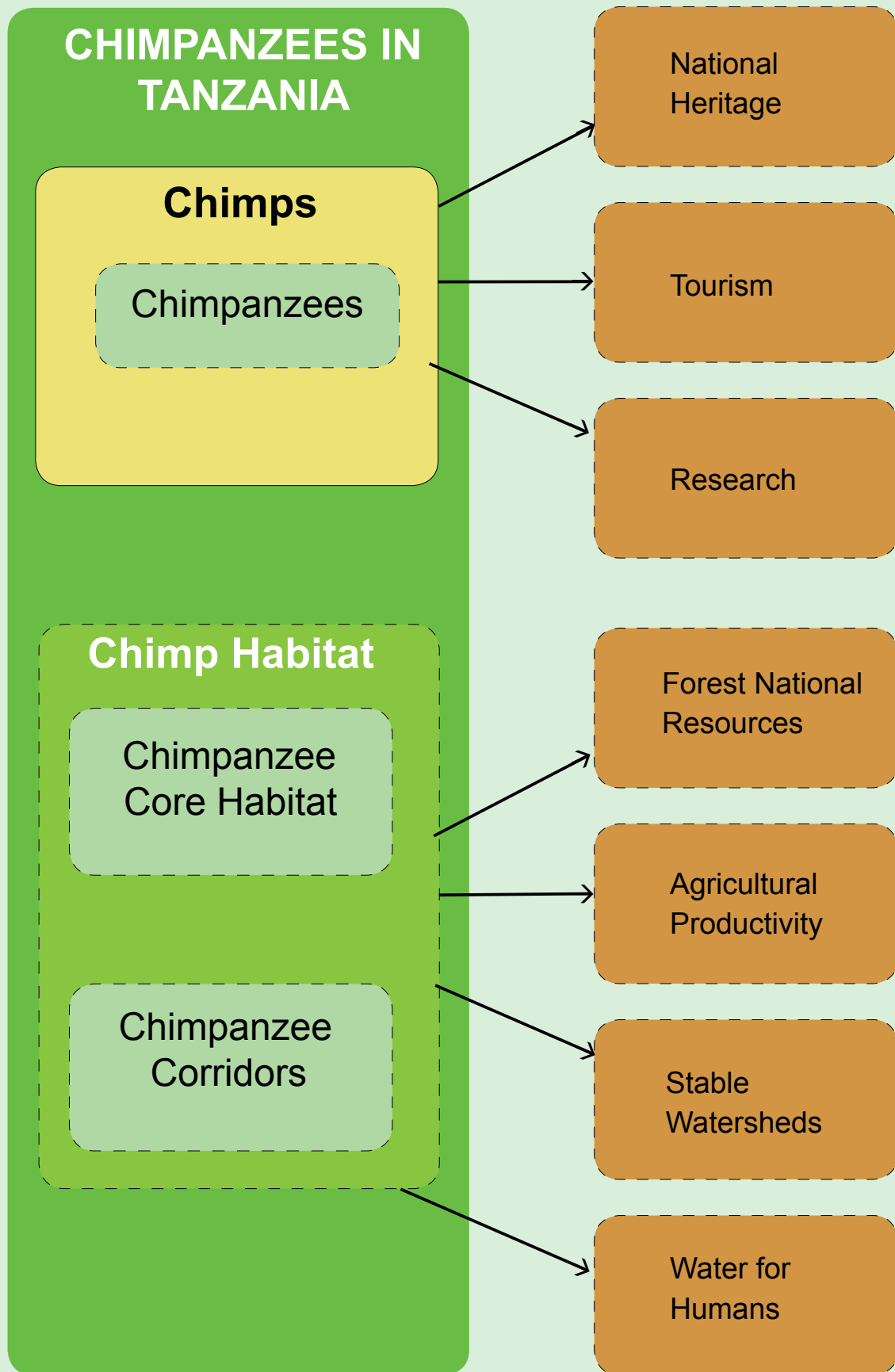
The **scope** of this plan is focused on conceptual targets and spatial management units in addressing chimpanzee conservation efforts across their entire range in Tanzania.

Conceptual targets

The first planning dimension is a conceptual framework and involves identifying **focal conservation targets**. The plan identifies three focal conservation targets as shown by the green ovals in Figure 1.1. These are:

- A. Chimpanzees:** This target represents the species itself, including individuals, communities and populations.
- B. Chimpanzee Core Habitat:** This target represents the habitat that chimpanzees currently or potentially could occupy.
- C. Chimpanzee Corridors:** This target is the habitat needed to connect areas of core chimpanzee habitat so as to enable population shifts and genetic transfer.

Figure 1.1: Conceptual targets



In addition to these conservation targets, the plan also identified seven human well-being targets as shown by the brown ovals in Figure 1.1. These represent the human values that chimpanzee conservation provides.

- **National Heritage:** Chimpanzees as part of the unique natural heritage of Tanzania.
- **Tourism:** The livelihood and other economic benefits provided by tourists who come to see chimpanzees.
- **Research:** Globally important long-term research on chimpanzees that enhances knowledge and brings economic benefits.
- **Forest Resources:** Resources as well as cultural values to local communities that forests and woodland provide.
- **Agricultural Productivity:** A measure of agricultural yields when compared to inputs; enhancement of agricultural yields due to forests and woodland contributions.
- **Stable Watersheds:** The role that natural systems play in availability of water while mitigating floods and landslides.
- **Water for Humans:** The services that forests and woodlands provide through the natural hydrological cycle.

The second planning dimension refers to different geographical management units. As shown in Figure 1.2, there are four main populations of chimpanzees in Tanzania.

- Greater Mahale Ecosystem (GME):** The GME has an area of about 20,000 km² including Mahale Mountains National Park (MMNP) and the surrounding habitat. MMNP hosts a long-term study of wild chimpanzees that dates back to 1965 (Nakamura *et al.* 2013). During 16 years, the chimpanzees moved over a total area of 25.2 or 27.4 km². This long-term research has focused on one chimpanzee group “known as M Group.” This is also the tourism group in MMNP, while the initial target group, “K Group”, became extinct in the mid 1980s. The total number of chimpanzees living inside the park has been estimated at 500-700 individuals from the distribution of unit-groups within the park (Nishida, Takasaki & Takahata 1990). Nonetheless, the GME hosts more chimpanzees than any other ecosystem in Tanzania, including an estimated 1,374-1,804 individuals outside MMNP (Stewart *et al.* 2014), as well as critical areas with other large, mammalian fauna such as elephants. Areas peripheral to MMNP serve as critical habitat connectivity to Katavi National Park.
- Greater Gombe Ecosystem (GGE):** The GGE includes Gombe National Park (GNP) and contiguous areas stretching to the Burundi border, north of the park boundary and extending slightly to the south. The GGE is mostly made up of village land with the exception of GNP. Gombe hosts about 90 chimpanzees and is home to the longest, continuous study of wild chimpanzees, dating to 1960 (Pusey *et al.* 2007). About 60 percent of chimpanzee habitat adjacent to the north and eastern parts of the park has been experiencing habitat loss due to conversion of forests to farmlands and human settlement between 1971 and 2003 (Pintea 2007). Recent efforts to work with local communities to create village land-use plans and establish village forest reserves have shown encouraging signs (Ardhi University, 2017). The village forest reserves could serve as potential

wildlife corridors to ease chimpanzee movements to and from protected areas.

- C. Southern Tanganyika (ST):** The chimpanzee population in ST is the most southerly wild chimpanzee population in Africa. Approximately 100 chimpanzees survive in this highly threatened areas, south of Kipili and north of Kalambo Falls, where they range across two protected areas i.e., Lwafi Game Reserve and Loasi Forest Reserve, but most of them are found outside protected areas (Davenport, Mpunga & Phillipps 2010). However, charcoal making, timber production and agriculture have contributed to degradation of the ST chimpanzees' habitat.
- D. Rubondo Island (RI):** The founder population consisted of 17 individuals that were all wild-born, but of West African descent, introduced to the island between 1966 and 1969 (Matsumoto-oda 2000). They had spent their previous years in German and Dutch zoos and circuses. Because RI chimpanzees are not indigenous to Tanzania, the population is not included in the official IUCN maps of chimpanzee ranges in Tanzania. Tanzania is, however, responsible for managing this population. It is likely that one or two communities inhabit the island, totalling <100 individuals, none of whom are fully habituated.

Within each of these planning units, there are different land use classifications, each with its own management regime and managing agencies. As shown in Figure 1.2, key land-uses are:

- **National Parks:** Gombe, Mahale Mountains and Rubondo Island national parks. These are core protected areas managed by TANAPA and provide the highest level of protection for species and ecosystems under the category of *reserved land*.
- **Forest Reserves:** These are gazetted forests owned and managed by the central government through the Tanzania Forest Service (TFS) of the Ministry of Natural Resources and Tourism (MNRT).
- **Local Authority Forest Reserves:** Forest reserves declared under section 22 of Forest Act No. 14 of 2002.
- **Village Land Forest Reserves:** Forest reserves declared under section 32 and 23 or gazetted under section 35 of Forest Act No. 14 of 2002.
- **Village Lands:** Land within the boundaries of a village that has been demarcated as village land and accepted by the village council, and in accordance with Section 7 of the Land Act of 1999 includes any land transferred to a village.
- **Game Reserves and Game Control Areas:** The Wildlife Conservation Act No. 5 of 2009 governs game reserves (GRs) and game control areas (GCAs). The GRs and GCAs prohibit human activities, including settlement, farming and grazing. The major difference between GRs and GCAs is that grazing is allowed in GCAs after being granted a permit by the Director of Wildlife Division.
- **District Investment Zone:** Land set aside by the district council as economic development zones and can be assigned for ecotourism, surveyed farming, residential areas or other agreed use, including industries (Tanganyika and Uvinza District plan).
- **General Land:** General land means all public land, which is not reserved land (forest reserves, game parks, etc.) or village land.

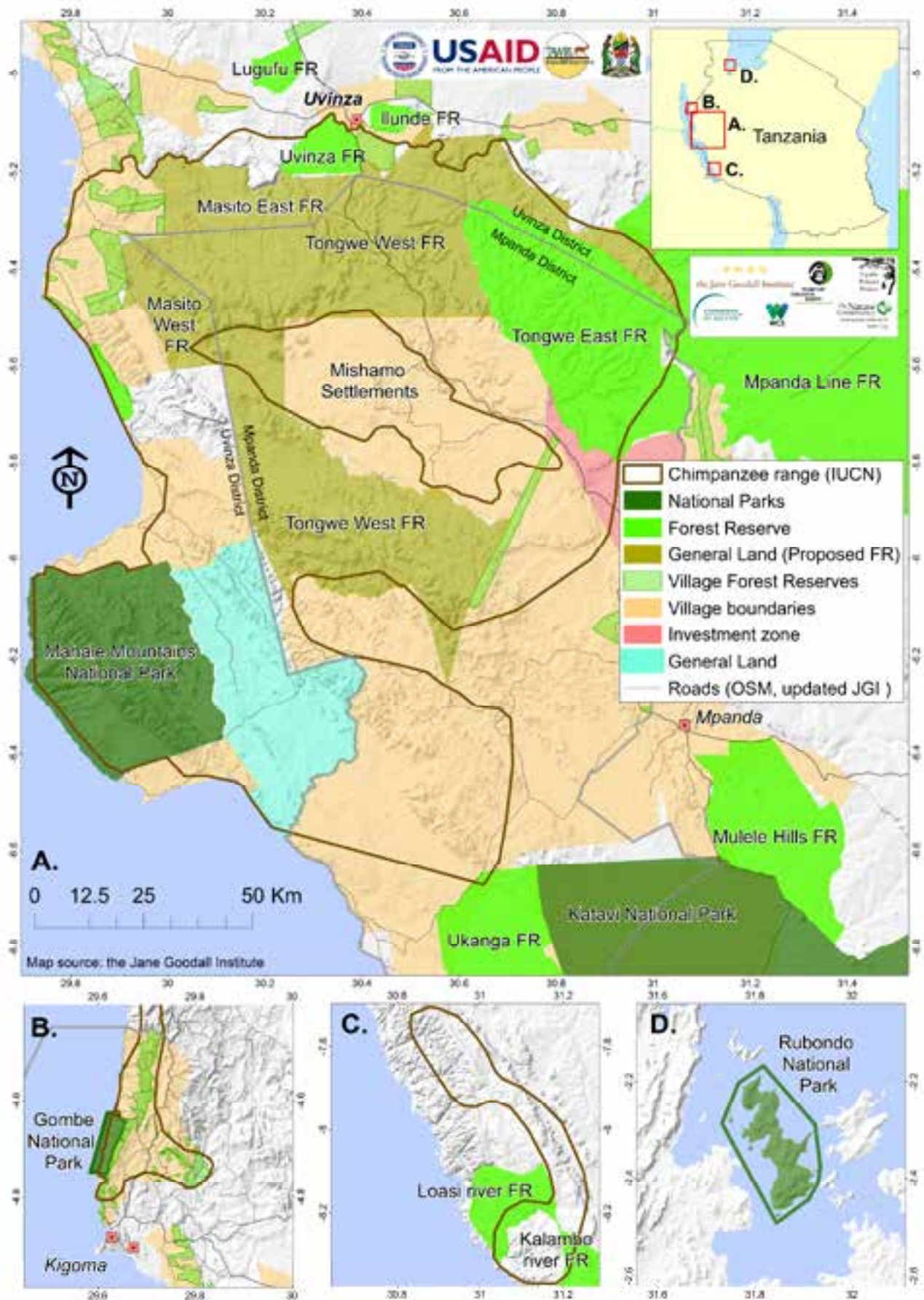


Figure 1.2. Four main populations of chimpanzees in Tanzania. A) Greater Mahale Ecosystem, B) Greater Gombe Ecosystem, C) Southern Tanganyika and D) Rubondo Island

CHAPTER TWO

Distribution and Status of Chimpanzees

There are four great ape species, namely chimpanzee, bonobo, gorilla and orangutan. Chimpanzees (*Pan troglodytes*) are found in Africa, from Senegal eastward as far as the western part of Tanzania. In *West Africa*, chimpanzees are found in Nigeria, Cote D'Ivoire, Senegal, Guinea Bissau, Equatorial Guinea. In *Central Africa*, they are are found in Cameroon, Gabon, Congo DRC and Congo Brazzaville. In *East Africa*, Tanzania, Uganda, Burundi, Rwanda and Southern Sudan. They inhabit a wide range of habitats, from rainforest to dry savanna woodland.

Currently, there are four recognized subspecies of chimpanzees, namely the western chimpanzee (*Pan troglodytes verus*), the Nigeria-Cameroon chimpanzee (*P. t. ellioti*), the central chimpanzee (*P. t. troglodytes*) and the eastern chimpanzee (*P. t. schweinfurthii*) (Humble *et al.* 2016). Chimpanzees are abundant and widespread compared to the other three great apes (bonobo, gorilla and orangutan). However, their numbers are declining at alarming rates. The population in the continent has greatly declined over the past century from about 1 million to 2 million chimpanzees to about 150,000 to 250,000 individuals by 1990 (WWF, 1990), with the current population estimated at less than 300,000 chimpanzees in the wild, and potentially as few as 150,000 individuals (King & Moehlman 2016). All four subspecies are classified as endangered (King & Moehlman 2016). In Tanzania, the native subspecies is the eastern chimpanzee, but also there is an introduced chimpanzee, in the Rubondo Islands National Park of West African origin that is currently not clearly identified as to whether it is subspecies *P. t. ellioti* OR subspecies *P. t. troglodytes*. Continentally, the species is highly threatened by habitat loss (largely conversion of chimpanzee habitat for farmland and settlement), diseases and hunting for bushmeat among others (especially in Central and West Africa). In Tanzania, the historical chimpanzee range is known to decline (Figure 2.1), suggesting a decline in numbers over the past few decades, with the current numbers estimated to be the region of 2,500 individuals.

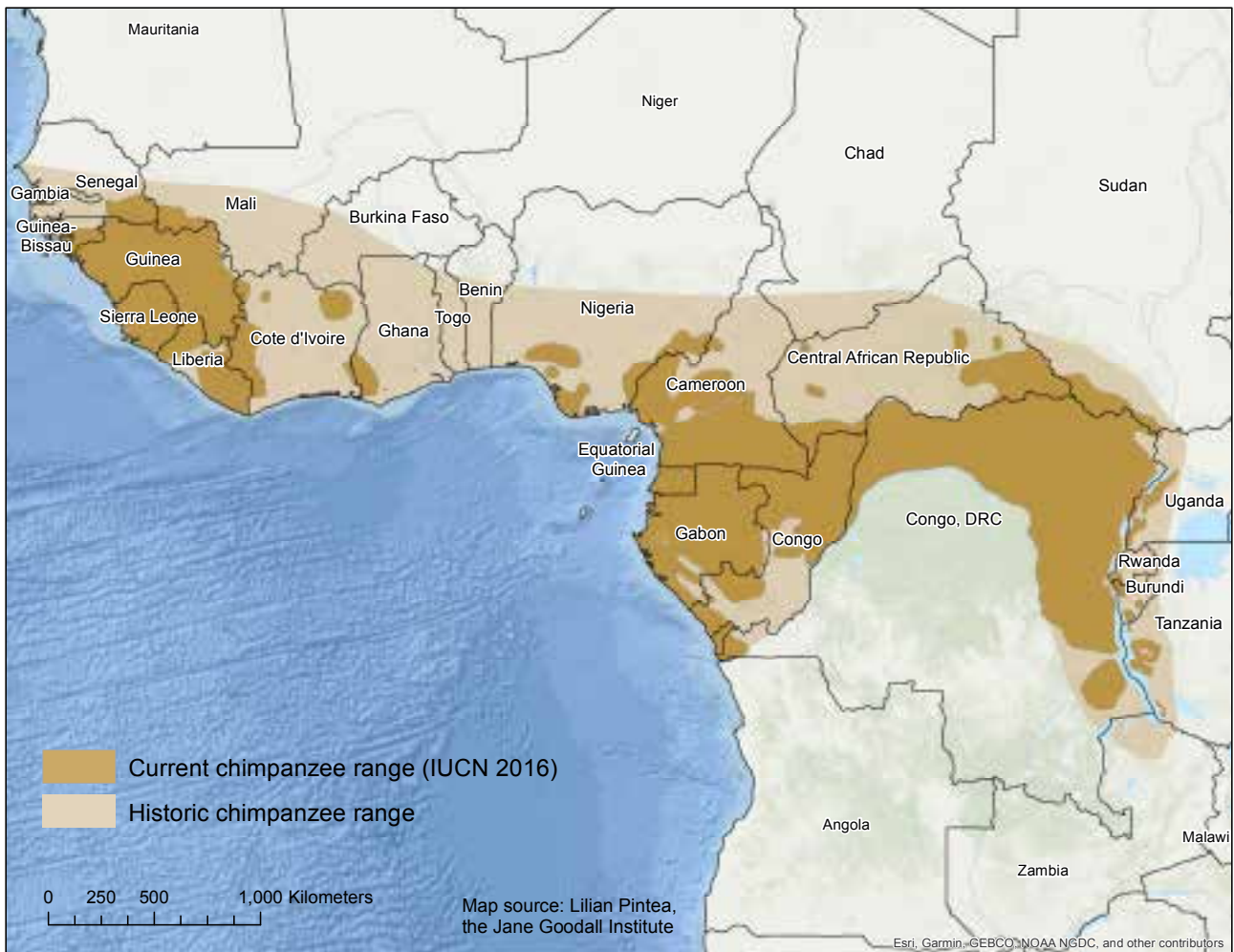


Figure 2.1: Historical and current distribution of chimpanzees in Africa

Chimpanzees of MMNP and GNP are the longest-studied species (over 50 years) in the world, hence constituting most of what we know about chimpanzees today. While most of the chimpanzees in GNP are individually identified, only individuals from one habituated community in MMNP are currently identified, and a few individuals have been identified in RI so far. The 2006 census indicated that most chimpanzees are found outside the aforementioned protected areas (Moyer *et al.* 2006); there is still limited knowledge about their current movement, distribution and abundance. Based on the distribution of sleeping nests encounters, the plan has identified known chimpanzee ranges (Figure 2.2) that needs attention.

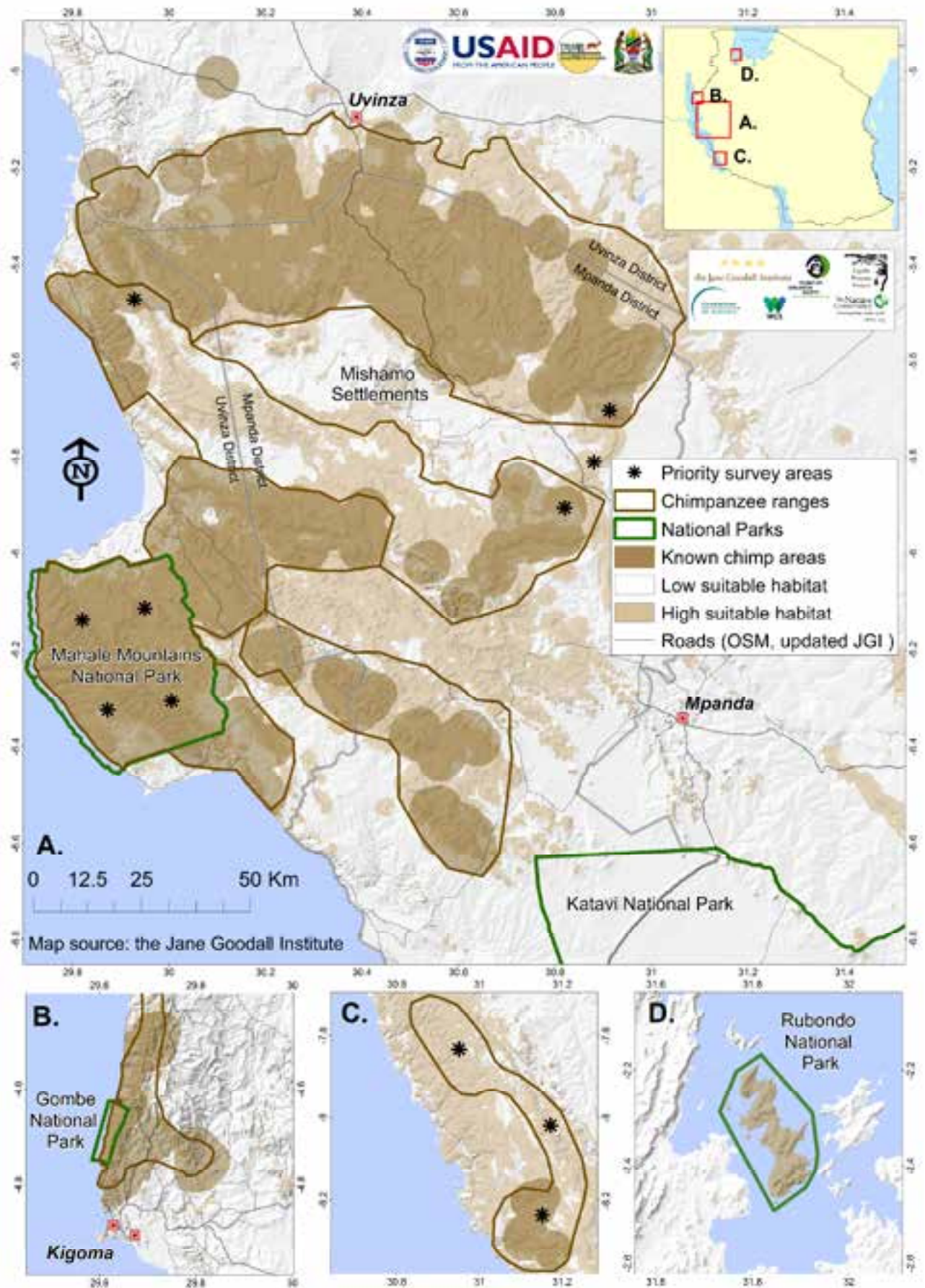


Figure 2.2. Chimpanzee relative density based on nest encounter rate and their potential habitat in Tanzania

The dark brown shading in Figure 2.2 indicates areas where there is direct evidence of chimpanzee presence over the past decade. These areas were constructed by drawing a 5-km buffer around observed chimpanzee presence. Areas that are light brown show predicted potential suitable habitat, but no chimpanzee record. This could be because:

- chimpanzees are present, but have not been detected,
- chimpanzees used to be present, but no longer occupy the habitat, or
- chimpanzees were never present in this habitat.

Area marked with an asterisk represent priorities for additional survey research.

2.1. Biology and Ecology of Chimpanzees

Chimpanzees are highly social animals that live in a community, care for their offspring and congregate to socialize (Goodall 1986). Female chimpanzees reach maturity around 9-13 years, and usually give birth to a single baby, or occasionally to twins. The inter-birth interval, when a baby survives till weaning, is typically 4-5 years after a gestation period of about 8 months (Goodall 1986, Van der Wal *et al.* 2000). In the wild, chimpanzees can live up to 55 years (Goodall 1986) but in captivity, some live beyond 60 years (Goodall 1986). Chimpanzees in a community know their territory boundary and defend it against other communities. They use their territory mostly for foraging and nesting/sleeping. Chimpanzee communities also show similarities and differences referred to as cultural differences, e.g., Gombe chimpanzees eat oil palm fruits while those of Mahale do not eat them. Also, female chimpanzees can move to another community while males remain in their natal community for life.

Chimpanzees are omnivorous (feed on a variety of food items that include fruits, leaves, pith, seeds, flowers, bark, tree gums, honey, mushrooms, bird eggs and various insects), but fruits comprise the largest portion of their diet. The availability and distribution of fruits greatly influence chimpanzee-ranging pattern within and between seasons (Nakamura *et al.* 2013). The species occupy a wide home range from as little as 4 km² to 200 km² (McGrew, Baldwin & Tutin 1981; Mitani, Merriwether & Zhang 2000; Newton-Fisher 2003; Lehmann & Boesch 2004; Nakamura *et al.* 2013). In their range, chimpanzees occupy an area relative to the size of their community and the limit of the range of the neighbouring communities. It is important to note that the size of the home range is generally a function of habitat quality and subsequent population density. Highly productive forests host large numbers of individuals/km² that do not need to range widely to meet their daily requirements, whereas savanna-mosaic chimpanzees (miombo woodlands in particular) live at lower densities and occupy large home ranges (Baldwin, McGrew & Tutin 1982; Morgan & Sanz 2006).

Terms at a Glance - Viability Analysis

Viability Analysis is a methodology to determine the status of a conservation target. Elements include:

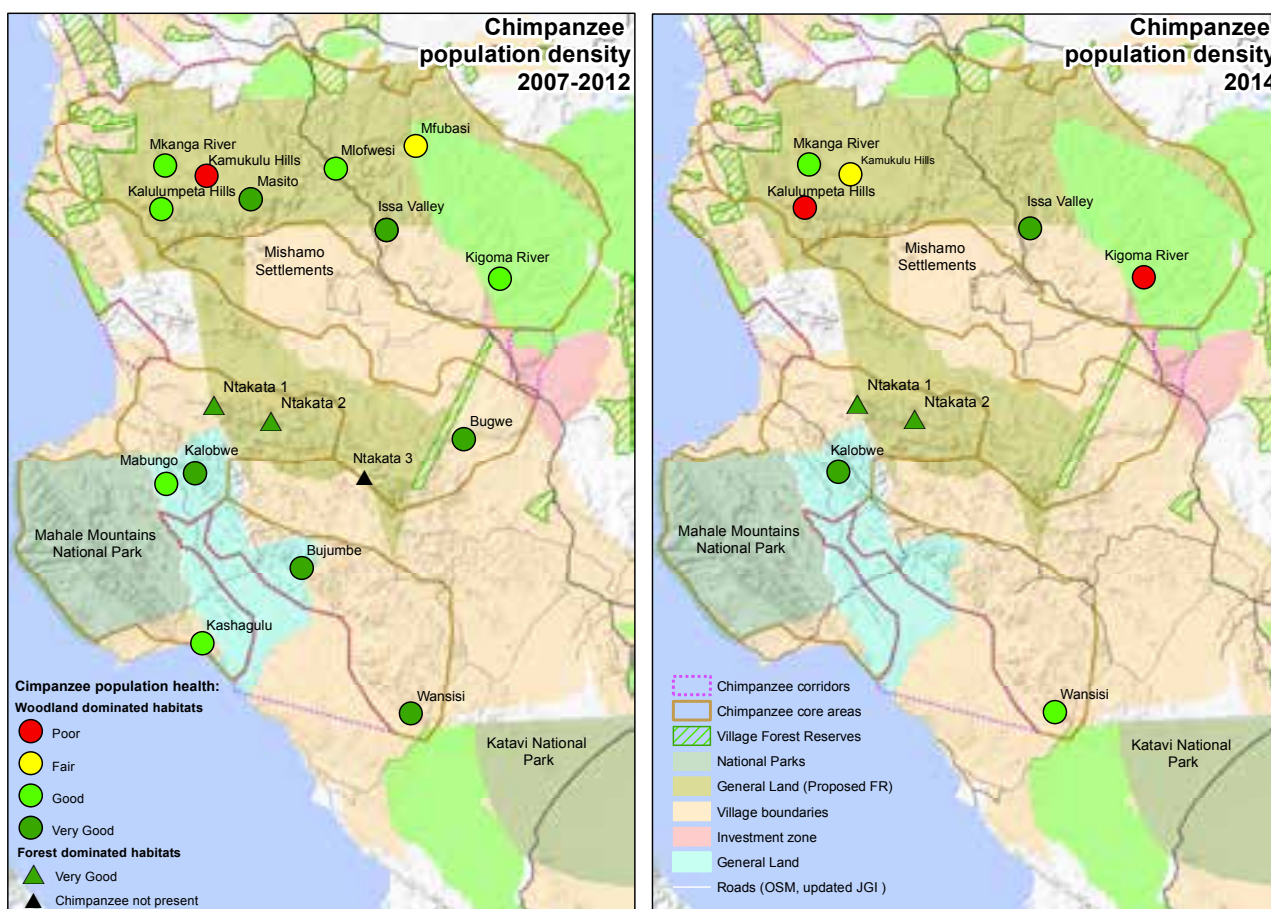
- *Key Ecological Attribute (KEA)*: An aspect of a target’s biology or ecology that, if present, defines a healthy target and, if missing or altered, would lead to the outright loss or extreme degradation of that target over time; these are often grouped into size, condition and landscape context categories
- *Indicator*: A measurable variable used to assess a key ecological attribute

The KEAs includes population size, diseases, intraspecific completion and connectivity for genetic transfer (Table 2.1).

Table 2.1: The KEAs and indicators for chimpanzee range status

Item	Type	Poor	Fair	Good	Very Good
Population Size	Size				
Nest Density - Forest / Woodland Mosaic (no/sq.km)		< 0.25	0.25 - 0.5	0.5 - 1	> 1
Nest Density - Woodlands (no/ sq.km)		< 0.1	0.1 - 0.25	0.25 - 0.5	> 0.5
Overall Population Size		< 50	50 - 99	100 - 250	> 250
Disease	Condition				
Presence of “Key” Diseases		high	tolerable	none, but nearby	non, none nearby
Intraspecific Competition	Condition				
Degree of Community Conflict		intense	moderate	normal	Low
Connectivity for Genetic Transfer	Landscape				
Female Transfer to Other Chimpanzee Populations		impossible	difficult	possible	Easy

Figure 2.3: Status of chimpanzee populations in Tanzania using chimpanzee density/sq km thresholds for woodland-dominated habitats (circles) and forest-dominated areas (triangle)



2.2.1 Chimpanzee Habitat

Chimpanzee habitat in Tanzania is within Albertine Rift and Zambezi Woodland Ecoregions. Most of the habitat is primarily within the Zambezi Woodland Ecoregion, as one moves east from the shores of Lake Tanganyika, lush forests of the Congo Basin such as those facing the lake at Gombe and Mahale Mountain national parks grade into the much more open, drier, savanna mosaic Zambezi woodlands of East Africa. The topography of the western region is characterized by broad but steep hills of miombo woodland broken up by thin strips of gallery forest, typically in valley bottoms. There are also patches of seasonally inundated swamps, wooded grasslands, rocky outcrops and expansive tracts of bamboo woodlands, especially along the eastern border of Mahale Mountains National Park. Further east, the proportion of gallery forest to miombo woodland is reduced. The ecosystem is framed by Lake Tanganyika in the west and by major rivers – Malagarasi in the north, Ugalla in the east – as well as smaller riverine systems that flow into Lake Tanganyika. Broadly, the region contains large tracts of intact woodland characterised by *Brachystegia* sp. and *Julbernardia* spp. that provide high-quality habitat for a variety of species, including chimpanzees, savanna elephants and zebras. There are two clear seasons across the region, with a wet season from November to April, and a dry season from May to October.

Chimpanzee Habitat Status: The plan assessed the status of chimpanzee habitat by assessing the viability of indicators for each of the key ecological attributes (Table 2.2).

Table 2.2. Key Attributes and Indicators for Chimpanzee Habitat

Item	Type	Poor	Fair	Good	Very Good
Habitat 1. Woodland cover	Size				
✓ Percent of forest loss (year 2000)		>5%	2-5-5%	1-2.5%	<1%
Habitat 2. Evergreen forest	Condition				
✓ Percent of forest loss (Year 2000)		>5%	2-5-5%	1-2.5%	<1%
Habitat 3. Distance to humans	Landscape				
✓ Average pixel (30m) distance to human feature		<250m	250-499m	500-1000m	>1000m

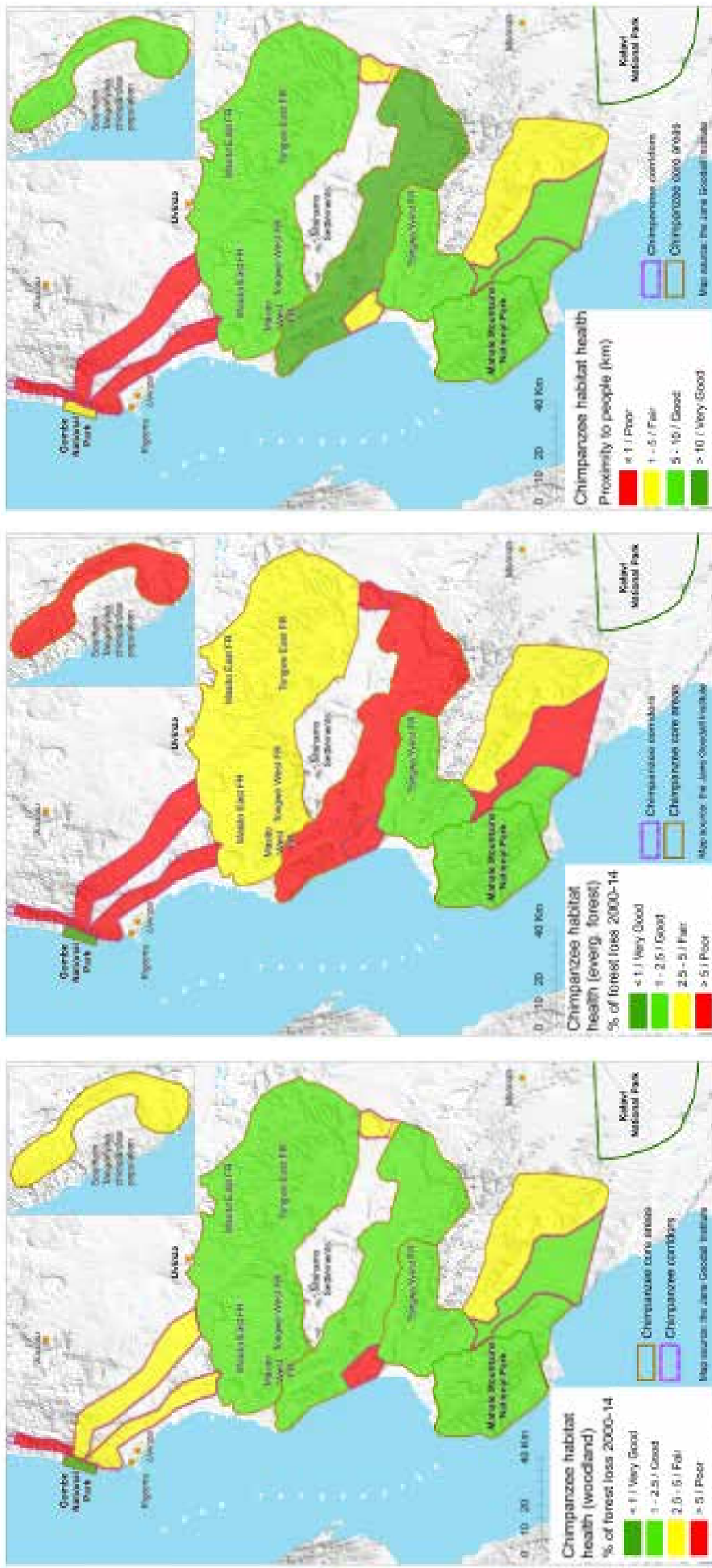


Figure 2.4: The status of chimpanzee habitat across three KEAs by chimpanzee range and by corridor

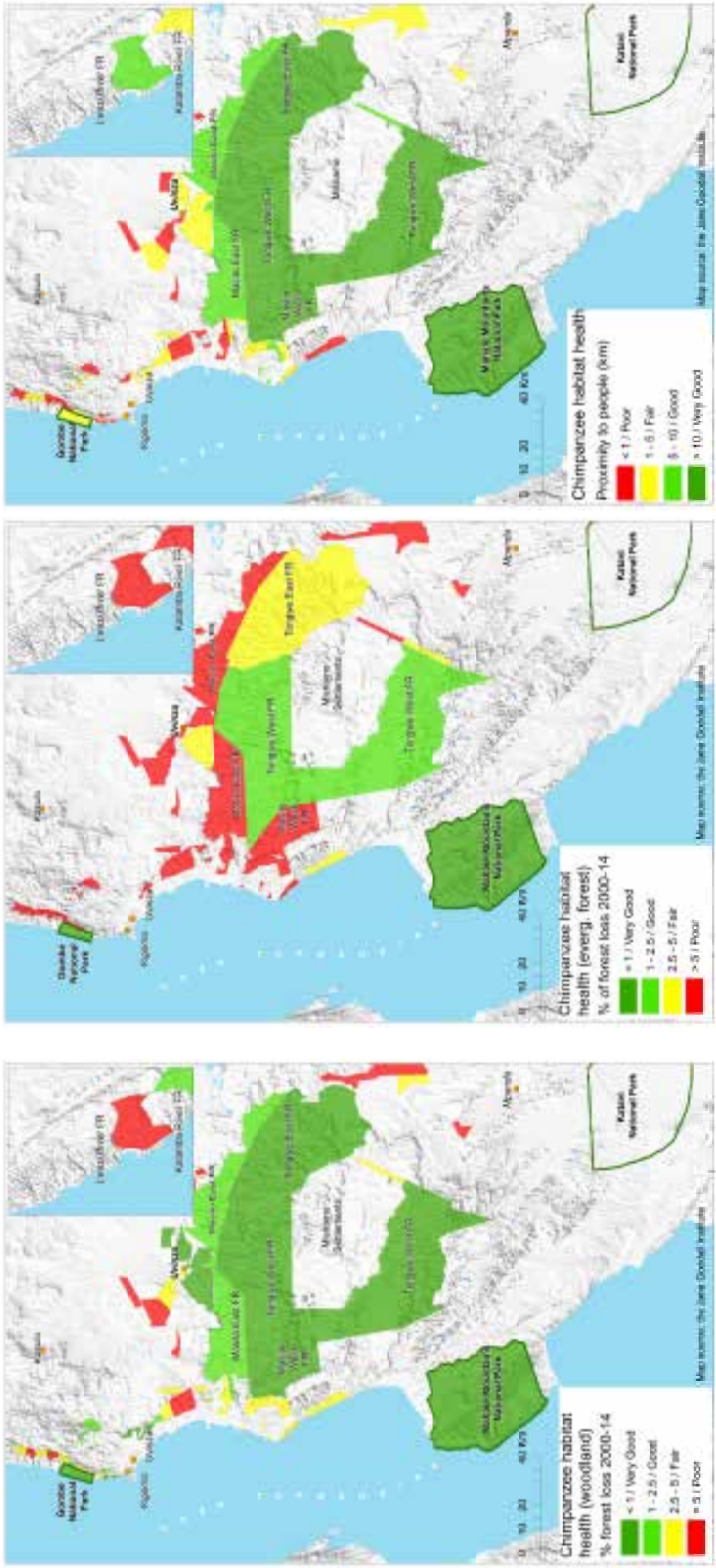


Figure 2.5: The status of chimpanzee habitat across three KEAs by protected area

2.2.2 Chimpanzee Corridors

Conservation of habitats that facilitate movement of wildlife species (corridors) within and between populations is important to maintain genetic diversity. Tanzania recognizes the protection of wildlife corridors as a key component to addressing the increasing isolation of protected areas (Wildlife Conservation Act No. 5 of 2009). This plan identifies chimpanzee corridors in Western Tanzania (Figure 2.6) based on the information provided in Tables 2.4 and 2.5.

Table 2.3. Key corridors and Their status in Western Tanzania (see Figure 2.6)

Basic Corridor Info			Corridor Viability					Action Needed
ID	Corridor name	Current protection status	Woodland gaps >1km	Food gaps > 5 km	Riverine forest gaps > 2 km	Human activities < 1 km	Current overall viability	
1	GNP to Burundi border	VFR - Mwamgongo, Bugamba, Kiziba, Zashe	N	N	Y	Y	Fair	Cross-border initiative. Consider upgrading VFR to corridor.
2a	Kazuramimba (Uvinza) to GNP	Mixed VFR	Y	Y	N	Y	Poor	
2b	Ilagala (Uvinza) to GNP	Mixed VFR	Y	Y	N	Y	Poor	
3	Bugwe to Ilumba (Tongwe Forest)	Vikonge VFR; investment zone, Tongwe East FR	N	N	N	Y	Good	Enhance forest protection.
4	Mkuyu FR via Herembe VFR to Tongwe West FR	VFR and village land	N	N	N	Y	Fair	Strengthen or consider upgrading VFR to corridor status.
5	GME to Wansisi Forest	General land	N	N	N	Y	Good	Upgrade to VFR.

Note: Y=Yes, N=No

Table 2.4. Key attributes and indicators for chimpanzee corridors

Item	Type	Poor	Fair	Good	Very Good
Passability of corridors to migrating chimps	Condition				
✓ Max width of woodland gaps		gaps>1 km	no gap > 1 km	no gap > 0.5 km	no gaps
✓ Max distance between food sources		gaps>5 km	no gap > 5 km	no gap > 2 km	no gaps
✓ Max distance between gallery forest		gaps>2 km	no gap > 2 km	no gap > 1 km	no gaps
Use of corridor by chimps	Size				
✓ Evidence of chimps appropriately using the areas		Never	Sparse	Present	Frequently present



Figure 2.6: Key chimpanzee corridors and their current conservation status

CHAPTER THREE

Threats to Chimpanzees and Habitats in Tanzania

3.1 Overview of Threats

There are several threats facing chimpanzee conservation in Tanzania. Human activities are the leading threats that potentially impact conservation of chimpanzees and their habitat. Based on the conceptual framework presented in Figure 3.1, impacts from human activities are subdivided into effects that affect chimpanzee populations directly or indirectly through core habitat and corridor destruction. The conceptual framework shows that most of the threats resulting from land-use pressure occur in a cascade, such that when one threat occurs, all the others quickly follow it. Therefore, this section describes threats such as human-chimpanzee interaction, habitat loss and connectivity.

Terms at a Glance-Threats

Threats are human activities that directly degrade one or more conservation targets. Threats analysis includes looking at historical, current and future threats. The severity of a threat is assessed by looking at:

- *Scope*: The proportion of the target that can reasonably be expected to be affected by the threat within 10 years given the continuation of current circumstances and trends
- *Severity*: Within the scope, the level of damage to the target from the threat that can reasonably be expected, given the continuation of current circumstances and trends
- *Irreversibility*: The degree to which the effects of a threat can be reversed and the target affected by the threat being restored

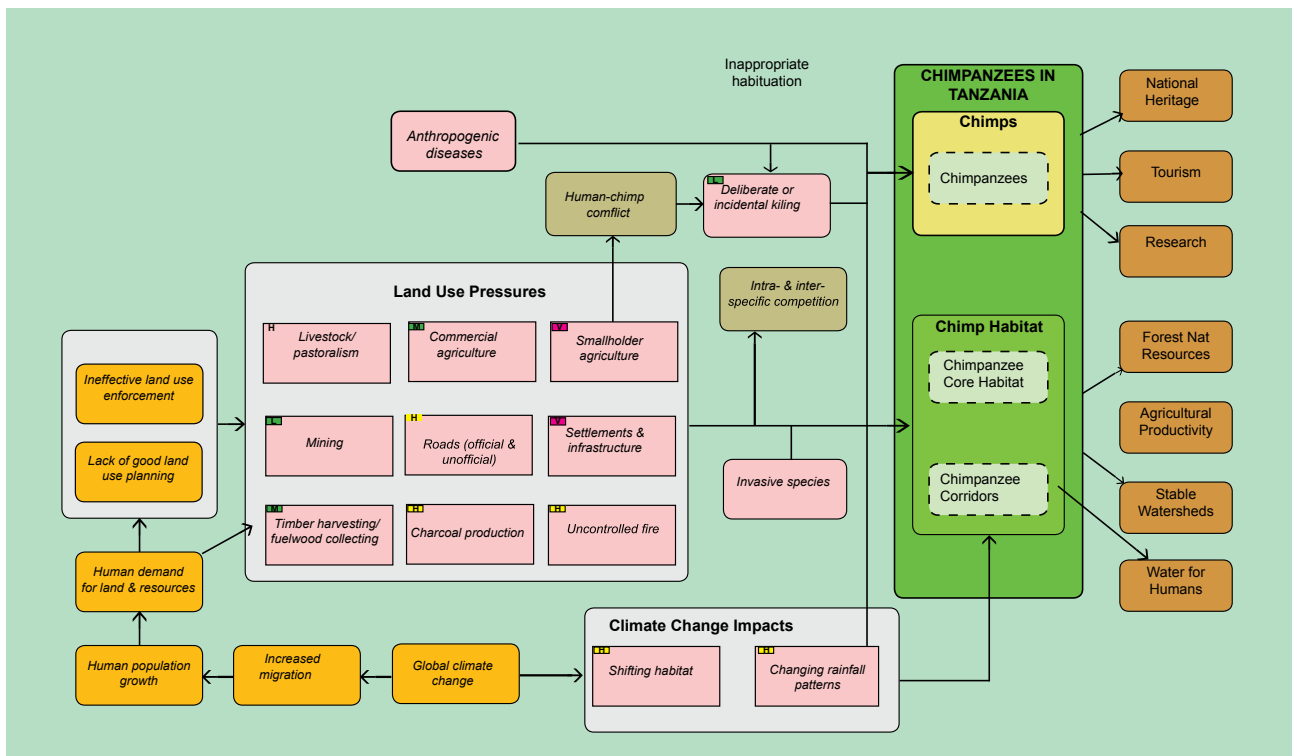


Figure 3.1: Conceptual summary of threats to chimpanzees and habitats in Tanzania

The 2016 Technical Workshop conducted in Arusha assessed the current status of the threats at a national scale. Table 3.1 shows the summary of rating the relative magnitude of each threat and how it affects chimpanzees, chimpanzee core habitats and corridors.

Table 3.1 National-level threat ratings for each target according to 2016 Technical Workshop

Direct Threats	Targets	Chimpanzees	Chimpanzee Core Habitat	Chimpanzee Corridors	2016 Summary Threat Rating
Smallholder agriculture		Very High	Very High	Medium	Very High
Settlements & infrastructure			Very High	Very High	Very High
Anthropogenic disease		High			High
Uncontrolled fire			High	Low	High
Roads (official & unofficial)			High	High	High
Shifting habitat			High	Low	High
Changing rainfall patterns		Medium	High	Low	High
Livestock / pastoralism			High	Low	High
Charcoal production			High	Low	High
Commercial agriculture			Medium	High	Medium
Timber / fuelwood			Medium	Low	Medium
Mining			Low	Low	Low
Invasive species			Low	Low	Low
Deliberate or incidental killing		Low			Low

3.2 Key Threats to Chimpanzees

3.2.1 Human Wildlife Interaction in Chimpanzee Core Habitats

Interaction between human and wildlife increases as human proximity to wildlife habitat increases, which results in human-wildlife conflicts (Greengrass 2000) and spread of anthrozoonotic diseases (Parsons *et al.* 2014), especially when anthropogenic activities increase contacts between humans and chimpanzee. Recent work in Tanzania reports the introduction of *Cryptosporidium* into wild chimpanzee populations and the increased risk of ape mortality associated with SIVcpz-*Cryptosporidium* co-infection. Chimpanzees, like other wildlife, are also affected by close proximity to humans in protected areas, particularly in Gombe National Park (Figure 3.2). Previous studies show that conflicts and diseases have often occurred in GNP, which is surrounded by high human populations as described below:

3.2.1.1 Human-Chimpanzee Conflict

Conflicts between humans and chimpanzees have not been a big problem in Africa (Hockings *et al.* 2007). Although the conflict seems to be minimal, cases of human killings, injuries and crop damages have been reported in GNP and MMNP (Goodall 1986). However, a few cases of chimpanzee killings by humans have been reported in GNP as retaliation due to crop raiding and worry about park expansion (Pusey *et al.* 2007; Williams *et al.* 2008). At Gombe National Park, long-term research has provided at least four benefits to wildlife conservation – understanding of chimpanzee behaviors and viability, disease pattern and requirement for ecological monitoring, understanding of habitat use and connectivity, and engagement of local communities in research and conservation. Poaching for food, pet trade and cultural beliefs have been reported to occur in DRC. Currently, Congolese do not share the Tanzanian tradition and taboos against eating primates (Ogawa, Sakamaki & Idani 2006) but due to human interaction between DRC and Tanzania, it is likely cultural diffusion through migrations and intermarriages may erode the Tanzanian taboo towards eating primates. Another potential threat is inappropriate habituation of chimpanzees, that brings them closer to people by reducing natural fear for humans and makes them potentially vulnerable to killing.

3.2.1.2 Anthropogenic Disease

Transfer of human diseases to chimpanzees (especially epidemic diseases) has been reported to cause mortality to the species in protected areas (Williams *et al.* 2008). Chimpanzees succumb to many diseases that affect humans (Butynski 2001), because genetically and immunologically, they are related to humans (Pastor, Cohen & Hobbs 2006). Expansion of human population around wildlife areas increases the potential for zoonotic disease transmission between chimpanzees and humans. Furthermore, the frequency of encounters between chimpanzees and humans and/or human waste is increasing as human population continues to expand (Figure 3.2), leading to higher risks of contracting diseases (Moyer *et al.* 2006; Oates *et al.* 2008; Macfie & Williamson 2010). Some of the human infectious diseases such the common cold, influenza, chicken pox, paralytic poliomyelitis, tuberculosis and pneumonia can be transmitted to chimpanzees through droplets and poor hygiene

practices(Butynski 2001). Chimpanzees are also likely to contract infections and pathogens from domestic animals (Parsons *et al.* 2014), especially when anthropogenic activities increase their overlap with humans and wildlife. Researchers describe the application of novel GPS technology to track the mobility of domesticated animals (27 goats, two sheep and eight dogs).

Due to low reproductive rates in great apes, even small disease outbreaks or single deaths can have a disproportionate impact on the viability of small or isolated ape populations (Leendertz *et al.* 2006), making it imperative to guard against and manage disease outbreaks.

3.2.2 Habitat Loss and Fragmentation

Habitat loss and fragmentation are major threats to chimpanzee conservation. Activities that lead to habitat loss and fragmentation of chimpanzee habitat and corridors include agriculture, infrastructure and settlement development, logging and charcoal production, livestock keeping and mining. Subsistence agriculture is the main anthropogenic activity that destroys chimpanzee habitat. It generally starts near settlements and expands, especially along the rivers, because of soil fertility and water availability for farming. It is particularly damaging to evergreen forest habitat in the valley bottoms, since these forests tend to grow in fertile soils that are suitable for farming. At the same time, they are an important source of food for chimpanzees, especially in the dry season. Increase in human population and loss of soil fertility on existing agricultural lands result in further expansion of land use by humans to pristine areas that are suitable for chimpanzees, hence loss of the chimpanzees' habitat.

In addition to increasing human population, refugee influx from neighbouring countries (DRC and Burundi) increases pressure on land use especially in the Kigoma and Katavi regions, which host over 300,000 refugees (UNHCR 2017; UNICEF 2017). Most of the refugee camps and settlements are located in remote areas that used to harbour a large number of wildlife species. Demand of resources (building material, firewood, charcoal) in their camps has greatly increased loss of forest/ woodland and of wildlife animals through bush meat hunting (Jambiya, George, Milledge, Simon, Mtango 2007).

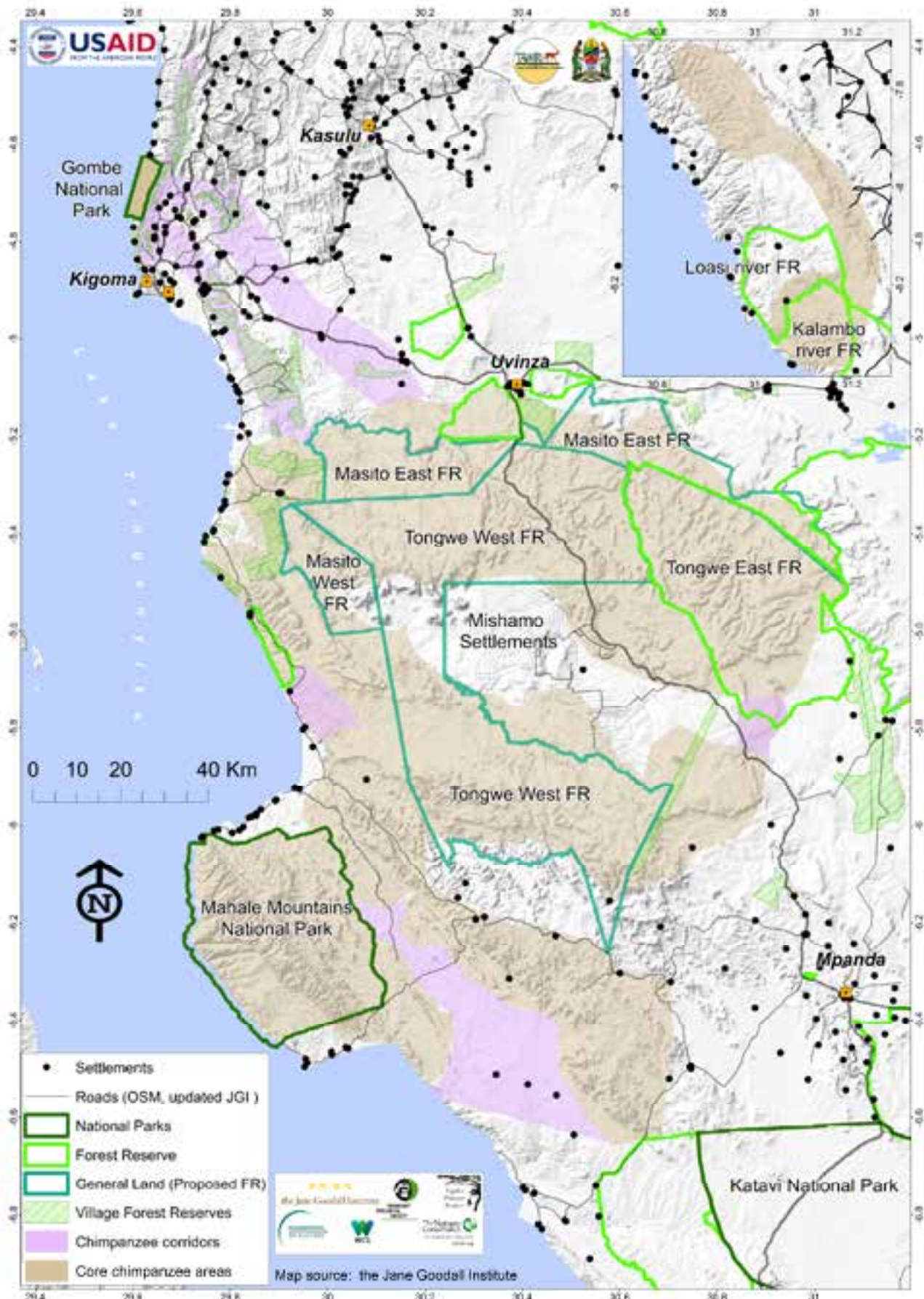


Figure 3.3: Map of Western Tanzania showing distribution of villages, scattered settlements and roads

3.2.3 Invasive Plant Species

Invasive plant species are alien plants that aggressively displace other plants and are likely to cause harm to the ecosystem. In MMNP, there are invasive plants such as senna trees, and there has been a growing concern that these plant species may lead to loss of chimpanzee habitats. From 1996 to date, efforts have been made by Mahale Wildlife Conservation Project and National Park staff to control invasive senna species in chimpanzee habitats (Nishida 1996; Wakibara & Mnaya 2002). However, as yet today *senna spectabilis* is still a problem in MMNP.

3.2.4 Inadequate Law Enforcement

The Wildlife Conservation Act 2009 provides a legal framework, for the establishment of and operation in protected areas and wildlife corridors. However, law enforcement is hindered by insufficient human and financial resources to support efficient and sustainable protection of wildlife. Other contributing factors include inadequately trained staff and insufficient infrastructure and vehicles. Through the land use planning process, districts and villages have developed bylaws that govern their natural resources against human activities. However, experience has shown that there is low understanding of the bylaws among the communities.

CHAPTER FOUR

Conservation Strategies

Terms at a Glance - Strategies and Actions

Strategies are groups of related conservation actions used to restore targets and mitigate threats. Each strategy has a *lead implementer* who is responsible for ensuring that the actions get done.

Actions (sometimes called activities) are the specific pieces of work needed to implement a strategy. Each action should be assigned to specific agencies or organizations (and ideally individuals) that are responsible for carrying them out.

4.0 Strategic Objectives

4.1 Conducting Regular and Systematic Chimpanzee Surveys and Monitoring

Chimpanzee range (Figure 2.2) has been drawn from a collection of data from different institutions and individual chimpanzee researchers that have been working in the country. Until today, there is no reliable data on chimpanzee population status in the country (except Gombe), and there is no baseline data for the entire range especially the GME, which is the largest range and hosts the most chimpanzees in Tanzania as per the rapid population assessment conducted in 2006 and 2014.

While MNRT recognizes the work done by the Kyoto University and the Jane Goodall Institute from the 1960s to date and WCS and TNC in 2006 and 2014 respectively, it is crucial that chimpanzee surveys are well coordinated to enable the government (through TAWIRI) to put a national database for chimpanzees in place.

To this end, the plan directs formulating a Chimpanzee Technical Committee that will be chaired by WD, have a secretary from TAWIRI and include representatives from TAWA and TANAPA, and may include other members from conservation NGOs and universities. The committee among other things will be tasked to mobilize and archive data from individuals or institutions and deposit to the government database. In collaboration with researchers, the committee will develop a chimpanzee census protocol that will be a guideline for the long-term chimpanzee survey.

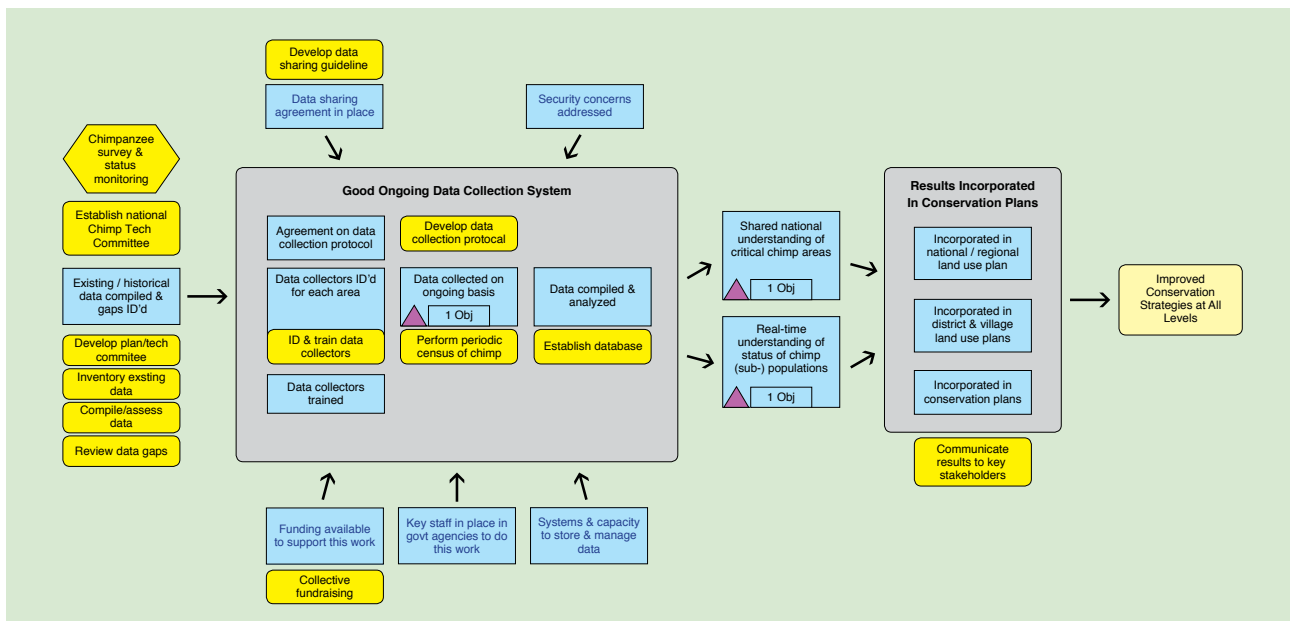


Figure 4.1: Results chain for chimpanzee survey and status monitoring

Table 4.1: Chimpanzee periodical surveys and monitoring work plan

National Actions	Lead Implementer(s)	Time Frame
Establish a national Chimpanzee Technical Committee	WD	Year 1
Regional and Local Actions	Lead Implementer(s)	
Develop data collection protocol	Chimpanzee Technical Committee	Year 1
Establish database	TAWIRI	Year 1
Perform periodic census of chimpanzees	TAWIRI	Year 1-5
Develop data-sharing guideline	Chimpanzee Technical Committee	Year 1
Communicate results to key stakeholders	TAWIRI	Year 1-5
Collective fundraising	Chimpanzee Technical Committee	Year 1-5
Identify & train data collectors	TAWIRI	Year 1-5
Key Effectiveness Indicators to Track	Lead Collector(s)	
National Technical Committee Established	WD	
Number of surveys submitting data	TAWIRI	Year 1-5
Maps showing key chimp areas available	TAWIRI	Year 1-5
Information about chimp status in place	TAWIRI	Year 1-5
Database, repository in place	TAWIRI	Year 1-2

4.2 Regulating Chimpanzee Habituation for Research and Tourism

Actions to reduce the threats posed by inappropriate habituation of chimpanzees for both research and tourism purposes are important. Establishing and enforcing best practice for habituation that reduces the risk of disease transmission (Figure 4.2) and ensures that habituated chimpanzees are not vulnerable to poaching and other forms of incidental killing, while also protecting human interests and safety. To guide the habituation practices within the species range, there is a need to develop a “guideline for chimpanzee habituation”.

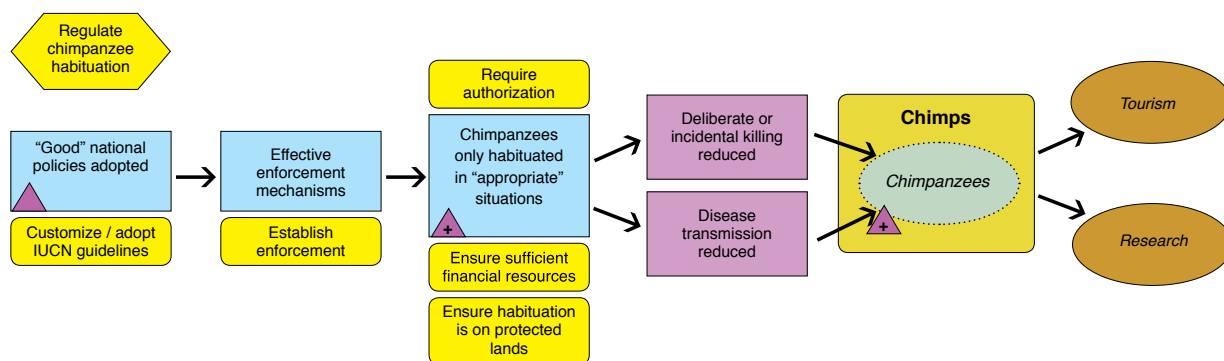


Figure 4.2: Develop chimpanzee habituation guidelines

Table 4.2: Regulating chimpanzee habituation for research and tourism work plan

National Actions	Lead Implementer(s)	Timeline
Develop guidelines for chimpanzee habituation	TAWIRI	Year 2
Issue permit for habituation	TAWIRI	Year 1-5
Establish enforcement mechanisms to ensure that habituation regulations are observed	TANAPA/TAWA/ TAWIRI	Year 1-5
Regional and Local Actions	Lead Implementer(s)	
Train law enforcers on chimpanzee habituation protocols	WD/TANAPA/TAWA	Year 1-5
Key Effectiveness Indicators to Track	Lead Collector(s)	
Chimpanzee habituation guidelines in place	WD, TAWIRI, TANAPA, TAWA	Year 1
Number of permits issued	WD, TAWIRI, TANAPA	Year 1-5
Number of inspections conducted	TAWIRI, TAWA	Year 1-5
Number of law enforcers trained	WD, TANAPA, TAWA	Year 1-5

4.3 Reduction of Human-Chimpanzee Conflict

Close proximity of humans to wildlife is a potential cause of conflict and loss of wildlife across their range. Chimpanzee populations that live adjacent to human settlement areas are known to learn new habits of foraging on farms, and preying on human babies and livestock, that result in human-chimpanzee conflict (Goodall 1986; Greengrass 2000). Such conflicts may result in retaliatory killing of chimpanzees, which then leads to decrease of chimpanzee population.

Establishment of conservation areas or any other land use that is friendly to chimpanzee conservation

will reduce conflict arising from close interaction between humans and chimpanzees. Since the chimpanzee number is low (<2,500 individuals), the loss of a single animal is very significant, as the species has a very low recruitment rate.

Table 4.3: Reduction of human-chimpanzee conflict

National Actions	Lead Implementer(s)	Timeline
Establishment of conservation area	WD, TAWA	Year 2- 5
Awareness raising	WD, TAWA	Year 1-5
Regional and Local Actions for Each Candidate Site	Lead Implementer(s)	
Awareness raising	TAWA, TAWIRI, TANAPA,	Year 1-5
Approval of conservation areas establishment proposals	TAWA, Local government	Year 4-5
Law enforcement	TAWA, TANAPA	Year 1-5
Key Effectiveness Indicators to Track	Lead Collector(s)	
Conservation area established	TAWIRI, District Councils	Year 1-5
Number of awareness programmes developed	TAWA, TAWIRI, TANAPA	Year 1-5

4.4 Ensuring Trans-boundary Conservation of Chimpanzees, Core Habitat and Corridors

Trans-boundary chimpanzee conservation between Tanzania and Burundi is important in ensuring genetic diversity of the species in the greater Gombe – Mukungu-Vyanda ecosystem. An appropriate forum should be established to guide cross-boundary conservation of chimpanzees, core habitat and corridors.

Table 4.4: Trans-boundary conservation work plan

National Actions	Lead Implementer(s)	Timeline
Establish collaboration among countries on conservation of chimpanzees and their habitats	WD	Year 2
Develop and put in place intergovernmental agreement on improved collaboration on chimpanzee conservation	WD	Year 2
Establish trans-boundary conservation forum	WD	Year 2
Regional and Local Actions for Each Candidate Site	Lead Implementer(s)	
Establish trans-boundary management plan of chimpanzees and habitat	TAWA, TANAPA, DED	Year 2-3
Initiate cross-border joint patrol	TAWA, TANAPA	Year 2
Sensitization - targeting law enforcers and decision makers	WD, TAWA, TANAPA	
Key Effectiveness Indicators to Track	Lead Collector(s)	
Signed international/bilateral agreement in place	WD	Year 1-5
Approved general management plan in place	WD, TANAPA, TAWA	Year 2-3
Trans-boundary conservation forum established	WD	Year 2
Number of joint patrols conducted	WD, TANAPA, TAWA	Year 1-5
Number of collaboration meetings	WD	Year 1-5

4.5 Reduction of Anthropogenic Diseases Affecting Chimpanzees

The resemblance in genetic composition between humans and chimpanzees increases the chance of transmitting diseases from one species to another. Reducing contact between chimpanzees and humans is crucial in managing anthroozoonotic diseases. In order to control disease transmission, it is important to develop guidelines for disease control in chimpanzees.

Table 4.5: Work plan for anthropogenic diseases affecting chimpanzees

National Actions	Lead Implementer(s)	Timeline
Formulate guidelines for disease control in chimpanzees	WD, TAWIRI	Year 2
Regional and Local Actions for Each Candidate Site	Lead Implementer(s)	
Establish veterinary unit with proper facilities and trained personnel	TAWIRI, TAWA, TANAPA	Year 2-3
Identify and assess sources of disease	TAWIRI	Year 1-5
Support vaccination campaign for communicable diseases	TAWIRI, TANAPA	Year 1-5
Screen researchers, tour guide and tourists for diseases	TAWA, TANAPA	Year 2
Establish a quota system for tourists visiting chimpanzees in national parks	TANAPA, TAWA	Year 1
Raise awareness	TANAPA, TAWA	Year 1-5
Promote in-service training	TAWIRI, TANAPA	Year 1-5
Key Effectiveness Indicators to Track	Lead Collector(s)	
Chimpanzee guidelines for disease control in place	TAWIRI, TAWA, TANAPA	Year 1
Veterinary unit established and trained personnel in place	TAWIRI, TAWA, TANAPA	Year 2
Number of staff trained/in-service trainings	TAWIRI, TAWA, TANAPA	Year 1-5
Screening system in place	TAWIRI, TAWA, TANAPA	Year 1-5
Quota system for tourists in place	TAWIRI, TAWA, TANAPA	Year 1-5
Number of awareness meetings	TAWIRI, TAWA, TANAPA	Year 1-5

4.6 Enhance Law Enforcement

Improvement of anti-poaching units by providing enough rangers and facilities, including vehicles/boats, ammunition, for patrol would ensure effective conservation of wildlife including chimpanzee conservation. In addition, rangers' motivation and incentives are very important.

Local governments will promote community involvement and participation in law enforcement through the use of district and village bylaws.

Table 4.6: Work plan for enhancing law enforcement

National Actions	Lead Implementer(s)	Timeline
Mobilization of funds	WD	Year 1-5
Awareness campaign	TAWIRI, TAWA, TANAPA	Year 1-5
Regional and Local Actions	Lead Implementer(s)	Timeline
Sensitization of laws governing wildlife	TANAPA, TAWA	Year 1-5
Reinforcement of laws and regulations	TANAPA, TAWA	Year 1-5
Motivation of and provision of incentives to law enforcers	TAWA, TANAPA	Year 1-5
Improve and establish communication, transport and building infrastructure	TAWA, WD	Year 1-5

Key Effectiveness Indicators to Track	Lead Collector(s)	Timeline
Fundraising campaign conducted	WD	Year 1-5
Number of workshops, seminars or meetings conducted	TAWIRI, TAWA, TANAPA	Year 1-5
Communication technology acquired	TAWIRI, TAWA, TANAPA	Year 1-5
Number of vehicles or other means of transport procured	TAWIRI, TAWA, TANAPA	Year 1-5
Houses/game post constructed	TAWIRI, TAWA, TANAPA	Year 1-5
Anti-poaching gears in place	TAWA, TANAPA	Year 1-5
Number of arrests and actions taken	TAWA, TANAPA	Year 1-5

4.7 Promote Integration of Livelihood Options in Conservation Interventions

The use of legal instruments such as law enforcement and park patrols is insufficient to safeguard wildlife, particularly those moving to village lands or outside protected areas. In addition, given the size of wildlife areas in Tanzania, government agencies alone cannot protect wildlife without engaging local communities and other stakeholders. It is therefore important to balance conservation goals and human livelihood needs to guarantee partnership and sustainability for long-term chimpanzee conservation (Bragagnolo *et al.* 2016).

Table 4.7: Work plan for integration of livelihood options in conservation interventions

National Actions	Lead Implementer(s)	Timeline
Create funding mechanism for the support of income-generating activities (IGAs)	WD	Year 1
Regional and Local Actions for Each Candidate Site	Lead Implementer(s)	
Facilitate Identification and Implement alternative income-generating projects to local communities to improve livelihoods	TAWA, TANAPA	Year 1-5
Organize training on business management and entrepreneurship skills	TAWA, TANAPA	Year 1-5
Develop benefit-sharing mechanism	TAWA, TANAPA	Year 1
Key Effectiveness Indicators to Track	Lead Collector(s)	
Funding mechanism in place	TAWIRI, TAWA, TANAPA	Year 1-5
IGAs identified	TAWIRI, TAWA, TANAPA	Year 1-5
Number of IGAs implemented	TAWIRI, TAWA, TANAPA	Year 1-5
Number of people trained in IGAs	TAWIRI, TAWA, TANAPA	Year 1-5
Benefit-sharing mechanism developed and practised	TAWIRI, TAWA, TANAPA	Year 1

4.8 Reducing Chimpanzee Habitat Loss

Farmers mostly target the evergreen forest for agriculture because of its high soil fertility. However, the evergreen forest is the most suitable habitat for chimpanzees as it is a rich source of food and shelter throughout the year. These lands need to be given as much legal protection as possible. The key to combatting agriculture expansion into chimpanzee habitat is to identify and protect where it is likely to expand in the coming years. It will also be important to work with district authorities to direct growing human populations into appropriate locations and to stop newly forming unplanned settlements before they become permanent. In addition, the Environmental Act of 2004 should be adhered to whenever new roads are being constructed across chimpanzee habitats. Furthermore, charcoal production poses threats to chimpanzee habitats, hence the need for protecting sensitive habitat areas through land-use planning and enforcement. Other potential strategies could involve providing alternative income-generating livelihoods for charcoal producers and developing alternative energy sources for urban charcoal consumers.

Table 4.8: Work plan to reduce chimpanzee habitat loss

National Actions	Lead Implementer(s)	Timeline
Dissemination of agriculture and conservation policies	WD	
Regional and Local Actions for Each Candidate Site		
Facilitate development and institutionalization of conservation agriculture	TAWA, TANAPA	Year 1-4
Identify of areas prone to agriculture expansion	WD, TAWA	Year 1-2
Regulate farming practices	WD, TAWA	Year 1-5
Promote alternative energy sources/fuel-efficient stoves	WD, TAWA	Year 2-5
Raise awareness	TANAPA, TAWA	Year 1-5
Key Effectiveness Indicators to Track	Lead Collector(s)	
Number of simplified version of policies distributed	TAWIRI, TAWA, TANAPA	Year 1-2
Agriculture areas mapped	TAWIRI, TAWA, TANAPA	Year 1-5
Percentage of farmers implementing best practice	TAWIRI, TAWA, TANAPA	Year 1-5
Percentage of households using fuel-efficient stoves	TAWIRI, TAWA, TANAPA	Year 1-5
Number of farmers trained on conservation agriculture	TAWIRI, TAWA, TANAPA	Year 1-5
Number of awareness-raising sessions conducted	TAWIRI, TAWA, TANAPA	Year 1-5

4.9 Control of Invasive Species

Invasive species have been considered to be one of the low-ranking threats to chimpanzee habitats, but in the absence of proper measures, invasive species have the potential to expand, resulting in degradation of chimpanzee habitat quality. Control of invasive species calls for proper understanding of the species' distribution and dispersal mechanisms. It is important to deploy diverse measures that will control the spread of invasive species.

Table 4.9: Work plan to control invasive species

National Actions	Lead Implementer(s)	Timeline
Promote afforestation of indigenous trees	WD	Year 1-5
Regional and Local Actions	Lead Implementer(s)	
Promote establishment of indigenous tree nurseries for afforestation	TAWA, TANAPA	Year 1-5
Create effective mechanisms to prevent introduction and promote eradication of invasive species	TAWA, TANAPA, TAWIRI	Year 1-5
Map out the diversity and abundance of invasive species	TAWIRI	Year 2
Key Effectiveness Indicators to Track	Lead Collector(s)	
Number of awareness sessions conducted	TAWA, TANAPA, TAWIRI	Year 1-5
Number of indigenous tree nurseries established	TAWA, TANAPA, TAWIRI	Year 1-5
Number of awareness campaigns addressing control and eradication of invasive species	TAWA, TANAPA, TAWIRI	Year 1-5
Maps of invasive plants produced	TAWA, TANAPA, TAWIRI	Year 1-5

4.10 Expansion / Establishment of Protected Areas (PAs)

There are different levels of legal protection, including national parks, forest reserves, local authority forest reserves, game reserves, game controlled areas, open areas, wildlife management areas and village land forest reserves. There is a need to identify “key” areas that are of high conservation importance for chimpanzees that are reasonably feasible. Protection of key chimpanzee sub-populations and habitats is urgently needed to the greatest degree possible. Where feasible, the relevant management authorities have to annex general land close to national parks or game reserves, to ensure connectivity of chimpanzees’ habitat ranges (Figure 4.3).

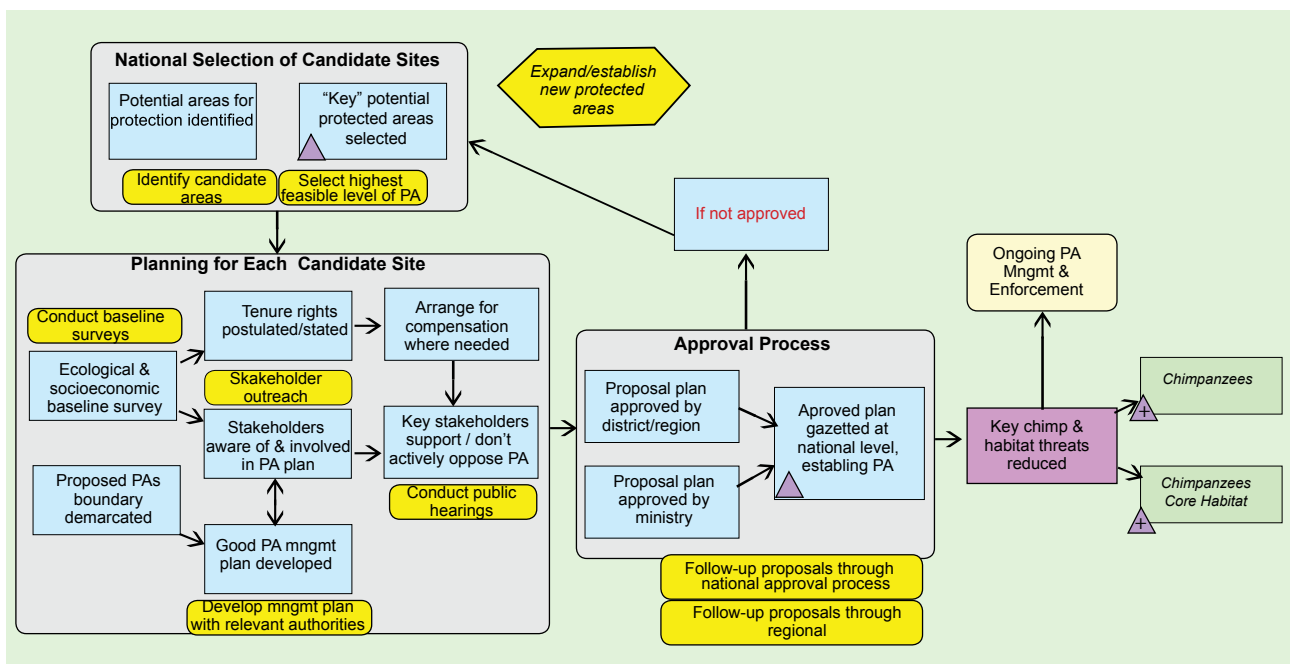


Figure 4.3: Chain for expansion of protected areas

Table 4.10: Work plan for identifying threatened chimpanzee sites and conserving them

National Actions	Lead Implementer(s)	Timeline
Identify potential areas for protection	WD, TAWA	Year 2
Propose establishment of selected potential areas for upgrading	WD, TAWA	Year 2
Regional and Local Actions for Each Candidate Site	Lead Implementer(s)	
Conduct biodiversity and socioeconomic baseline surveys	TAWIRI	Year 1
Propose specific boundaries	TAWIRI, TAWA, TANAPA	Year 1
Develop a general management plan with relevant authorities	TAWA, TANAPA	Year 4
Stakeholder outreach	TAWA, TANAPA	Year 1-5
Conduct stakeholder outreach	WD	Year 3
Follow-up proposals through regional / local approval process	WD, TAWA	Year 3
Key Effectiveness Indicators to Track	Lead Collector(s)	
Priority areas identified	WD, TAWA	Year 1-2
Proposed areas upgraded	WD	Year 1-2
Baseline surveys conducted	TAWIRI	Year 1
General management plans developed	TAWA, TANAPA	Year 2
Number of outreach programs conducted	TAWA, TANAPA	Year 1-5
Number of proposals developed	TAWA, TANAPA	Year 1-5

4.11 Develop District Land Use Framework Plan

MNRT to work with relevant ministries and authorities to ensure that land use planning efforts take into account chimpanzees and other wildlife conservation needs. Potential districts include but are not limited to Kalambo, Mpanda, Nkasi, Tanganyika, Uvinza and Kigoma.

Table 4.11: Work plan to ensure chimpanzee sites get included in district land use framework plans and other national plans

National Actions	Lead Implementer(s)	Timeline
Mobilize resources	WD, TAWA	Year 1-5
Provide capacity, systems and technical support	TAWIRI, TANAPA, TAWA	Year 1-5
Regional and Local Actions for Each Candidate Site	Lead Implementer(s)	
Establish biodiversity and socioeconomic baseline data	TAWIRI, TANAPA, TAWA	Year 1
Conduct meetings with respective district/villages/stakeholders	WD, TAWA, TANAPA	Year 2-3
Conduct advocacy and sensitization programs with villagers on the importance of setting areas for conservation	WD, TAWA	Year 1-5
Follow-up proposals through regional / local approval process	WD, TAWA	Year 2-3
Key Effectiveness Indicators to Track	Lead Collector(s)	
Baseline data and maps of proposed core habitats and corridors developed	TAWIRI	Year 1
DLUFP approved	TAWA, TANAPA	Year 1-5
Funds available	WD, TAWA	Year 1-5

CHAPTER FIVE

Indicative Budget and Conclusion

5.1 Indicative Budget

Appendix 1: Indicative budget

5.0	BUDGET					
	Strategy/actions	Unit	Rate	Total (US\$)	Lead Implementer(s)	Additional Comments
5.1.0	Chimpanzee Periodic Survey and Monitoring			339,000		
	Conduct 2 surveys in 10 years	2	60,000	120,000	TAWIRI in collaboration with partners	One survey will be background while the second becomes evaluation survey
	Convene Technical Committee meetings for updating and improving database.	5	25,000	125,000	TAWIRI and Technical Committee	Develop Technical Committee plan with members from higher learning institutions, conservation NGOs, TAWA, TANAPA, led by TAWIRI
	Create database by establishing data systems	1	10,000	10,000	TAWIRI+NGOs+ universities + technical team	Evidence that data are collected on ongoing basis
	Convene a meeting of researchers involved with data collection by identifying and training data collectors (2 meetings by regions)	2	30,000	60,000	Technical Committee, TAWIRI leads the process	Accessible map showing key chimp areas
	Communicate results to key stakeholders (through articles, journals, flyers, calendars and emails)	12	2,000	24,000	TAWIRI + Technical Committee	Accessible information about chimp status
						Database, repository in place
5.2.0	Human-Chimpanzee Conflict Resolution			700,000		
	Conduct Preliminary assessment of known buffer zones	5	10,000	50,000	TAWA, TAWIRI, ARDHI and responsible district councils	Buffer zones established
	Conduct meetings with stakeholders (village and authorities)	5	30,000	150,000	TAWA, TAWIRI, TANAPA, NGOs	Raising awareness and making people accept the idea of buffer establishment

	Compensate the individuals severely affected by reallocation	5	30,000	150,000	TAWA, TAWIRI, TANAPA, NGOs, ARDHI,	
	Approval of buffer zones establishment proposals	5	10,000	50,000	TAWA, ARDHI	Buffer zones established
	Conduct law enforcement campaigns	20	10,000	200,000	TAWA, TANAPA	
	Conduct general awareness-raising campaigns (radios, TV, flyers, brochures, meetings)	10	10,000	100,000	TAWA, TAWIRI, TANAPA, NGOs, ARDHI,	People aware of chimpanzee behavior and needs
5.3.0	Trans-boundary Chimpanzee Conservation Plan			500,000		
	International Actions					
	Efficient trans-boundary conservation partnership to safeguard chimpanzees and their core habitats			130,000	WD – Tanzania, Burundi/, TAWIRI, TAWA, TANA[A	
	Conduct meetings to establish collaboration among countries on conservation of chimpanzees and their habitats	2	20,000	40,000	WD, Tanzania, Burundi/ TAWIRI, TAWA/ TANAPA	
	Develop and put in place intergovernmental agreement on improved collaboration				WD – Tanzania, Burundi/TAWIRI	
	Establish trans-boundary management plan of chimpanzees and their habitats	2	30,000	60,000	WD, Tanzania, Burundi; TAWA, TANAPA	
	Establish cross-boundary conservation forum to address challenges	1	20,000	20,000	TANAPA, TAWA	
	Hold meetings to develop and put in place intergovernmental agreement on improved collaboration	1	10,000	10,000	TAWA, TANAPA	
	Regional and Local Actions for Each Candidate Site			370,000		
	Survey and confirm potential chimpanzee habitats	1	15,000	15,000	TAWIRI	Survey report
	Conduct meetings to establish general management plan for managing chimpanzees and their habitats	1	15,000	15,000	TAWA, TANAPA, DED	Signed international agreement in place
	Conduct joint patrol in adjoined habitats e.g., Ugalla and greater Mahale ecosystem	20	15,000	300,000	TAWIRI	Approved general management plan in place
	Conduct campaigns, sensitizing people targeting law enforcers	2	20,000	40,000	TAWA, TANAPA, DED, NGO	
5.4.0	Anthropogenic Diseases Affecting Chimpanzees			281,000		
	National Actions			26,000		

	Conduct workshops to formulate a policy for managing anthroozoonotic diseases	2	13,000	26,000	WD	Policy for managing anthroozoonotic developed. Wildlife health policy in place that complies with IUCN best practices guidelines for health monitoring and disease control e.g., disease prevention, quarantine, immunization, etc.
	Regional and Local Actions			255,000		
	Establish of veterinary unit with proper facilities and trained personnel	2	40,000	80,000	TAWIRI, TAWA, TANAPA	
	Equip Gombe and Mahale veterinary units for capacity to screen tourists, researchers and rangers for symptoms of diseases	2	20,000	40,000	TANAPA,	Tourists, researchers and rangers screened for symptoms of infectious diseases
	Conduct study to assess sources of chimpanzee diseases in the parks	1	20,000	20,000	TAWIRI	Veterinary unit established in Kigoma and trained personnel in place
	Develop booking system to establish a quota system for tourists visiting chimpanzees in national parks (computer system and accessories to serve Gombe and Mahale national parks)	1	15,000	15,000	TANAPA, TAWA	Booking system in place
	Veterinary staff attend in-service training	1	40,000	40,000	TAWIRI, TANAPA	Number of staff trained/in-service trainings
	Conduct awareness campaigns about anthropogenic diseases affecting chimpanzees in all potential habitats/sites	3	20,000	60,000	NGOs, TANAPA, TAWIRI, WD, TAWA	Use different methods of passing information to people involved (public, tourists, researchers and rangers)
5.5.0	Law Enforcement			545,000		
	Convene a workshop to revise existing laws and regulations governing wildlife	1	15,000	15,000	WD	Outdated laws revised and new laws and regulations introduced or proposed
	Conduct good governance workshop to law reinforcement teams	3	25,000	75,000	NGOS, WD/ TAWA AND TAWIRI	Majority reached and reminded of good governance procedures.
	Conduct awareness or sensitization campaigns of laws governing wildlife	10	20,000	200,000	TANAPA, TAWA	Ensure all communities and targeted people are reached by using different methods
	Conduct patrols and use of all means to reinforce laws and regulations	10	20,000	200,000	TANAPA, TAWA	Anti-poaching trips made every year, and number of arrests and persecutions followed

	Motivate and provide incentives to law enforcers	5	5,000	25,000	TAWA, TANAPA	Awarding by introducing study tour to the best performers
	Camping gear (tents, binoculars, and other tools)	1	30,000	30,000	TAWA, TANAPA	
5.6.0	Integrated Conservation Programme			220,000		
	National Actions			40,000		
	Convene a workshop to formulate policies that support alternative income-generating projects to local communities to improve livelihood	2	20,000	40,000	WD,TAWA, TANAPA, TAWIRI	Customize and adopt ICDP approaches
				-		
	Regional and Local Actions			180,000		
	Conduct workshops for advocacy and sensitization on ICDPs	2	30,000	60,000	TAWA, TANAPA, NGOs	Policy in place
	Conduct meetings by Involvement of local communities in the designing of suitable ICDPs	2	20,000	40,000	TAWA, TANAPA, NGOs	Established suitable ICDP
	Conduct meetings involving communities in conserving the chimpanzees' core habitats and corridors	4	20,000	80,000	TAWA, TANAPA, TAWIRI, NGOs	Restored core habitats and corridors
5.7.0	Strategy for Habitat Loss			170,000		
	National Actions			45,000		
	Execute existing policy on invasive plants	1	5,000	5,000	WD	
	Control of introduction of non-native plants and management of existing alien species	1	40,000	40,000	respective ministry, WD, TAWIRI,	
	Regional and Local Actions			125,000		
	Conduct workshop with all involved parties to assess and document the magnitude of the problem	1	25,000	25,000	TAWA, TANAPA	Create effective mechanisms to prevent or eradicate the introduction of invasive species; e.g., how to ensure vehicles and equipment are clean of invasive plants and seeds; also how to minimize soil disturbance in all construction and maintenance activities, disposal of alien fruits and seed remains in the parks

	Conduct assessment on potential alien species invading chimpanzee habitat sites	2	30,000	60,000	TAWA, TANAPA, TAWIRI	Report on the magnitude of the problem
	Create monitoring systems for detecting and eradicating alien species	1	10,000	10,000	TAWA, TANAPA, TAWIRI	
	Develop awareness procedures on mechanisms to fight against introduction of alien species	3	10,000	30,000	TAWA, TANAPA, TAWIRI, NGOs	Use brochures and flyers
5.8.0	Establish New Protected Areas (PAs)			600,000		
	National Actions			150,000		
	Conduct surveys and meetings to Identify and propose potential areas for protection	1	50,000	50,000	TAWA, TAWIRI	New Protected Areas (PAs) proposed; selection of highest feasible level of PA for each area; selection of "key" priority areas
	Establish new PAs	1	100,000	100,000	TAWA, TAWIRI	(Meetings and endorsement of new protected sites important in chimpanzee conservation)
	Regional and Local Actions for Each Candidate Site			450,000		Follow-up proposals through regional / local approval process
	Conduct baseline surveys	3	30,000	90,000	TAWIRI	Approved plan gazette for each priority area
	Propose and develop specific boundaries	3	30,000	90,000	TAWIRI, TAWA, TANAPA	Assuming 3 PAs will be developed
	Develop management plan with relevant authorities	3	50,000	150,000	TAWIRI, TAWA, TANAPA	as above
	Stakeholder outreach	3	10,000	30,000	TAWIRI	as above
	Conduct public hearings	3	30,000	90,000	WD, TAWIRI	as above
					WD, TAWIRI	
5.9.0	4.2.8 District Land Use Planning			432,000		
	National Actions			-		
	Provide capacity, systems and technical support			-	TAWIRI, TANAPA, TAWA	Note, these will be used under National Land Use Planning Commission during preparation of the District Land use plans; they got their capacity
	Promote implementation and enforcement				TANAPA, WD	These National Land Use Planning Commission are used in implementation as well

	Regional and Local Actions for Each Candidate Site			432,000		
	Develop district land use plan focusing on saving chimpanzees in threatened ecosystems	4	50,000	200,000	TAWIRI	Data from baseline data used but also 2 DLUPs have been developed and several VLUPs
	Establish baseline data (referring to all existing DLUPs, village LUP and the functions they serve in chimpanzee conservation)	6	15,000	90,000	TAWIRI, TANAPA, TAWA, ARDHI /NGOs	Get and incorporate stakeholders input in 6 districts with chimpanzees
	Conduct meetings to assess the LUP's contribution to respective districts and villages	6	7,000	42,000	DEDs, TAWIRI, TAWA, TANAPA,ARDHI /NGOs	
	Develop land use plan focusing on saving chimpanzees in threatened ecosystems	10	10,000	100,000	TAWIRI,TANAPA, TAWA,ARDHI / NGOs	Baseline data and maps of proposed core habitats and corridors. Advocate and run sensitization programs with villagers on the importance of setting areas for conservation
	GRAND BUDGET FOR THE PLAN			3,787,000		

This plan is projected to require resources that amount to a minimum of 3.787 million US\$ dollars for a period of five years (Appendix 1). The funding will cover the main objectives and some of the adaptable implementation over time. We envisage the collaborative effort in implementing this plan for the long-term conservation of chimpanzees of Tanzania. Government will work with different partners and stakeholders in making sure that this work is not futile.

5.2 Conclusion

Improve Connectivity and Manage Chimpanzee Diseases in National Parks

Broadly, the hundreds of chimpanzees living within the boundaries of *Gombe and Mahale national parks* are currently in good status, although there is a need for updated estimates on chimpanzee density and distribution in Mahale (see below). For these two national parks, primary concern centres on connectivity to suitable habitat and chimpanzee populations outside the park boundaries. Gombe has increasingly become isolated, although recent efforts to create corridor areas are paying off with the apparent transfer of migrating females into the population. The remaining corridor connection needs to be maintained to maintain the trends of transfer. Current areas of connectivity, especially along the eastern border of Mahale, are increasingly threatened by conversion of forest to agriculture and the development of roads and village infrastructure (see Chapter 3). In the long-run if not addressed, this loss of connectivity coupled with the slow reproductive rates in great apes can result in isolated small populations that suffer from inbreeding effects (Leendertz *et al.* 2006). Increased isolation can also cause increase in intra-specific conflict, as chimp communities compete for shrinking habitat resources, as well as chimpanzee-human conflict when chimpanzees wander outside the park boundaries in search for food and other resources (McLennan & Hill 2012; McLennan 2013). Similarly, because of slow reproductive rates in great apes, even small disease outbreaks or single deaths can have a disproportionate impact on the viability of small or isolated ape populations (Leendertz *et al.* 2006), making it imperative for all chimpanzee sites to guard against and manage disease outbreaks. It is important to emphasize measures that reduce or eliminate possibilities of transmitting diseases from humans or livestock to chimpanzees as well as improving health monitoring in chimpanzee sites.

Rubondo National Park represents a special case, given that its chimpanzee population is not native, but is derived from chimpanzees from West Africa that were introduced to the island over four decades ago. In this context, guidelines for the management of chimpanzee sanctuaries (Schoene & Brend 2002) are likely the most appropriate way to ensure the ongoing welfare of these animals. The island's low chimpanzee population density and high resource availability (Moscovice *et al.* 2010) mean that this population is currently in a good status, although over the longterm, inbreeding and diseases remain concerns.

Urgently Enhance Protection of Chimpanzees Outside National Parks

Over the next decade, chimpanzee conservation in Tanzania needs to most urgently focus on the approximately 700-1,300 chimpanzees outside the national parks. These animals range across areas of varied protective status, from general land to village and district forest reserves. These sub-populations live in woodland-dominated landscapes and at lower population densities than their park neighbours; they also have lower viability status due to increased pressure from threats to remaining suitable habitat (see Chapter 3). Specifically, chimpanzees within the *Greater Gombe* and *Southern Tanganyika ecosystems* are already highly vulnerable due to decreasing available

habitat. Both are predicted to be extinct in the near future without urgent, extensive and effective conservation action.

The status of chimpanzee sub-populations in the *Greater Mahale Ecosystem* ranges from fair to good. This ecosystem represents the last chance to “get ahead of the curve” and conserve a large population of chimpanzees that will be viable over the long term. As part of this work, it is essential to complete survey efforts so that we can identify key conservation areas and establish baseline population numbers.

Protect Key Chimpanzee Corridors

As part of our overall conservation strategy, it is essential to protect several key corridors that are currently under threat and need conservation action to maintain their function (Table 2.3). Specifically, connectivity between Gombe National Park and Masito Ugalla is under imminent threat from forest conversion, and key corridors connecting Mahale National Park to surrounding forest areas are under threat from road construction.

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