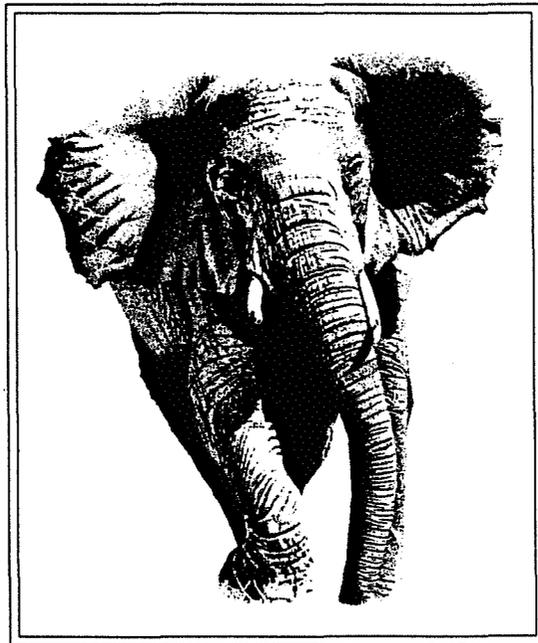


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# Management Zone Plan

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## Tarangire National Park

Tanzania National Parks

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# TARANGIRE NATIONAL PARK

## Management Zone Plan/ Environmental Impact Assessment

APRIL 1994



**Tanapa  
Planning  
Unit**

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**Tanzania National Parks**

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## The Arusha Manifesto

Over twenty-nine years ago the first President of Tanzania, Mwalimu Julius K. Nyerere, recognized the integral part wildlife plays in this country. In September 1961 at a symposium on the Conservation of Nature and Natural Resources, he gave a speech that has become known as the Arusha Manifesto:

**"The survival of our wildlife is a matter of grave concern to all of us in Africa. These wild creatures amid the wild places they inhabit are not only important as a source of wonder and inspiration but are an integral part of our natural resources and our future livelihood and well being.**

**In accepting the trusteeship of our wildlife we solemnly declare that we will do everything in our power to make sure that our children's grand-children will be able to enjoy this rich and precious inheritance.**

**The conservation of wildlife and wild places calls for specialist knowledge, trained manpower, and money, and we look to other nations to co-operate with us in this important task - the success or failure of which not only affects the continent of Africa but the rest of the world as well."**

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*Dear Friends,*

*Tanzania National Park's long range goal is to have an approved General Management Plan/Environmental Impact Assessment (GMP/EIA) for each of our national parks. However, with the increasing pressures for more tourist development in our parks at this point in time, we do not have the luxury of spending the two years it takes to complete a comprehensive general management plan effort for a park.*

*To ensure that our parks are not over developed, resulting in the loss of resources and values, TANAPA will be pursuing a slightly different planning approach during the next couple of years. Our planning unit will take the lead in establishing and facilitating interdisciplinary teams that will prepare **Management Zone Plan / Environmental Impact Assessments (MZP/EIA)** for specifically designated parks.*

*The same planning process developed by our planning unit to prepare GMPs will be used in preparation of MZPs. Simply stated, a Management Zone Plan is a General Management Plan minus the comprehensive set of actions developed to address all the park's problems and achieve all the identified objectives. Importantly, a Management Zone Plan takes only 3-4 months to prepare. The Management Zone Plan determines what types of use and development are both desirable and feasible in different areas of a park. It also establishes the type, general location, and limits of acceptable use and development for each identified zone in the park and on a parkwide cumulative basis. Like a General Management Plan, our Management Zone Plans will:*

- 1) establish the park's purpose and significance*
- 2) identify exceptional resource values and management objectives*
- 3) include a management zoning scheme that identifies what can and cannot occur with specific emphasis on development and use*
- 4) determine the limits of acceptable use and development for the overall park and for each zone within the park*
- 5) assess the environmental impacts of the zoning scheme and limits of acceptable use*

*We all know that there will be continuing pressures for tourist developments in other parks. While I wholeheartedly believe we should encourage investment and the benefits derived from tourism, we cannot allow our nation's spectacular natural resources to be sacrificed for the sake of foreign exchange. Tanzania must avoid the temptation of misusing and thereby depleting our natural resources for short term economic gains and high profits. Because the Management Zone Plans take a shorter time to complete, we will be able to develop a number of these plans during the next several years. These Management Zone Plans will guide development within the national parks and ensure that an appropriate balance between preservation and tourism use/development is achieved.*

**L. MELAMARI**  
**DIRECTOR GENERAL**  
**TANZANIA NATIONAL PARKS**

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**APPROVAL PAGE**

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Implementation of this plan has been approved by the appointed officers of Tanzania National Parks and its Board of Trustees.



Ambassador J. Lusinde  
Chairman  
Board of Trustees  
Tanzania National Parks



L. Melamari  
Director General  
Tanzania National Parks

## ***SUMMARY OF MANAGEMENT OBJECTIVES***

- Ensure that tourism and tourism development are within the limits of acceptable use and have the least adverse impact on park resources and the high quality of visitor experience traditionally associated with Tarangire National Park.
- Maintain the scenic quality, aesthetic attributes, and the type of traditional low impact camping experience that has become synonymous with Tarangire National Park.
- Allow only those tourist activities that contribute to the understanding and appreciation of park resources and only to the extent that natural, cultural, aesthetic, and scenic values are not impaired.
- Provide a diverse range of appropriate visitor use opportunities that are compatible with park resources and conform to the status associated with the national park designation.
- Create opportunities within the park boundary where visitors can experience pristine areas with little or no contact with man-made intrusions or contact with other people.
- Reduce the amount of tourist congestion that occurs in the northern portion of the park
- Minimize the adverse visual impacts of human activity along and within the Tarangire River corridor and within a specified distance of areas with unique natural, scenic, or topographic features, critical concentrations of wildlife, critical water sources, and areas with exceptional resource values.
- Encourage all new development outside the park boundary or as near to the boundary as possible.
- Ensure that all man-made developments, facilities, and structures are designed to be harmonious with the park's natural environment.
- Protect the floodplains and wetlands that support the park's prime resource - the Tarangire River.
- Eliminate all human use of surface water in the park, with the exception of sanctioned walking safaris.
- Prohibit all consumptive use of park resources, except where approved by the park's GMP/EIA.
- Maintain natural ecological processes that perpetuate the greatest degree of biological diversity and ecosystem integrity within the park and where possible within the larger Tarangire ecosystem.

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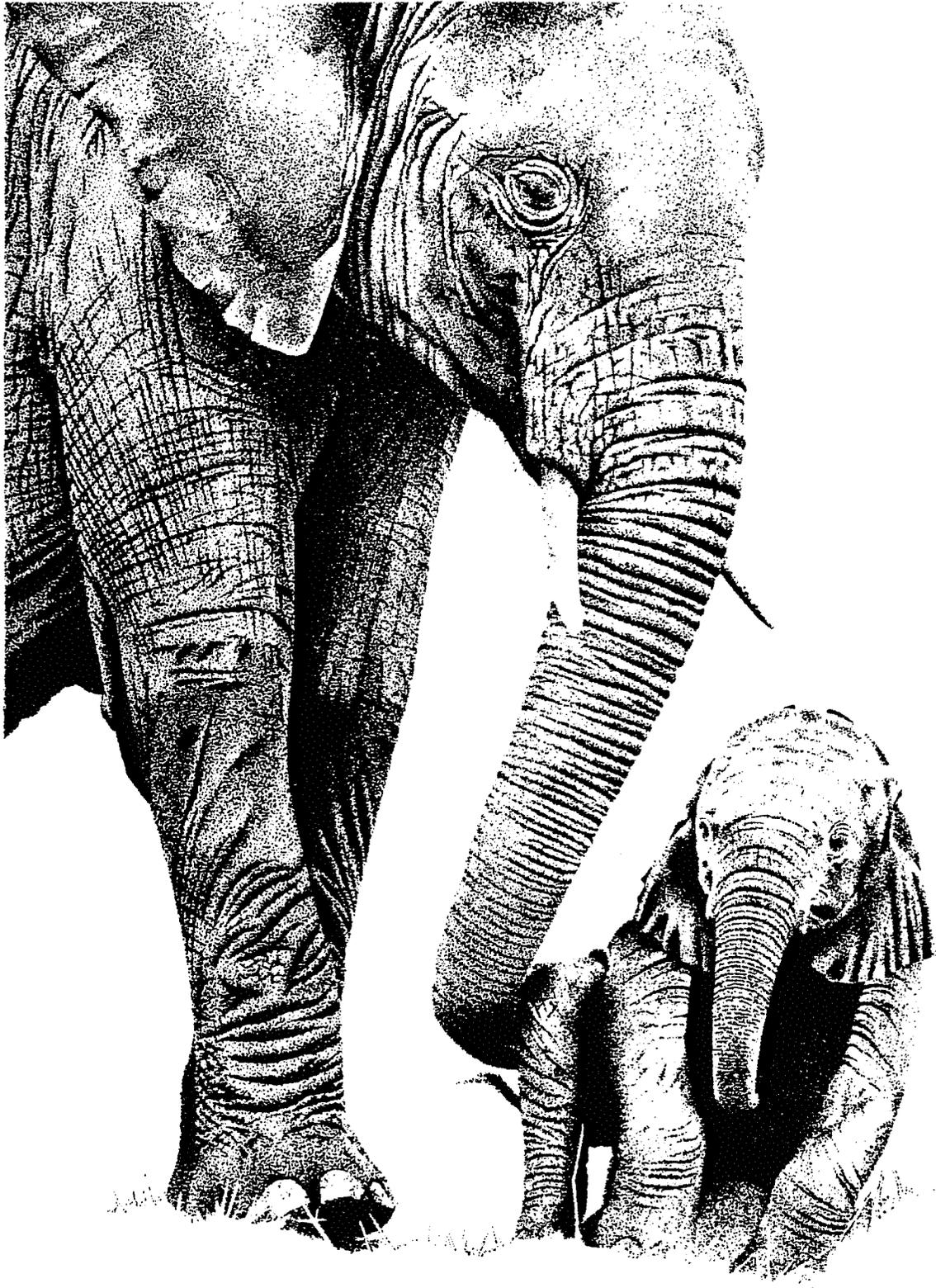
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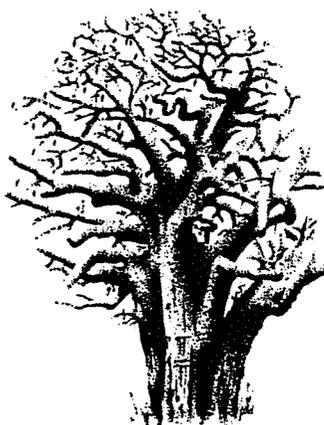
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# INTRODUCTION

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## 1. BRIEF INTRODUCTION OF THE PARK

Tarangire National Park is the fourth largest park in Tanzania with one of the highest density of elephants of any park in the country. It is part of Tanzania's popular northern tourist circuit that includes Arusha, Mt. Kilimanjaro, Lake Manyara, and Serengeti National Parks as well as Ngorongoro Conservation Area. Many tourists visit Tarangire either as a first stop or last stop on the northern tour circuit.



The park derives its name from the Tarangire River that flows through the center of the national park from south to north/north-west and empties its water into lake Burungi. During the dry season this river is a primary source of water in the Tarangire ecosystem. This park is endowed with wetlands (Silale, Gursi, Larmakau and Nguselrorobi Swamps) which act as sponges to supply water to Tarangire River during dry periods. Because of the availability of water, the park has a high concentration and variety of wildlife in the dry season.

### 1.1 LOCATION

Tarangire National Park is located in northern Tanzania between 3° 40' and 5° 35' south and 35° 45' and 37° East at an elevation of between 1200 meters and 1600 meters above sea level (Figure 1 - Location Map). It comprises a 2600 km<sup>2</sup> portion of the Tarangire ecosystem. The entire ecosystem encompasses approximately 20,500 km<sup>2</sup> of the Masai Steppe, including Mto-wa-Mbu Game Controlled Area on the north, Lolkisale and Simanjiro Plains Game Controlled Areas on the east, Mkungunero Game Controlled Area to the south and Kwakuchinja Open Area (Mweka College Demonstration Area) on the west. (Figure 2 - Vicinity Map). The park is located 118 km south-west of Arusha, east of the Great North Road and within the administrative districts of Babati, Monduli, Kiteto, Simanjiro, and Kondo.

### 1.2 ACCESS

The park is accessible on the tarmacked Great North Road (Arusha-Dodoma) from Arusha to the turn off at Kwakuchinja village near Minjingu phosphate mine. All tourist access into the park is through an entrance gate located in the northwest.

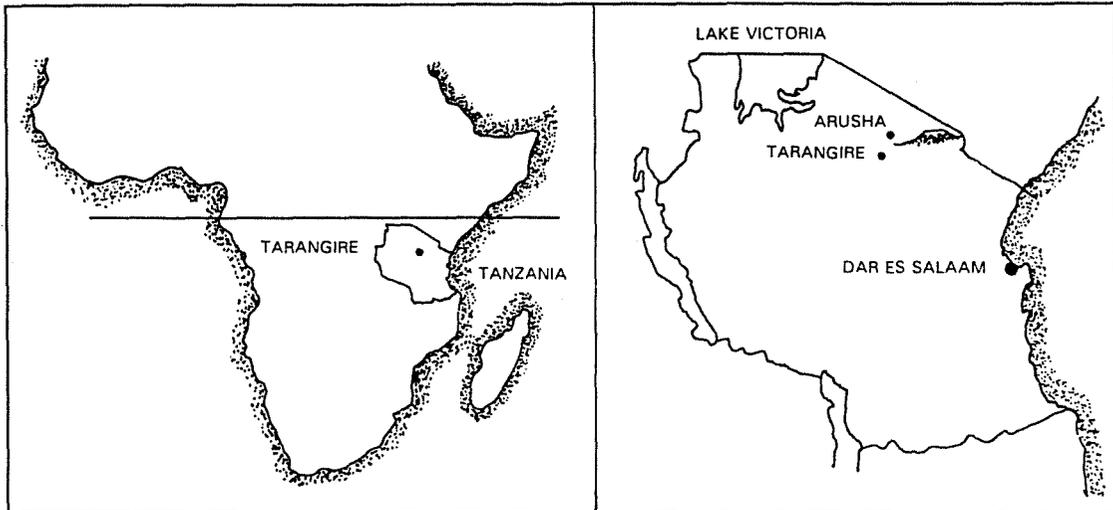


Figure 1: Location Map

corner of the park near the park headquarters. An 8 km gravel road connects the park entrance with the Great North Road. All other access points into the park are for administrative use only including Loibor Serrit Ranger post on the south-eastern boundary and the former ranger post at Chubi near the south western corner of the park boundary.

### 1.3 PARK INFRASTRUCTURE

The park has five ranger posts that are located in various strategic locations within and along the park boundary. The park headquarters is located near the park entrance gate in the extreme northwestern portion of the park adjacent to the park boundary. The headquarters office block contains the administrative offices for the Chief Park Warden, Warden of Tourism, Field Ecologist, Warden Antipoaching, Warden Community Conservation and Accounts. The garage and workshop for the park are located behind the administration headquarters building. The senior staff residential housing and resthouse are located within 500 meters east of the administrative offices. The junior staff village is located south of the senior staff, 1 km from the administrative offices. (Figure 3, Management Zone Plan; the symbol ● indicates location of ranger posts).

Kuro	(central)
Sangaiwe	(north-west)
Mamire	(west)
Loibor Serrit	(east)
Boundary Hill	(north-east)

The main park entrance, where visitors register, pay fees, and purchase park guide books (when they are available) consists of a gate, a small visitor contact building and toilet.

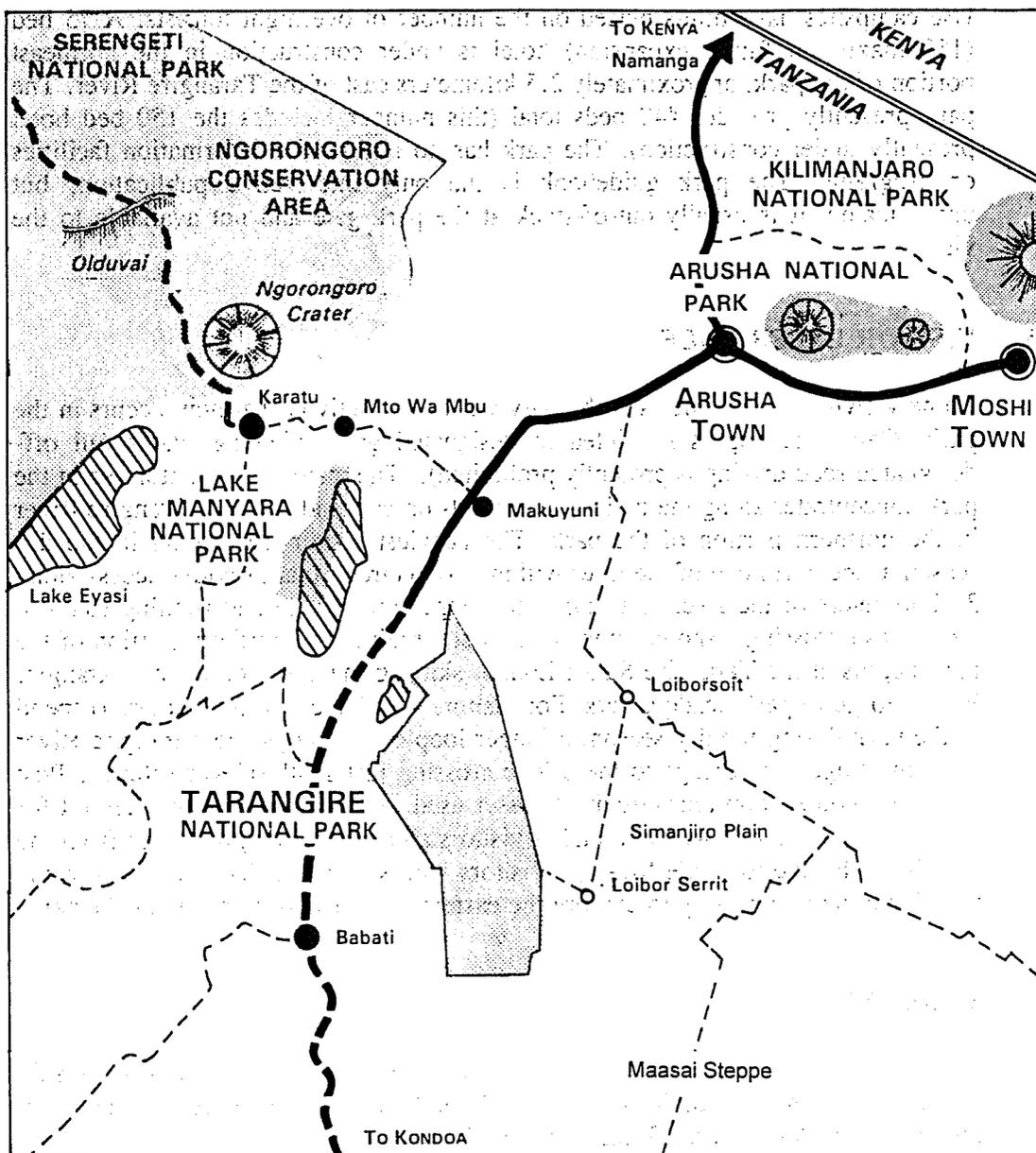


Figure 2 Vicinity Map

#### 1.4 EXISTING VISITOR FACILITIES

Presently, one tented lodge (85 beds) and one permanent luxury tented camp (16 beds) provide overnight accommodations for visitors. Other tourist accommodations include ten campsites located along the northern portion of the Tarangire River valley. Two out of the 10 campsites are Public campsites and the remaining 8 are Special Use campsites (Appendix A). Neither the Public campsites nor the Special

Use campsites have limits placed on the number of overnight tourists. A 75 bed (150 maximum future expansion) hotel is under construction in the northeast portion of the park, approximately 2.5 kilometers east of the Tarangire River. The park presently provides 442 beds total (this number includes the 150 bed hotel presently under construction). The park has no interpretive/information facilities or programs. The park guidebook is the only interpretive publication, but unfortunately it is usually out-of-stock at the park gate and not available to the visitor.

## 1.5 VISITOR EXPERIENCE

Game viewing from vehicles is the only visitor use activity that now occurs in the park. Game viewing is restricted to designated game viewing tracks (all off-designated road driving is presently prohibited). The majority of visitor use in the park concentrates along the main gravel roads on each side of the Tarangire River in the northern portion of the park. The heaviest visitor use occurs in the dry season at the north end of the river within a loop circuit that provides access along 35 kilometers of the river, starting at the Engelhard Bridge and running south to a dry wash crossing. Another popular tourist circuit in the northern portion of the park begins at the Tarangire Safari Lodge, skirting the east side of the Tarangire River Gorge to park headquarters. For visitors who have 3 to 3½ hours to spend in the park during the dry season, a longer loop circuit along the Tarangire River from the Engelhard Bridge to the bridge crossing just south of Kuro Ranger Post provides another loop tour circuit. A lesser used, but popular loop tour circuit for visitors who have 4 to 4½ hours takes visitors along the Tarangire River from the Engelhard Bridge to Silale Swamp. Visitors who stay more than two days in the park have the opportunity to explore the eastern and western portions of the park.

## 1.6 VEGETATION

Tarangire National Park is situated in the wooded steppe in an arid *Acacia* savannah belt that is dominated by *Acacia* and *Commiphora* species. The most important vegetation types found in the park are:

- Riparian woodland
- *Acacia tortilis* parkland
- Wetlands and seasonal flood plain
- *Acacia-Commiphora* woodland
- Riverine grassland
- *Combretum-Dalbergia* woodland
- *Acacia drepanolobium* woodland
- Rocky hilltop outcrops [kopjes] vegetation
- Deep gully vegetation
- Grasslands with scattered baobab trees

## **1.7 WILDLIFE**

Tarangire National Park is a dry season refuge for a majority of the migratory wildlife in the Tarangire ecosystem. The park is very rich in mammals and birds. It is estimated that during the dry season total biomass of large mammals inside the park is well in excess of 35 metric tons/km<sup>2</sup>. Some of the more important wildlife species include: African Elephant, Lesser and Greater Kudu, African Buffalo, Cheetah, Fringe-eared Oryx, Leopard, Lion, Masai Giraffe, Spotted Hyena, Common Zebra, White-bearded Wildebeest, Warthog, Eland, Olive baboon, Bat-eared Fox, Mountain Reedbuck, Impala, Common Waterbuck, Bushbuck, Coke's Hartebeest, Gerenuk, and Bohor Reedbuck.

The park has more than 550 species of birds. Particularly rich bird life occurs in the open Acacia woodlands, in and along the wetlands (Silale Swamp), and in the flood plain of Tarangire river. A few species that warrant mention: Yellow-collared Lovebird, Masai Ostrich, Martial Eagle, White and Pink-backed Pelicans, Saddle-bill Stork, Goliath Heron, Hammerkop, Bateleur Eagle, Helmeted Guinea-fowl, Kori Bustard, Long-toed Lapwing, Brown Parrot, White-bellied Go-away-bird, Madagascar Bee-eater, African Hoopoe, and a variety of kingfishers, weavers, owls, doves, plovers, sandpipers, francolins, and ducks.

## **1.8 GEOLOGY AND SOILS**

Tarangire National Park is situated within the eastern portion of the East African Rift Valley. The geology is based on three types of rock formations: the pre-Cambrian gneiss rocks; lake deposits and alluvial deposits. However, much of the park is underlain by gneiss and other pre-Cambrian crystalline rocks which give rise to different physical features. These parent rocks are of varying resistance to weathering and erosion. The harder un-weathered rocks stick out as outcrops and form prominent features in the park like the Sangaiwe hills on the central western boundary, Boundary Hill on the north eastern boundary, and other numerous smaller kopjes in the park.

The major soil types are the well drained red-loams that become alluvial along river valleys, alluvial on ridges and colluvial on hill slopes. They become increasingly stony along hill slopes due to lack of depth. The other soil types originating from lake deposits and sediments vary from clays to sands and are normally very saline. The third soil type is made up of alluvial deposits that are predominantly vertisols, commonly known as black-cotton soils. These clay soils are the expanding type that are poorly drained. They become wet and impassable to vehicles during the rains and dry up and crack during the dry season.

## **1.9 PHYSICAL FEATURES**

The southern half of the park and the extreme northern corner are relatively flat while the rest of the park is gently undulating. The park's landscape is dotted with rocky outcrops (kopjes) with scattered baobabs, especially in its northern and central portions. Tarangire hill is located on the western side of the river in the center of the northern half of the park. This well-known topographic feature stands at over 1600 meters above sea level and forms the highest feature in the entire Tarangire valley. The Tarangire river is the main perennial river and traverses the park from south to north/north-west. The general drainage pattern of the area is north-westwards towards the soda lakes of Burungi and Manyara.

## **1.10 CLIMATE**

Precise figures for many climatic parameters are not available, meteorological records are fragmentary and recording stations are widely separated. Tarangire National Park is located in a semi-arid area characterized by a prolonged dry season lasting up to 7 months. It lies in a typical bimodal rainfall region of northern Tanzania. The annual rainfall pattern consists of the short rains between November and December followed by a dry spell in January and long rains occur any time between February/March to May/June. The short rains are erratic, unreliable and variable in distribution. The annual average rainfall is about 650 mm. Temperatures are highest from December to February and lowest in June and July. The average maximum temperature is 27° C while average minimum is 16° C.

## **2. ESTABLISHMENT HISTORY**

Prior to 1950, the area which is now Tarangire National Park had little human settlement and was not used for livestock grazing due to the high concentration of tsetse flies which transmitted sleeping sickness to both livestock and the human population. This one factor played a major role in protecting this area from human exploitation. The areas to the east of the park, the Masai Steppe, are some of the region's most important grazing lands for both wildlife and livestock. Only during very severe droughts when all the surrounding grazing lands were overgrazed, would the Masai pastoralists be forced to use the Tarangire area for cattle grazing. The only other historical human use of the area was by fishermen who took up temporary residence in the park to harvest catfish from the Silale swamp.

The Tarangire Game Reserve was gazetted in 1957 in recognition of its importance as a dry season watering area for wildlife. Prior to its gazette as a game reserve, the area was a well-known hunting area for rhino. The Tarangire Game Reserve lands were included as part of a larger area to establish Tarangire National Park. Tarangire National Park was established by a Presidential Decree signed on 14 May 1970 under Section 3 of the 1959 National Parks Ordinance. The Decree was published in the Gazette of the United Republic of Tanzania (No. 25, Vol II) on 19 June 1970.

### **3. PURPOSE AND SIGNIFICANCE OF THE PARK**

Neither the proclamation notice for Tarangire National Park nor the National Park Ordinance state the specific purposes for setting this area aside as a national park. However, prior to gazettelement, the area was known for its importance as a dry season watering place for much of the wildlife in southern Masailand. Through an interdisciplinary team planning process, the Management Zone Plan team identified the following as the purpose and significance of Tarangire National Park:

#### **3.1 PARK PURPOSE**

- a critical dry season watering place for both resident wildlife and much of the migratory wildlife of southern Masailand.
- one of Tanzania's most important wetlands and hydrological regimes that support a variety and abundance of both fauna and flora.
- the unique association and mosaic of habitats and landforms that give Tarangire a distinctive character not duplicated anywhere else in Tanzania.
- habitat for endangered, threatened, endemic, and rare species and species of special concern or species of exceptional value.
- the scenic quality, aesthetic attributes, and the type of traditional low impact camping experience that has become synonymous with Tarangire National Park.

#### **3.2 PARK SIGNIFICANCE:**

- possesses, second only to the Serengeti/Ngorongoro ecosystem, the highest concentration of wildlife during the dry season of any area in Tanzania (Lamprey 1964).
- is one of the few protected areas in Tanzania with a hydrological regime that ensures a permanent year round water source for the park's most exceptional resource - the Tarangire River.
- is known for its river valley, wetlands, gently rolling hills, rocky outcrops, acacia woodlands, and numerous baobab trees.
- is the only national park in Tanzania's northern circuit where one can easily view a large concentration of elephants during almost any time of the year.

- is one of the few protected areas in Tanzania where one can easily see concentrations of oryx.
- possesses within its acacia habitat one of the highest known diversity of breeding birds in a single vegetation type (Moreau, 1966).
- protects one of the finest birdlife spectacles and picturesque landscapes in Tanzania - the Silale Swamp.
- has an exceptional number of acacia species (16) when compared to other acacia habitats in Africa (Clark J., 1992).
- comprises an exceptional association of *Acacia tortilis* and baobab trees that has become synonymous with the name Tarangire National Park.
- provides a landscape with a distinctive combination and balance of openness for game viewing and a mosaic of habitats and vegetative cover types that provide for both spectacular scenery and species diversity.
- has an uninterrupted history as an area with a significant variety and concentration of wildlife dating back 9000 years as evidenced by the prehistoric pictographs at Kisesse, Kolo, and Pahi (located approximately 40 kilometers southwest of the park boundary), depicting rhinoceros, giraffe, roan antelope, elephant, buffalo, hyena, ostrich, warthog, zebra, reedbuck, kudu, oryx, snakes, and crocodiles.
- has achieved a reputation of being uncrowded and unspoiled.
- is one of the most easily accessible protected areas on Tanzania's northern circuit.

#### **4. CONSTRAINTS**

The following constraints guided this planning effort.

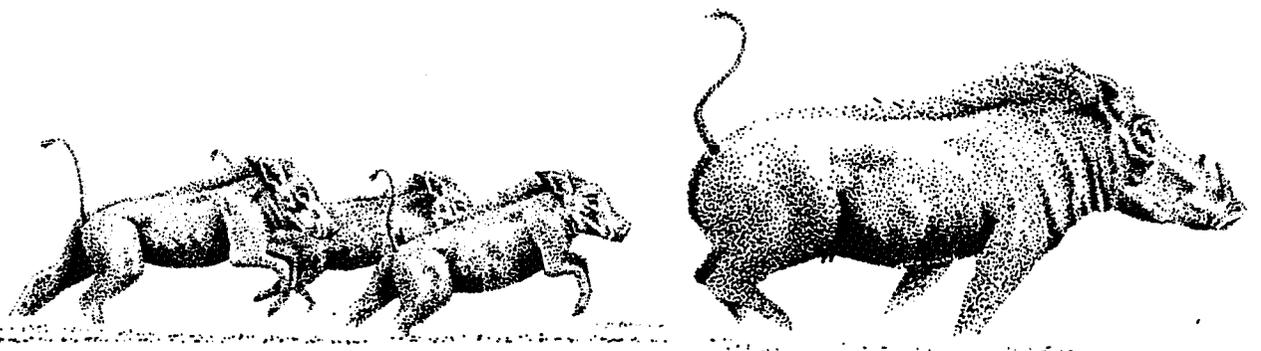
##### **4.1 THE TANZANIA (TANGANYIKA) NATIONAL PARKS ORDINANCE**

The Tanzania (Tanganyika) National Parks Ordinance, Chapter 412 - Supp. 59 of the Laws (Principal Legislation) 1959, gives wide ranging authority to the Board of Trustees for the management and operation of national parks. Precedents established by the Board of Trustees since 1959 give evidence to the fact that permanent human settlement, hunting and trapping, and grazing by domestic livestock is prohibited in national parks and that other types of consumptive use of park resources have been kept to a minimum.

#### 4.2 THE APPROVED NATIONAL POLICIES FOR NATIONAL PARKS IN TANZANIA (MARCH 1994)

The approved National Policies for National Parks in Tanzania (March 1994) state that:

- Recreational and subsistence hunting will be prohibited in all national parks.
- Agricultural activities will be prohibited in all national parks.
- Grazing activities by any type of domestic livestock will be prohibited in all national parks.
- All Human settlement (with the exception of essential Tanzania National Parks staff and permitted research/advisor personnel, and essential tourism support staff) will be prohibited in all national parks.
- All other types of consumptive uses of park resources will be prohibited in national parks, except where authorized by an approved General Management Plan/Environmental Impact Assessment (GMP/EIA).
- Tanzania National Parks (TANAPA) will encourage that all major developments (hotels, lodges, permanent tented camps, visitor centers, general park administration structures, park housing, park maintenance facilities etc) be located outside national park boundaries. Major facilities or developments will be constructed within national park boundaries only if approved by the park's GMP/EIA or Management Zone Plan/EIA (MZP/EIA) and only if:
  - there is no practicable alternative to such use of park lands.
  - all criteria are met for special park uses.
  - the development will be located in development zones established in the park's approved GMP/EIA or MZP/EIA.
  - there is a complete and thorough environmental impact site assessment of the action.
  - facilities or structures do not exceed one-story in height (no occupancy above ground level).
- Off-Road recreational driving for scenic/wildlife viewing will be discouraged, but may be allowed in specific zone(s) of a park if approved by the park's GMP/EIA or MZP/EIA.



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## ***THE PLAN***

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### **5. *PLANNING PERSPECTIVE***

Tanganyika National Parks Ordinance, Chapter 412-Supp. 59 of the Laws (Principal Legislation) 1959, the Tanzania Wildlife Conservation Act of 1974, and the Approved National Policies for National Parks in Tanzania, 1994 provided primary direction for this park planning effort. Through an interdisciplinary team planning process, the Management Zone Plan identified the park's purpose and significance, exceptional resources values, management objectives, and developed a management zoning scheme within the context of an environmental impact assessment.



### **6. *EXCEPTIONAL RESOURCE VALUES***

The known exceptional natural and cultural resources and unique biological attributes of the park were identified using the following criteria:

- outstanding examples of the natural, scenic, geological, ecological, floral, faunal, and recreational values for which the park was established
- populations of sensitive, rare, endemic, threatened, or endangered plants and animals that are particularly vulnerable because of their small population sizes and/or genetic isolation
- habitat necessary for the continued survival of globally threatened and endangered species of fauna
- resources that are unusually sensitive to human use or activity
- major known archaeological or important cultural resources

#### **6.1 *TARANGIRE RIVER***

Tarangire River is an approximately 120 kilometer lifeline of Tarangire National Park, the northern portions of which provide water year-round for wildlife in the greater Tarangire ecosystem. The river enters the park from the southwest, flows through almost the entire length of the park before exiting at the park's northwestern boundary. The river and natural waterholes within the park boundary attract animals during the dry season, providing both an important wildlife habitat and some of the most spectacular wildlife viewing in northern Tanzania.

## **6.2 LARGE AND VISIBLE POPULATION OF ELEPHANTS**

It is estimated that there are between 1,550 and 3,300 elephants in the park during the dry season, over a 1/3 of which are also present in the wet season (1990 aerial survey, TWCM). Although these mammals migrate in-and-out of the park on a cyclical basis with the dry and wet seasons, the park has the deserved reputation of being a place where one can see elephants at almost any time of the year.

## **6.3 BAOBAB TREES / MOSAIC OF VEGETATION**

Baobab trees dominate much of the park's landscape and are as much a trademark of Tarangire National Park as elephants. These trees with their massive girth and contorted form, with appendages that resemble roots more than branches, are a curiosity to tourists and provide an important habitat for a host of animals, insects, and birds.

The park also provides a variety of environments within its boundary. The combination and variety of landforms and vegetation types create a uniquely scenic landscape that is both diverse and ecologically complex. The principal features of the park are the floodplains and associated grasslands, riparian woodland, mbugas (seasonal floodplains), *Acacia tortilis* parklands, *Acacia Commiphora* woodlands, *Combretum Dalbergia* woodlands, *Acacia drepanolobium* woodlands, deep gully vegetation, and rocky hill vegetation.

## **6.4 DRY SEASON REFUGE:- SILALE SWAMP, WETLANDS, AND MBUGAS**

Tarangire National Park is well known as a dry season refuge for wildlife from the Masai Steppe. During the dry season, large concentrations of animals move into the park, especially the northern portion, where permanent water sources exist. The rainy season begins in March and at its peak, animals disperse from the park and spread over an area of more than 20,500 sq km of Masai country. At the beginning of June the long rains end, the Masai steppe dries up rapidly and the migratory species return to the northern portion of Tarangire National Park between August and September.

Silale Swamp, a vast wetland in the center portion of the park, is saturated with water throughout most years, providing a green oasis that is a major attraction to both wildlife and tourists. These wetlands are important because they act as a sponge, releasing water slowly, allowing the Tarangire River to provide water to wildlife even in some of the driest years. The panoramic view of this extensive mbuga with its open water, green grasses, and abundant birdlife is further accentuated by the volcanic cone known as Oldonyo Ngahari, a perfect backdrop; all of which comprises one of the park's most picturesque settings.

## 6.5 BIRD LIFE

Over 550 species of birds have been recorded in the park. The acacia savannah in Tarangire National Park is also among one of the richest in the world for breeding species of birds in one habitat.

## 6.6 THREATENED AND ENDANGERED SPECIES

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) identifies the following species that are believed to be present in Tarangire National Park:

### APPENDIX I

Black rhinoceros	( <i>Diceros bicornis</i> )	[no recent sightings]
Cheetah	( <i>Acinonyx jubatus</i> )	
African elephant	( <i>Loxodonta africana</i> )	
Leopard	( <i>Panthera parclaus</i> )	
Pangolin	( <i>Manis temminchii</i> )	

Appendix I includes all species threatened with extinction which are or may be affected by trade and are subject to strict regulations. Tarangire National Park has no species listed under Appendix II.

The 1990 IUCN Red List of Threatened Animals includes the following species that are believed to be present in Tarangire National Park:

African hunting dog	( <i>Lycaon pictus</i> )	<b>Endangered</b>
Cheetah	( <i>Acinonyx jubatus</i> )	<b>Vulnerable</b>
African elephant	( <i>Loxodonta africana</i> )	<b>Vulnerable</b>
Black rhinoceros	( <i>Diceros bicornis</i> )	<b>Endangered</b>

## 7. MANAGEMENT OBJECTIVES

Because this is a Management Zone Plan rather than a comprehensive General Management Plan, the following management objectives focus primarily on visitor use and development and to a more limited degree on natural resources management. A full range of management objectives along with those that follow will be incorporated into the comprehensive Tarangire General Management Plan when it is prepared at a later point in time. The following Management Objectives will guide managers in achieving the "desired future" for Tarangire National Park.

## **7.1 NATURAL RESOURCES MANAGEMENT**

- Eliminate all human use of surface water in the park, with the exception of sanctioned use for walking safaris.
- Protect the floodplains and wetlands that support the park's prime resource - the Tarangire River.
- Prohibit all consumptive use of park resources, except where approved by the park's GMP/EIA or MZP/EIA.
- Maintain natural ecological processes that perpetuate the greatest degree of biological diversity and ecosystem integrity within the park and where possible within the larger Tarangire ecosystem.
- Eliminate or mitigate any impacts that threaten biological resources.
- Determine the extent of plant and animal diversity, monitor the changes that are occurring, and identify the sources of change; initiate any necessary actions that are consistent with the 1994 National Policies for National Parks in Tanzania and the park's natural resource management objectives.
- Protect threatened, endangered, and endemic species, as well as species determined to be of exceptional resource value.
- Protect the park from wildfires.
- Establish a baseline to determine resource conditions, monitor changes, and identify sources of change; eliminate or mitigate any human-caused impacts that threaten abiotic, biotic, and scenic park resources.

## **7.2 VISITOR USE, EXPERIENCE, AND DEVELOPMENT**

- maintain the scenic quality, aesthetic attributes, and the type of traditional low impact camping experience that has become synonymous with Tarangire National Park.
- Ensure that tourism and tourism development are within the limits of acceptable use and have the least adverse impact on park resources and the high quality of visitor experience traditionally associated with Tarangire National Park.
- Allow only those tourist activities that contribute to the understanding and appreciation of park resources and only to the extent that natural, cultural, aesthetic, and scenic values are not impaired.

- Provide a diverse range of appropriate visitor use opportunities to avoid limiting visitor use to a\*one dimensional type of park experience.
- Create opportunities within the park boundary where visitors can experience pristine areas with little or no contact with man-made intrusions or contact with other people.
- Provide opportunities for visitors to experience a broader range of park landscapes and resources.
- Reduce the amount of tourist congestion that occurs in the northern portion of the park
- Minimize the adverse visual impacts of human activity along and within the Tarangire River corridor and within a specified distance of areas with unique natural, scenic, or topographic features, critical concentrations of wildlife, critical water sources, and areas with exceptional resource values.
- Encourage all new development outside the park boundary or as near to the boundary as possible.
- Prohibit all temporary or permanent structural development within the Tarangire River corridor and in areas where during the dry season there are high concentrations of wildlife.
- Ensure that all man-made developments, facilities, and structures are designed to be harmonious with the park's natural environment so as not to detract from scenic views or vistas within or adjacent to the park.
- Eliminate all off-road driving except in designated areas; ensure that all designated roads avoid or have minimum adverse impact on unique natural, scenic, or topographic features, critical concentrations of wildlife, critical water sources, and areas with exceptional resource values.
- Provide (TANAPA working with the Department of Civil Aviation) airstrips at appropriate locations outside park boundaries.

### **7.3 LOCAL COMMUNITIES**

- The objectives for local community programs and benefits will be detailed in the park's GMP/EIA.

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\* *A social science/leisure research term - by either tradition or design, an area has only one type of recreation or tourist activity.*

## **8. MANAGEMENT ZONE PLAN OVERVIEW**

### **8.1 DIVERSE VISITOR EXPERIENCE**

The Tarangire National Park Management Zone Plan (MZP) focuses on diversity, providing for a wide range of "appropriate" visitor experiences consistent with policies, acts, ordinances and management objectives. The Core Preservation Zone, Conservation General Use Zone, the Semi-Wilderness Zone, and the Wilderness Zone described below play a key role in establishing this range of visitor experiences.

The difference in the types and levels of use as well as the types of physical development for each zone is fundamental to the zoning plan. For example, this planning effort determined that it would not be desirable or appropriate to expand the existing tourist-van road circuit system in the northern portion of the park to a parkwide road system. A parkwide network of game viewing roads would lead to a one-dimensional park experience and also have severe adverse impacts on park resources. It was determined that a range of experiences from low impact walking safaris to carefully planned designated road and off-road game viewing will provide a more balanced use that will best serve the interests of visitors and also give better protection to park resources.

### **8.2 MANAGEMENT APPLICATION**

The zones established under this MZP will permit a better understanding of what activities "can and cannot" occur in different parts of the park. In addition, the management strategies outlined for each zone will guide the actions of the Warden-in-Charge and staff in maintaining the integrity of the zoning system and the individual zones. This plan will provide direction for day-to-day management and operations as well as for long-term decision making to ensure that a range of experiences continue to be provided. As the park's personnel change, the zoning plan will continue to direct the actions of future Wardens-in-Charge, visitor use specialists, resource management specialists, rangers and maintenance personnel, providing continuity over time. If future research, surveys, and assessments produce new information about the significance of natural or cultural resources, park management with TANAPA Headquarters approval, may make minor adjustments to the zone boundaries to reflect this information. Nevertheless, the idea of a continuum of experiences will be reflected in all management decisions. No major changes in the zoning scheme can be made unilaterally at the park level. However, the MZP should not be viewed as a static document. If conditions warrant, a Warden-in-Charge may request that the MZP be revised with approval from the TANAPA Director General. The TANAPA Planning Unit, working with

the park will be responsible for plan revision, including the preparation of appropriate environmental impact assessment documentation.

### **8.3 LIMITS OF ACCEPTABLE USE**

This plan does not attempt to determine a "carrying capacity" of how much use and development the area can tolerate. Rather, it requires that "limits of acceptable use" (LAU) be determined. The LAU system represents a reformulation of the carrying capacity concept, **with primary emphasis on the conditions (both physical and social) desired in the area rather than on the maximum amount of use and development the area can tolerate.** This system requires managers and planners to define desired conditions and to undertake actions to achieve and maintain these conditions unless and until there are signs of resource damage, degradation, or ecological change. This MZP presents the **desired conditions (both social and physical) for both use and development in Tarangire National Park.**

**The limits of acceptable use (LAU) for Tarangire National Park focus on the maximum number of beds established for those zones designated for overnight stays and the number of vehicles per kilometer in the most frequented zone of the park. The LAU was determined by the best professional judgement of an interdisciplinary team of park managers, planners, and researchers, using the best available information to achieve a desired condition - an appropriate balance between preservation and tourism use/development.**

### **8.4 RATIONALE FOR THE ZONING CONCEPT**

The zoning designations are based on different management emphases. Primary consideration was given to the following criteria:

- Protection of exceptional resource values
- Constraints imposed by the landscape and ecological determinants
- Provision of a diverse range of appropriate visitor experiences and visitor use levels subject to the desired management objectives and resource limitations
- Elimination of uses and activities that either damage park resources or create an undue burden on park management
- Strict control and limitations to ensure the appropriate level, type, and placement of development within the park

## **9. MANAGEMENT ZONE PLAN ACTIONS**

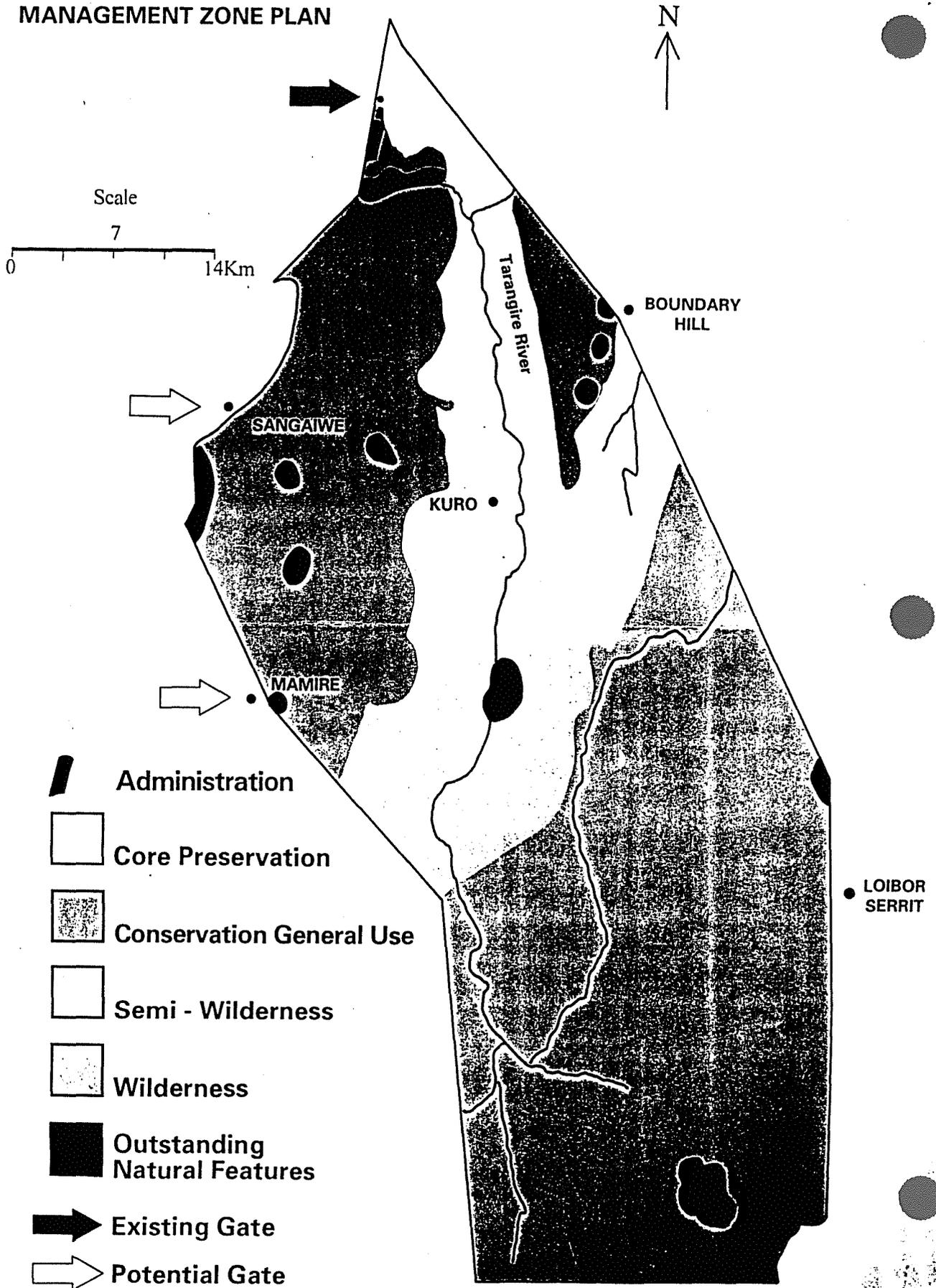
The first series of actions listed in 9.1 apply to all zones of the park. Following the parkwide actions, the document identifies five specific park zones and one subzone. The specific guidance for each zone and subzone is described using the following 8 categories: resources values, visitor use and experience, access, facilities and development, limits of acceptable use, maintenance, natural resources management, and cultural resources management.

### **9.1 PARKWIDE ACTIONS:**

- Prohibit consumptive use of surface water by humans, with the exception of sanctioned use for walking safaris.
- Prohibit new construction or expansion of existing air strips within the park boundary.
- Prohibit any further development of hotels and lodges within the park boundary.
- Prohibit all recreational "high profile" types of activities (hang gliding, ballooning, para-sailing, mountain bicycles, and any other activity deemed by TANAPA to be high profile) within the park boundary.
- Prohibit all off-road driving within the park, except in the Semi-Wilderness Zone.
- Monitor day use numbers to evaluate the need to place daily use limits on the number of day users entering the park.
- Suppress all wildfires within the park boundary where feasible.
- Allow pre-emptive prescribed early burning along park boundaries. All other prescribed fires within the park will be prohibited until the park has an approved Fire Management Plan.
- All research activities within the park will be allowed under the existing special use permit system. Researchers will not be allowed to drive off-road unless approved by the TANAPA Director General.
- Make all park roads gravel and accessible to 2WD vehicles; improve drainage and provide maintainable gravel surfacing (5-10 centimeters gravel); widen only as needed to improve drainage; maximum road width will not exceed 4 meters; selective use of passing turnouts; armor drainage crossings with low water crossings (drifts) or culvert pipes.

**Figure 3 Tarangire National Park  
Management Zone Plan**

# MANAGEMENT ZONE PLAN



## 9.2 CORE PRESERVATION ZONE (37,746 hectares)

(See Tarangire National Park Management Zone Plan Map - Figure 3)

**9.2.1 Resource Values** - The Tarangire River, and the permanent water source that it represents, has long been known for its dry season concentrations of elephant and other wildlife. This acacia and baobab tree-lined river valley, along with the scenic grandeur of the Silale Swamp and its diverse and abundant birdlife, represent the very essence of Tarangire National Park.

**9.2.2 Visitor Use and Experience** - This zone will accommodate one of the highest levels of use within the park. The resources in this zone form the nucleus of its status as a national park. The game viewing circuit on the east and west side of the river and the road to and along Silale Swamp will continue to be the park's principal attraction. Game viewing from a vehicle is the highest use of this zone and nothing should conflict or detract from this use. Contact with other tourists during the peak season will be frequent. Contacts will be somewhat less during the non-peak season. Visitors will be able to stop in order to stand near their vehicle (not in excess of 10 meters from their vehicle) to stretch and relax. Only at designated locations will visitors be encouraged to walk 50 meters or less to selected observation points, outstanding natural features, or special use sites of interest, but only if dangerous animals are 200 meters from the designated area. Walking safaris will be prohibited. *\*\*Picnicking will be allowed in designated areas only. Training for tour guides and new interpretive opportunities (parkwide) will be developed to give visitors a better understanding and appreciation of the park's significance and its resources.*

**9.2.3 Access** - This zone will be accessible by both the existing north entrance park gate and a *\*\*new major park entrance gate that will be located on the west side of the park in the Conservation General Use Zone West.* No off-road vehicle use will be permitted. Access will be along designated roads only.

**9.2.4 Facilities and Development** - All development, with the exception of designated gravel roads, picnic sites and low profile pit toilets, will be prohibited within this zone. Existing developments not in compliance with this zone will be removed. This zone will be for day use only and no overnight stays will be permitted. **No additional tour circuit roads will be constructed in this zone between the two existing east and west road circuits that parallel the Tarangire River.** The existing tour road system will be upgraded to all weather gravel roads and drifts will be constructed to improve access in the rainy season. Development and human activities occurring in other zones of the park will not be visible from or impair the view or visitor experience in the Core Preservation Zone.

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\*\* General actions depicted by italicized sentences will be planned and assessed in detail at a later date during the preparation of the comprehensive General Management Plan (GMP) for Tarangire National Park.

**9.2.5 Limits of Acceptable Use** - The quality of the overall visitor experience for Tarangire National Park will be based on the number of vehicles per kilometer during a peak season day on the existing described roads (east and west loop roads along both sides of the Tarangire River and the ridge road overlooking Silale Swamp - 171 kilometers of road) within the Core Preservation Zone. The interdisciplinary team responsible for this plan assumes that the Core Preservation Zone is and will continue to be the primary attraction for 95% of all tourists who visit the park. The interdisciplinary team also feels that it is an erroneous assumption (numerous precedents worldwide) to think that TANAPA can, during the peak season, encourage or entice a large percentage of visitors away from the park's prime attraction - the Core Preservation Zone. *\*\*Additional tour road circuits in other zones are needed and will serve to diversify visitor opportunities for all visitors and especially those who stay more than one day in the park or for repeat visitors.* However, it is the plan's contention that these additional road circuits in other park-zones will not substantially reduce the visitation pressure on the Core Preservation Zone. The majority of visitors will not feel that they have had a quality visitor experience unless they "experience" firsthand the unique concentration of wildlife that occurs along this river during the dry season in the Core Preservation Zone.

**EXISTING: NUMBER OF VEHICLES PER KILOMETER**

Estimated number of vehicles per kilometer on a peak season day on the existing described roads (east and west loop road along both sides of the Tarangire River and the ridge road overlooking Silale Swamp - 171 kilometers of road) in the Core Preservation Zone is:

*Approximately 1 vehicle per 2.7 kilometers*

Calculations for the number of vehicles per kilometer for existing conditions included the number of beds and the number of day user estimates on a parkwide basis. It is important to note that the 150 beds under construction by Consolidated Sopa Hotel is not included in the 1 vehicle per 2.7 kilometers estimate (see Appendix B).

**PLAN ACTION: NUMBER OF VEHICLES PER KILOMETER**

Estimated number of vehicles per kilometer on a peak season day on the existing described roads (east and west loop road along both sides of the Tarangire River and the ridge road overlooking Silale Swamp - 171 kilometers of road) in the Core Preservation Zone will be:

*Approximately 1 vehicle per 1.6 kilometers*

Calculations for the number of vehicles per kilometer for the proposed action included the number of beds and the number of day user estimates on a parkwide basis. However, it was estimated that only 75% of the total number of tourists staying overnight in the Conservation Use Zone West would visit the Core Preservation Zone, while 100% and 50% respectively from the Conservation Use Zone East and the Semi-Wilderness Zone would visit the Core Preservation Zone. It was estimated that Wilderness Zone users would not visit the Core Preservation Zone. It is important to note that existing number of beds, the 150 bed Consolidated Sopa Hotel and the additional beds in the plan action were included in the 1 vehicle per 1.6 kilometers estimate (Appendix B).

**EXISTING: ACCOMMODATIONS TO BE RELOCATED WITH LIMITS OF USE**

- 10 Special Use Campsites (no limits of use)
- 3 Public campsites (no limits of use)
- 1 Administrative Campground (no limits of use)

**PLAN ACTION:**

- *No overnight use or accommodations will be allowed in this zone; all existing overnight accommodations will be relocated.*

**9.2.6 Maintenance** - Activities will include maintaining roads, protecting resources, and restoring areas disturbed by human activities. Power tools will be used for routine maintenance activities. Heavy equipment will be used only during the dry season and during the time of day when game viewing is minimal, or when an emergency (flood, fire, or other catastrophic event) could endanger resources, visitor safety, or access.

**9.2.7 Natural Resources Management** - The natural character and natural processes associated with lands in this zone will be preserved to the greatest extent possible while accommodating high levels of vehicle game viewing. Any apparent adverse effects of visitor use will be mitigated, and disturbed areas (adverse human impact) that cause significant visual impairment will be restored. Visitor use will not be permitted in areas with sensitive species and environments. Unavoidable human impacts will be confined to resistant and less sensitive areas. Park Wardens will be responsible for preventing or mitigating resource damaging activities. *\*\*Specific management actions (parkwide) to address the threats outside the park associated with the loss of wildlife corridors will be addressed as part of the General Management Plan.*

**9.2.8 Cultural Resources Management** - Presently there is little information on prehistoric, historic sites or contemporary cultural use sites within the park.

Additional survey and research will be undertaken to determine the extent and significance of cultural sites in the park. On-site investigations and clearance by professional cultural specialists will be required prior to any ground disturbance associated with any action.

### 9.3 CONSERVATION GENERAL USE ZONE (WEST) (55,495 hectares)

**9.3.1 Resource Values** - Permanent water sources in this zone also concentrate wildlife during the dry season but not to the same extent as in the Core Preservation Zone. The opportunity to see elephant, oryx, cheetah, leopard, buffalo, warthogs, and impalas provide a year-round attraction for tourists. This portion of the park provides one of the best opportunities anywhere along the northern Tanzania tour circuit for viewing concentrations of oryx. The combination of diverse topography and a mosaic of different vegetation types makes this one of the more interesting areas of the park to explore.

**9.3.2 Visitor Use and Experience** - This zone will accommodate moderate levels of use. Contacts with other tourists will be moderately frequent in the peak season and less so during off-season. Game viewing from vehicles will be the primary visitor activity. Visitors will be able to stop in order to stand near their vehicle (not in excess of 10 meters from their vehicle) to stretch and relax. Only at designated locations will visitors be encouraged to walk 50 meters or less along designated trails to selected observation points, outstanding natural features, or special use sites of interest, but again only if dangerous animals are 200 meters from the designated area. Walking safaris will be prohibited. *\*\*Picnicking will be allowed in designated areas only. Training for tour guides and new interpretive opportunities (parkwide) will be developed to give visitors a better understanding and appreciation of the park's significance and its resources.*

**9.3.3 Access** - Although this zone will be accessible by the existing north entrance gate, a significant number of visitors, mainly those with accommodations in this zone, may choose to access the park using the *\*\*new park entrance gate that will be located in this zone on the west side of the park.* No off-road vehicle use will be permitted. Access will be along designated roads only. *\*\*Additional vehicle game viewing circuits will be developed in this zone to expand game viewing opportunities.*

**9.3.4 Facilities and Development** - The following types of development will be permitted in this zone (Appendix A: Definitions of Overnight Accommodations):

- One pre-existing Wildlife Lodge, Permanent Tented Camps, Special Campsites (non-permanent tented campsites), and Public Campsites (non-permanent tented campsites). All camps and campsites will be located as near the park boundary as possible to reduce access related congestion within the park. *\*\*The location of these*

*overnight accommodations within this zone will be determined by an interdisciplinary team.*

- *\*\*Additional ranger posts, visitor information/interpretive facilities, small parking pulloffs, trailheads, short nature trails, and short trails to overlooks and points of interest, will be considered in this zone.*
- The game viewing tour road system (both existing and the potential expansion) will be rehabilitated/constructed to an all weather gravel road standard and drifts will be constructed to improve access in the rainy season.

**9.3.5 Limits of Acceptable Use** - The maximum number of beds in this zone will not exceed 304 (the 304 figure does not include the Administrative campground). The following number and type of overnight accommodations will be restricted to the following for this zone (Appendix A: Definitions of Overnight Accommodations):

**EXISTING: ACCOMMODATIONS, TO BE MAINTAINED**

- 1 Wildlife Lodge (84 bed maximum) -Tarangire Safari Lodge (pre-existing)
- 1 Permanent Tented Camp (16 bed maximum allocated) - Ker&Downey (prior existing lease agreement, under construction)

**PLAN ACTION: EXISTING PLUS THE FOLLOWING ADDITIONAL ACCOMMODATIONS:**

- 1 Permanent Tented Camp (not to exceed a 16 bed maximum)
- 8 Special Use Campsites (each not to exceed a 16 bed maximum); *\*\*Sixteen Special Use Campsite locations will be selected to be used on a rotational basis so that the 8 campsites can be rotated on a yearly basis to reduce adverse impacts.*
- 3 Public Campgrounds (each not to exceed 10 tents or 20 bed maximum)
- 1 Administrative Campground (not to exceed 80 bed maximum; used primarily for College of African Wildlife Management field exercises)

**9.3.6 Maintenance** - Activities will include maintaining roads and facilities, protecting resources, and restoring areas disturbed by human activities. Power tools will be used for routine maintenance activities. Heavy equipment will be used only during the dry season and during the time of day when game viewing is minimal, or when an emergency (flood, fire, or other catastrophic event) could endanger resources, visitor safety, or access.

**9.3.7 Natural Resources Management** - The natural character and natural processes associated with lands in this zone will be preserved to the greatest extent

possible while accommodating moderate levels of vehicle game viewing. Any apparent adverse effects of visitor use will be mitigated, and disturbed areas (adverse human impact) that cause significant visual impairment will be restored. Visitor use will not be permitted in areas where sensitive species and environments occur. Unavoidable human impacts will be confined to resistant and less sensitive areas. Park resource specialists will be responsible for preventing or mitigating resource damaging activities.

**9.3.8 Cultural Resources Management** - Presently there is little information on prehistoric, historic sites or contemporary cultural use sites within the park. Additional survey and research will be undertaken to determine the extent and significance of cultural sites in the park. On-site investigations and clearance by professional cultural specialists will be required prior to any ground disturbance associated with any action.

#### **9.4 CONSERVATION GENERAL USE ZONE (EAST) (7,708 hectares)**

**9.4.1 Resource Values** - This portion of the park, adjacent to the important dry season habitat of the Core Preservation Zone, comprises many of the equally important movement corridors for wildlife that connect the dry and wet season grazing areas. Baobab trees, scattered across an area of gentle rolling ridges and shallow valleys, intermixed with kopjes, leaves a lasting landscape impression in the minds of visitors. This unique landscape has become synonymous with Tarangire National Park.

**9.4.2 Visitor Use and Experience** - This zone will accommodate high levels of use once the 150 bed Consolidated Sopa Hotel is operational. Contacts with other tourists will be frequent in the peak season and less so during off-season. Game viewing from vehicles will be the primary visitor activity. Visitors will be able to stop in order to stand near their vehicle (not in excess of 10 meters from their vehicle) to stretch and relax. Only at designated locations will visitors be encouraged to walk 50 meters or less along designated trails to selected observation points, outstanding natural features, or special use sites of interest, but again only if dangerous animals are 200 meters from the designated area. Walking safaris will be prohibited. *\*\* Picnicking will be allowed in designated areas only. Training for tour guides and new interpretive opportunities (parkwide) will be developed to give visitors a better understanding and appreciation of the park's significance and its resources.*

**9.4.3 Access** - Most visitors will access this zone using the existing north park gate entrance. No off-road vehicle use will be permitted. Access will be along designated roads only. *\*\*Additional vehicle game viewing circuits will be planned and developed in this zone to expand game viewing opportunities.*

**9.4.4 Facilities and Development** - Only the following types of development will be permitted in this zone ( Appendix A: Definitions of Overnight Accommodations)

- One hotel and Special Use Campsites (non-permanent tented campsites). Any Special Use Campsites in this zone will not be visible from any location within the Core Preservation Zone. *\*\*The location of the Special Use Campsites within this zone will be determined by the general management plan.*
- *\*\*Additional ranger post(s), small parking pulloffs, trailheads, short nature trails, and short trails to overlooks and points of interest, will be considered in this zone.*
- The game viewing tour road system (both existing and potential expansion) will be rehabilitated/constructed to an all weather gravel road standard and drifts will be constructed to improve access in the rainy season.

**9.4.5 Limits of Acceptable Use** - The maximum number of beds in this zone will not exceed 182. The number and type of overnight accommodations for this zone will be restricted to the following (Appendix A: Definitions of Overnight Accommodations):

**EXISTING: ACCOMMODATIONS TO BE MAINTAINED**

- 1 Hotel (150 bed maximum) - Consolidated Tourist and Hotels Investment Limited, Tarangire Sopa Hotel; (pre-existing condition).

**PLAN ACTION: EXISTING PLUS THE FOLLOWING ADDITIONAL ACCOMMODATIONS:**

- 2 Special Campsites (each not to exceed a 16 bed maximum)

**9.4.6 Maintenance** - Activities will include maintaining roads and facilities, protecting resources, and restoring areas disturbed by human activities. Power tools will be used for routine maintenance activities. Heavy equipment will be used only during the dry season and during the time of day when game viewing is minimal, or when an emergency (flood, fire, or other catastrophic event) could endanger resources, visitor safety, or access.

**9.4.7 Natural Resources Management** - The natural character and natural processes associated with lands in this zone will be preserved to the greatest extent possible while accommodating high levels of vehicle game viewing. Any apparent adverse effects of visitor use will be mitigated, and disturbed areas (adverse human impact) that cause significant visual impairment will be restored. Visitor use will not be permitted in areas with sensitive species and environments. Unavoidable human impacts will be confined to resistant and less sensitive areas. Park resource specialists will be responsible for preventing or mitigating resource damaging activities.

**9.4.8 Cultural Resources Management** - Presently there is little information on prehistoric, historic sites or contemporary cultural use sites within the park. Additional survey and research will be undertaken to determine the extent and significance of cultural sites in the park. On-site investigations and clearance by professional cultural specialists will be required prior to any ground disturbance associated with any action.

**9.5 SEMI-WILDERNESS ZONE (37,336 hectares)**

**9.5.1 Resource Values** - Few tourists presently take the time to visit this more remote location of the park. Here, the Tarangire River occupies a unique location between rolling acacia ridges on the west and a broad panorama of the southern end of Silale Swamp on the east. During the dry season, this area provides a good location for viewing water independent species like the gerenuk, oryx, dikdik and lesser kudu. Movement of elephant, zebra, wildebeest, eland, and buffalo between dry and wet season habitats occurs here but is not as prevalent as in other areas of the park.

**9.5.2 Visitor Use and Experience** - In this zone there will be a sense of remoteness and solitude, but not of isolation from all human activity. **Use within this zone will be restricted to those visitors who are registered in Special Campsites in this zone.** Off-road vehicle game viewing will be the only activity in this zone during the dry season. All off-road vehicle game viewing will be prohibited during the wet season to protect the area from excessive vegetation loss and soil erosion. During the wet season day hikes (with an armed ranger and tour guide) will be the only activity allowed in this zone.

**9.5.3 Access** - This zone will be accessible by the existing north entrance gate and the *\*\*new park entrance gate that will be located in the Conservation General Use Zone West.* Access to Special Use Campsites will be along designated roads. Off-road vehicle game viewing will be allowed in all areas of this zone with the exception of locations designated as sensitive resource areas. In addition, TANAPA may from time to time indicate parts of this zone to be closed to off-road traffic if excessive use is made of some areas.

**9.5.4 Facilities and Development** - All development with the exception of designated Special Campsites (Appendix A: Definitions of Overnight Accommodations) and *\*\*additional ranger post(s)* will be prohibited in this zone. *\*\*The location of these overnight accommodations and ranger posts (if required) will be determined by the general management plan.*

**9.5.5 Limits of Acceptable Use** - The maximum number of beds in this zone will not exceed 48. Accommodation will be restricted to the following in this zone (Appendix A: Definitions of Overnight Accommodations):

**EXISTING:**

- No existing accommodation facilities

**PLAN ACTION: NEW ACCOMMODATIONS**

- 3 Special Use Campsites (each not to exceed a 16 bed maximum); *\*\*Six Special Use Campsite locations will be selected to be used on a rotational basis so that the 3 campsites can be rotated on a yearly basis to reduce possible adverse impacts.*

**9.5.6 Maintenance** - Activities will include maintaining roads and facilities, protecting resources, and restoring areas disturbed by human activities. Power tools will be used for routine maintenance activities. Heavy equipment will be used only during the dry season and during the time of day when game viewing is minimal, or when an emergency (flood, fire, or other catastrophic event) could endanger resources, visitor safety, or access.

**9.5.7 Natural Resources Management** - The natural character and natural processes associated with lands in this zone will be preserved to the greatest extent possible while accommodating moderate levels of off-road vehicle game viewing. Visitor use will not be permitted in areas with sensitive species and environments. Unavoidable human impacts will be confined to resistant and less sensitive areas. Localized adverse impacts due to off-road game viewing may require temporary closure of certain areas in this zone to allow for rest and rehabilitation. Park resource specialists will be responsible for preventing or mitigating resource damaging activities.

**9.5.8 Cultural Resources Management** - Presently there is little information on prehistoric, historic sites or contemporary cultural use sites within the park. Additional survey and research will be undertaken to determine the extent and significance of cultural sites in the park. On-site investigations and clearance by professional cultural specialists will be required prior to any ground disturbance associated with any action.

**9.6 WILDERNESS ZONE (126,653 hectares)**

**9.6.1 Resource Values** - The inherent inaccessibility of this portion of the park has allowed this area to remain, in effect, a de facto "wilderness area". This plan will formalize management actions to perpetuate this area of the park as a Wilderness Zone where the influence of man will continue to be minimal. This zone will serve an important research function as a baseline to evaluate change. It will serve to provide low impacting visitor use of a large portion of the park that has previously had no use while at the same time "banking resources" for the future. The area comprises a picturesque landscape with its mosaic of swamps, woodlands, and ridges and is an important migration route for large ungulates.

**9.6.2 Visitor Use and Experience** - This zone will provide a unique opportunity for the more hardy and adventurous visitor to have a remote experience with a maximum amount of solitude. It will be reserved exclusively for extended walking safaris (overnight non-permanent remote camps). All permanent structures will be prohibited (no designated campsites and no designated trails). Cross country orienteering and discovery will be encouraged. Campsites will be prohibited within 100 meters of any designated outstanding natural feature or sensitive resource area.

**9.6.3 Access** - This zone will be roadless and access will be by foot only. All use of vehicles will be prohibited except in case of emergency rescue, and in emergency anti-poaching situations. Access to the boundary of this zone will be provided by the existing Loibor Serrit Road on the northern boundary of this zone and the proposed boundary roads on the east, south, and west boundary of this zone.

All research, administrative, and maintenance access will be by foot only, unless it is determined that vehicle access is necessary to respond to human life, anti-poaching or endangered species emergency.

**9.6.4 Facilities and Development** - No developments will be permitted in this zone, and there will be no further modifications to the environment. A boundary road will be developed along the perimeter of this zone to provide both protection and access to the zone perimeter. *\*\*Additional boundary perimeter ranger post(s) will be considered in this zone.*

**9.6.5 Limits of Acceptable Use** - The maximum number of beds (self-reliant overnight camping in personal tents) will not exceed 40 per night. Group size will not exceed 10 tourists (excluding an armed ranger, guide, and porters). No more than 4 walking safari groups will be permitted in this zone at anyone time and no more than 8 groups per month.

**EXISTING:**

- No tourist use occurs in this zone at the present time

**PLAN ACTION:**

- Self-reliant, non-permanent remote tent camping (Appendix A)

**9.6.6 Maintenance** - Maintenance activities will be for the purpose of protecting resources and restoring areas disturbed by human activities. No recurring maintenance will take place. Park management will adopt the "minimum tool concept". Power tools and heavy equipment will not be permitted in this zone unless it is determined that such tools and equipment are necessary to respond to human life, anti-poaching or endangered species emergency.

**9.6.7 Natural Resources Management** - This zone will generally appear to have been affected by the forces of nature with the imprint of man's work substantially unnoticed. The natural environment will be preserved to the extent possible while accommodating low-density use. Naturally occurring species will be maintained and populations of sensitive species will be protected. Use might be controlled or dispersed if necessary to protect park resources; however, with the anticipated low use, these measures are not expected to be needed. Park resource specialists will be responsible for preventing or mitigating resource damaging activities.

**9.6.8 Cultural Resources Management** - Presently there is little information on prehistoric, historic sites or contemporary cultural use sites within the park. Additional survey and research will be undertaken to determine the extent and significance of cultural sites in the park. On-site investigations and clearance by professional cultural specialists will be required prior to any ground disturbance associated with any action.

## **9.7 OUTSTANDING NATURAL FEATURE SUBZONE**

**9.7.1 Resource Values** - This subzone represents isolated features of outstanding natural or scenic significance within other zones that require special protection and include areas critical to wildlife concentrations, essential water sources, and unique topographic formations. Many of these subzones are too small to be shown on Figure 3. A 1:50,000 Tarangire Management Zoning Map, located at Tarangire Park Headquarters, provides the level of detail to allow on-the-ground identification of all zones as well as the following sites in the Outstanding Natural Feature Subzone:

- Leminyon Plains
- Tarangire River Gorge
- Ridge Point
- Tarangire Hill
- Boundary Hill
- Boundary Hill Springs A
- Boundary Hill Springs B
- Poachers Baobab Hide
- Bwawa Mbili
- Chemchangeu Springs
- Sangaiwe Hills
- Kitibong Hill
- Heidodonga Hill
- Mingonyo Water Pools
- Oldonyo Ngahari
- Mkungunero Water Holes

**9.7.2 Visitor Use and Experience** - These subzones will accommodate varying levels of use. Due to the differing nature and character of these various features, some of these subzones may be viewed from a distance and others will allow direct foot access. All activities in these subzones will be governed by the requirements of the zone in which they are located. *\*\*Some form of interpretation (outdoor panel exhibits or pamphlet guides) will be considered.*

**9.7.3 Access** - Access to outstanding natural features within the Wilderness Zone will be by foot only. In other zones, vehicles and designated access roads will be permitted but will not be allowed within 50 meters of the outstanding natural feature. Access within the core area of each of these subzones (the primary feature) will be by designated trails only.

**9.7.4 Facilities and Developments** - No roads or developments will be permitted where this subzone is located in the Wilderness Zone. Where this subzone occurs in other management zones, all development will be prohibited with the exception of designated access roads, parking and foot trails.

**9.7.5 Limits of Acceptable Use** - The limits of acceptable use and requirements of each Outstanding Natural Feature subzone will conform to the limits and constraints of the zone in which it is located.

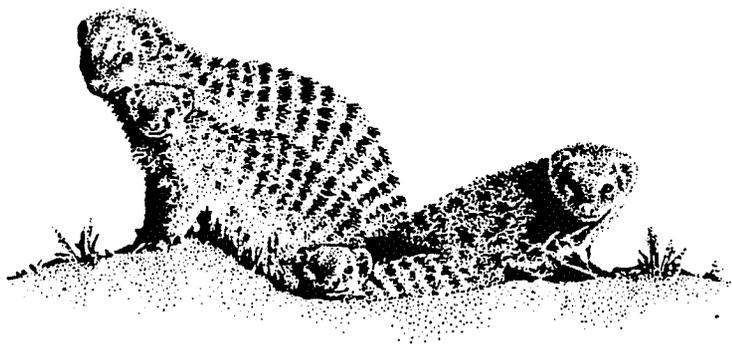
**9.7.6 Maintenance** - Maintenance activities will be for the purpose of protecting resources and restoring areas disturbed by human activities. Park Management will adopt the "minimum tool concept". Power tools and heavy equipment will not be permitted within 50 meters of the natural feature.

**9.7.7 Natural Resources Management** - The natural character and natural processes associated with lands in these subzones will be preserved to the greatest extent possible while accommodating low to moderate levels of use. Any apparent adverse effects of visitor use will be mitigated, and disturbed areas (adverse human impact) that cause significant visual impairment will be restored. Visitor use will not be permitted in areas with sensitive species and environments. Unavoidable human impacts will be confined to resistant and less sensitive areas. Park resource specialists will be responsible for preventing or mitigating resource damaging activities.

**9.7.8 Cultural Resources Management** - Presently there is little information on prehistoric, historic sites or contemporary cultural use sites within the park. Additional survey and research will be undertaken to determine the extent and significance of cultural sites in the park. On-site investigations and clearance by professional cultural specialists will be required prior to any ground disturbance associated with any action.

## **9.8 ON-THE-GROUND ZONE IDENTIFICATION**

To enable park personnel, tour operators, and visitors to identify the zones and subzones while in the park, "on-the-ground" identification will be provided. Although zone boundaries will not be physically marked in every instance, the zone boundary descriptions will be on file at park headquarters along with a 1:50,000 scale zone map. These two reference items will allow zone boundary determinations to be made to ensure that a certain action, activity, or use will not violate the zoning scheme.



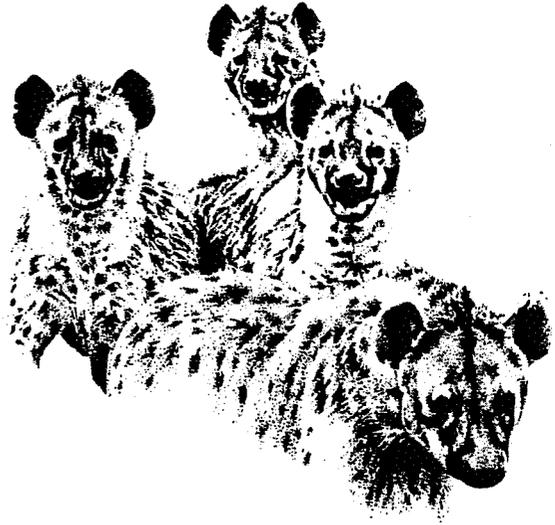
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# ***ENVIRONMENTAL IMPACT ASSESSMENT***

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## **10. DERIVATION OF ENVIRONMENTAL IMPACT TOPICS**

To determine the consequences of the plan described in Section 9, specific impact topics were identified based on resource knowledge and information. Other topics deemed important by the interdisciplinary planning team were also included. The rationale for topic selection is discussed below by major category. The environmental consequences of the plan are described by impact topic in the following sections.



### **10.1 BIOLOGICAL AND PHYSICAL RESOURCES**

The following biological and physical resources and attributes were selected as impact topics because they were identified as exceptional during the planning process:

- the Tarangire River/Silale Swamp (water quantity and quality)
- elephants
- baobab trees and vegetation mosaic
- a wildlife dry season refuge - the river, wetlands, springs and mbugas
- threatened and endangered species
- wilderness and scenic character - (selected as a natural resource impact topic because of the relationship between the perceptual significance of these values and the visitor experience).

### **10.2 SOCIOECONOMIC ENVIRONMENT**

Several user groups and interests were also identified as having the potential to be affected by the plan:

- the visitor experience
- the tourist industry
- park operations
- park revenue

### **10.3 CULTURAL RESOURCES**

Cultural resources were included as an impact topic because three well known archeological sites located near to but outside the park were identified that need increased protection. Little is presently known about the status of cultural sites within the park boundary.

## **11. ENVIRONMENTAL IMPACTS**

### **11.1 IMPACTS ON THE TARANGIRE RIVER/SILALE SWAMP (WATER QUALITY AND QUANTITY)**

The plan will prohibit any future construction of hotels, lodges, other types of overnight accommodations, and any other types of development within the 37,746 hectare Core Preservation Zone which includes Silale Swamp and an approximately 60 kilometer long corridor of the Tarangire River. The plan will require that the existing 10 special campsites (non-permanent tented camps), the existing 3 public campsites, and the 1 existing administrative camp that are now located in the Core Preservation Zone be relocated to one of the other zones that can accommodate the particular type of campsite. The plan will prohibit the consumptive human use of surface water within the park with the exception of sanctioned walking safaris use in the Wilderness Zone. These plan actions will greatly reduce impacts on water quality (both surface and subsurface) by prohibiting all types of development that contribute to vegetation reduction, soil compaction, erosion, siltation, trash, hazardous spills (petrol and oil from vehicle maintenance), and human fecal contamination. These actions will give an appropriate level of protection status to two of the park's most exceptional resource values - Water Quality and Water Quantity.

It is common knowledge (failure in past efforts to locate potable water by drilling boreholes) that it is extremely difficult to find potable ground water within the park boundary. While little is known about the ground water regime characteristics in the park, the plan action to set limits on the level of development and use can only enhance the status of both the quality and quantity of ground water - one of the park's most vital resources.

#### **IMPACTS ON WATER QUALITY AND QUANTITY IF THE PLAN IS NOT IMPLEMENTED**

Both uncontrolled, unplanned, and poorly planned development would continue to be the norm for development activity within the park. TANAPA could expect an increase in the number of development requests along with pressure to allow construction of both numbers and types of facilities and development that would have significant adverse impacts on both the quality and quantity of surface and ground water resources. Without the management zoning plan it would be difficult to resist pressure to allow such developments, leading to significant degradation of park resources.

## 11.2 IMPACTS ON ELEPHANTS

Tarangire National Park has one of the highest concentrations of elephants of any park in Tanzania. The park is well known as a location where tourists have the best opportunity consistently to see large numbers of elephants. It is estimated that between 1,550 and 3,300 elephants are in the park during the dry season,  $\frac{1}{3}$  of which are present in the wet season. The Tarangire River system and water holes provide the only natural dry season water supply for the entire 20,500 square kilometer Masai Steppe. The plan's management zoning scheme will provide added protection to elephant migration routes and habitat within the park boundary by setting overall limits of development and use within the entire park, by prohibiting development in critical corridor or habitat zones, and by setting strict limits of acceptable use and development in other zones. The Wilderness Zone, with both walking safari tourism and the associated perimeter road system, will greatly improve the level of protection for this 126,653 hectares of the park, benefiting both elephant migration routes and habitat within the park boundary. However, another significant threat to the elephant and the elephant habitat within the park is the continuing loss of wet season grazing habitat outside the park boundary because of increased cultivation and settlement within critical migration corridors leading to and from the park. Now, even in the wet season, the elephants seem more and more hesitant to leave the park due to conflicts with the increasing number of settlements within the primary migration corridors adjacent to the park. Continuing year-round use of the park by existing elephant numbers may have a devastating effect on the park's vegetation regime with a corresponding adverse impact on the park's elephant population. Since this Tarangire Management Zone Plan focuses more on suitability of site development and use within the park boundary, the critical issue of protection of migration corridors outside the park boundary will have to be deferred until the preparation of the Tarangire General Management Plan/Environmental Impact Assessment.

### IMPACTS ON ELEPHANTS IF THE PLAN IS NOT IMPLEMENTED

Without this plan, the pressures to allow tourist development within primary elephant corridors and habitat within the park boundary will continue. Since concentrations of elephants have traditionally occurred within the park boundary along the length of the Tarangire River, extensive tourist development (both overnight accommodations and roads) would be expected to proliferate along the river (*\*\*\*lease dispute precedent with Consolidated Sopa Hotels, 1993*). The types and levels of development along the river would disrupt long established elephant

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*\*\*\*February 1993, after the preparation of an environmental impact assessment by TANAPA, and pressure from tour operators, local, national, and international conservation organizations, individuals, and the press, Consolidated (SOPA) Tourist and Hotels Investment Limited agreed to relocate their lodge site away from the banks of the Tarangire River to a somewhat more environmentally compatible location in the Conservation General Use Zone, approximately 2.5 kilometers east of the river.*

movement patterns and add additional stress to an elephant population that is already being stressed by human intervention outside the park boundary.

### **11.3 IMPACTS ON BAOBABS AND VEGETATION MOSAIC**

The abundance of baobabs, the picturesque rolling terrain dominated by a variety of acacia species, along with the previously mentioned concentration of elephants cumulatively symbolize the identity of Tarangire National Park. The concentration of baobabs and the variety of acacia woodlands are both special trademarks of the park. The management zone plan will provide for controlled and planned development and use to provide additional protection for these two exceptional resource plant species. Prohibiting development in the 37,746 hectare Core Preservation Zone and the 126,653 hectare Wilderness Zone, setting strict limits on the amount of development and use in the 63,203 hectare Conservation General Use Zone and the 37,336 hectare Semi-Wilderness Zone will provide an additional measure of protection for the perpetuation of the park's flora.

However, the most severe long term threat to baobabs, acacias, and the park's vegetation may be damage caused by overgrazing; stripped and felled trees caused by the year-round concentration of elephants and other migratory wildlife that increasingly stay within the park year-round due to increasing cultivation and settlement pressures outside the park. The park's present prescribed burning program may also be contributing to the unnecessary destruction of vegetation, thereby transforming the Park from a mosaic vegetation type to a grassland savannah. Since this Tarangire Management Zone Plan focuses more on suitability of site development and use within the park boundary and since the critical issue of long term protection of the park's vegetation scheme also concerns issues outside the park, solutions to the major problems associated with vegetation issues will have to be deferred until the preparation of the Tarangire Comprehensive General Management Plan.

### **IMPACTS ON BAOBABS AND VEGETATION MOSAIC IF THE PLAN IS NOT IMPLEMENTED**

Without this plan, the pressures to allow uncontrolled and poorly planned tourist development would continue in the northern portion of the park where there are numerous acacias and the density of baobabs is high. Most reputable developers would probably take advantage of standing baobabs and acacias to enhance the landscape scheme around a facility; therefore, adverse impacts on these two species would probably be negligible on facility sites. On the other hand, developers are not as sensitive when designing and constructing access roads and parking areas. Unacceptable tree or vegetation loss might be expected to occur if access roads and parking lot plans (associated with facility development) are not reviewed carefully.

#### **11.4 IMPACTS ON A WILDLIFE DRY SEASON REFUGE - RIVER, WETLANDS, SPRINGS AND MBUGAS**

The Tarangire River system and associated wetlands, springs, and mbugas within the park boundary provide a critical natural dry season refuge, providing the primary water supply for wildlife within the entire 20,500 square kilometer Masai Steppe. The plan's management zoning scheme will provide greatly increased protection for the park's critical dry season habitat and natural water supply by prohibiting development and setting the limits of acceptable use in both the 37,746 hectare Core Preservation Zone and the 126,653 hectare Wilderness Zone and by setting strict limits of acceptable development and use within the 37,336 hectare Semi-Wilderness Zone and the 55,495 hectare Conservation General Use Zone (West). Critical dry season refuge areas within the park will be managed and protected primarily to ensure benefits to wildlife. Tourism will play a secondary role.

#### **IMPACT ON A WILDLIFE DRY SEASON REFUGE IF THE PLAN IS NOT IMPLEMENTED**

Dry season refuge areas (rivers, wetlands, springs and mbugas) where large concentrations of wildlife congregate will continue to be the focus for tourist related development pressures within the park. The potential for hotel/lodge/tented camp operations to dominate and have exclusive use of these exceptional resource areas will mean that human related activities will dominate and overshadow some of the park's most significant natural resource areas. The majority of tourists, therefore, will never have the opportunity to experience some of the park's most exceptional wildlife and water dominated landscape areas in a setting relatively free of man's influence.

#### **11.5 IMPACTS ON THREATENED AND ENDANGERED SPECIES**

By prohibiting development and limiting use in the 126,653 hectare Wilderness Zone and by providing for planned development and by setting acceptable limits of development and use in all other park zones, the plan will ensure that an adequate amount of habitat is placed in a protected status that will increase benefits for rare, endemic, threatened, and endangered species. The plan will also encourage some visitors to experience and use other areas of the park rather than focusing their attention only on the northern portion of the park adjacent to the Tarangire River. By encouraging more diverse visitor use throughout the park, the plan will increase and expand surveillance, thus helping deter illegal activities that might adversely impact threatened and endangered species.

### **IMPACTS ON THREATENED AND ENDANGERED SPECIES IF THE PLAN IS NOT IMPLEMENTED**

The increasing pressures now being brought to bear by the tourism industry in Tanzania to promote mass tourism at the expense of the park's resources will continue. Without planned and controlled development and use, the entire park will continue to be viewed by many as an unlimited opportunity for development of overnight accommodations and game viewing tracks. If the majority of the park becomes saturated with developments, roads and activities, unacceptable levels of pressure and stress would be placed on the park's threatened and endangered species.

### **11.6 IMPACTS ON WILDERNESS AND SCENIC CHARACTER**

This plan supports the internationally recognized concept of "Wilderness" as an integral and essential category for the Tanzania National Parks system (*National Policies for National Parks in Tanzania*, 1994). Wilderness Zones will be defined as roadless areas of meaningful and manageable size where there are no man-made structures and the influence and presence of man is minimal. The plan to put 126,653 hectares of the park in a Wilderness Zone will prohibit all development as well as any use of motorized vehicle or equipment in this zone. This plan moves Tanzania National Parks toward a policy of "eco-tourism" (fewer tourists paying more for a quality experience with an emphasis on resource preservation) and away from the more traditional "mass tourism" approach which emphasizes increased tourist numbers and development at the expense of park resources and values. This plan is based on the premise that the future trend in nature tourism and the market share will move away from crowded and overdeveloped protected areas to locations where people can escape the crowds and lose themselves in more pristine natural landscapes and habitats where man leaves only footprints and is a short term visitor. The 1993 approved Kilimanjaro Comprehensive General Management Plan and this Tarangire Management Zone Plan both establish wilderness areas in their respective parks, setting a precedent for all present and future national park planning efforts in Tanzania. These designated wilderness areas will allow Tanzania to provide low impacting use of large areas of two national parks where previously no use was allowed and at the same time to "bank" a significant portion of its valuable resource base to ensure the preservation and perpetuation of these valuable assets into the 21st century and beyond.

### **IMPACTS ON WILDERNESS CHARACTER IF THE PLAN IS NOT IMPLEMENTED**

A few tourist industry developers seem intent on exploiting Tarangire National Park to its fullest use and development potential with little or no consideration for the parks's natural resources. If this Tarangire Management Zone Plan is not strictly followed and implemented, the park's resources will be sacrificed to mass

tourism and short term revenue gains. Uncontrolled development and use of the park would create an irreversible loss to park resources. The adverse impact associated with an excessive number and size of hotels, lodges and tented camps and the network and degradation of game viewing tracks generated by such developments would cause irreversible loss to the wilderness and scenic character of the park.

## **11.7 IMPACTS ON THE VISITOR EXPERIENCE**

The cumulative impact of the 1990 decision to allow Consolidated Tourist and Hotels Investment Limited to build a 150 bed hotel while maintaining the existing number of beds (10 Special Campsites, 1 Permanent Tented Lodge and 1 Permanent Tented Camp) along with the actions to be implemented by this plan (the addition of 3 Special Campsites and 1 Permanent Tented Camp) will create severe adverse impacts on the quality of the visitor experience in the Core Preservation Zone during the peak season. An increase in the number of vehicles represented by the change from the present **1 vehicle per 2.7 kilometers** (assumes existing conditions: no 150 bed Consolidated Sopa Hotel and no additional proposed beds) to this plan's **1 vehicle per 1.6 kilometers** (assumes existing conditions, the 150 bed hotel, and the plan additions) moves Tarangire's Core Preservation Zone in the direction of mass tourism and the type of overuse that is now associated with the more heavily used portions of Masai Mara Game Reserve in Kenya with 1 vehicle per 1.2 kilometers, averaging 10 vehicles around one wildlife event (C.G. Gakahu 1992), and the most heavily used portion of Kruger National Park in South Africa with 1 vehicle per 0.75 kilometers (Joubert, 1992). Existing conditions and the plan action additions (without the 150 bed Consolidated Sopa Hotel) would represent only **1 vehicle per 2.4 kilometers** in the Core Preservation Zone.

This analysis demonstrates the adverse impact which occurs with respect to crowding when even one additional major hotel is located in the park, directly adjacent to the park's most exceptional resource area. Hotels and lodges by their very nature are high profile and high impacting because they are massive structures that concentrate intensive use within one localized area of a park (C.G. Gakahu, 1992). This previous decision to allow even one Consolidated Sopa Hotel directly adjacent to the Core Preservation Zone in Tarangire will increase the number of vehicles in the northern portion of the Core Preservation Zone by 28.6 vehicles per day. At the same time, this plan action to add 3 low impacting Special Campsites in the Semi-Wilderness Zone will increase the number of vehicles in the Core Preservation Zone by only an estimated 4.9 vehicles per day. The plan action to add 1 low impacting Permanent Tented Camp in the Conservation General Use Zone West will increase the number of vehicles in the Core Preservation Zone by only an estimated 2.3 vehicles per day. The advantage of having more, smaller, dispersed, low impacting camps located away from prime resources rather than

having fewer, large, high impacting hotels close to the park's prime resources within national parks is now obvious from TANAPA's experience in Tarangire.

Studies in other national parks have shown that the area within a 36 kilometer radius of any hotel or lodge in a national park is always severely adversely impacted (both adverse resource and adverse visitor experience impacts) because of the number of game viewing vehicles that tend to concentrate near the hotel in order to save petrol, thereby maximizing profits (Gakahu, 1992). This 36 kilometer radius around the Consolidated Sopa Hotel that will be intensively used for game viewing will cause severe adverse impacts to 72 kilometers of the park's most prime game viewing habitat along the east and west tour roads adjacent to the Tarangire River in the northern portion of the park.

The adverse impacts of Consolidated Sopa Hotel are compounded by the fact that this primary game viewing road from the park gate along the east side of the river to the hotel will be used by the hotel as an access route for both tourists and supply trucks.

Unfortunately the 1990 decision to place the Consolidated Sopa Hotel in the heart of Tarangire National Park now severely limits TANAPA's options to comply with National Policies for National Parks in Tanzania and 7 major management objectives of the Tarangire Management Zone Plan i.e.:

- maintain the scenic quality, aesthetic attributes, and the type of traditional low impact camping experience that has become synonymous with Tarangire National Park.
- Ensure that tourism and tourism development are within the limits of acceptable use and have the least adverse impact on park resources and the high quality of visitor experience traditionally associated with Tarangire National Park.
- Reduce the amount of tourist congestion that occurs in the northern portion of the park
- Minimize the adverse visual impacts of human activity along and within the Tarangire River corridor and within a specified distance of areas with unique natural, scenic, or topographic features, critical concentrations of wildlife, critical water sources, and areas with exceptional resource values.
- Encourage all new development outside the park boundary or as near to the boundary as possible.
- Prohibit all temporary or permanent structural development (except bridges and tour circuit roads) within the Tarangire River corridor and in areas where during the dry season there are high concentrations of wildlife.

- Ensure that all man-made developments, facilities, and structures are designed to be harmonious with the park's natural environment so as not to detract from scenic views or vistas within or adjacent to the park.

The Consolidated Sopa Hotel has unfortunately absorbed a disproportional high number of beds and has localized intensive use in one of the park's prime exceptional resource areas. Having absorbed such a high proportion of beds with respect to maintaining an acceptable number of vehicles per kilometer within the Core Preservation Zone, the Consolidated Sopa Hotel now restricts this plan's option to provide more, smaller, more widespread, less impacting types of overnight accommodations that would better serve TANAPA policy and plan objectives. While the plan action, itself, increases the number of vehicles per kilometer, it was necessary to require a minimal addition of low impacting beds in zones of the park where there are presently no beds. These few additional beds will help disperse use but will contribute minimally to TANAPA's objective of providing a traditional low impact camping experience that is synonymous with Tarangire National Park.

This plan action, including existing beds and with the 150 bed Consolidated Sopa Hotel allows for 534 beds. *Tarangire Core Preservation Zone will now have to support similar use levels as some of the more heavily used areas within the Masai Mara.*

#### **IMPACTS ON THE VISITOR EXPERIENCE IF THE PLAN IS NOT IMPLEMENTED**

With no zoning scheme and no "limits of acceptable use", Tarangire National Park and the Core Preservation Zone in particular will, given the current level of tourism development demands, be forced to yield totally to a mass tourism type of experience.

### **11.8 IMPACTS ON THE TOURIST INDUSTRY**

All future tourism development within the park will have to comply with this approved management zoning plan and the newly adopted 1994 Development Lease Consideration/EIA Procedures. The tourist industry will be required to commit more time, manpower, and resources to get the required approvals to plan and construct facilities and roads within the park. Working closely with interdisciplinary TANAPA management and planning teams, this expanded commitment by the tourist industry will ensure that an appropriate balance between use and preservation is achieved and that the park resources are not sacrificed for short term economic gain. This plan and new leasing procedures will ensure that park resources - the lifeline of the tourist industry - are sustained and perpetuated to ensure long term economic benefits for both the tourism industry and the country. This expanded commitment on both the part of TANAPA and the tour

industry will ensure that the eloquent words enshrined in the Arusha Manifesto are translated into meaningful actions. This move toward eco-tourism (fewer tourists paying more for a quality experience with a management emphasis on strict limits of acceptable tourist use and development) and away from mass tourism will create a level of healthy competition among tour operations that will, over time, reduce the number of substandard tour operations and maintain Tanzania's reputation for a quality wildlife experience.

#### **IMPACTS ON TOURIST INDUSTRY IF THE PLAN IS NOT IMPLEMENTED**

The pressures to promote mass tourism along with uncontrolled, unplanned, and poorly planned and constructed tourist development will continue to be the rule rather than the exception. Park resources will be sacrificed for short term economic gains and uncontrolled mass tourism will continue to encourage substandard tour development and operations. The tourist industry will continue to maximize short term economic gain from the national parks at the expense of irreversible degradation of park resources. This trend may lead to reduced visitor satisfaction over time with loss of revenue to the tour industry due to a park system wide drop in tourist numbers.

### **11.9 IMPACTS ON PARK OPERATIONS**

Tarangire National Park Headquarters will maintain a permanent copy of the approved Tarangire Management Zone Plan as well as a 1:50,000 scale base map of the entire park along with map overlays, depicting the management zoning scheme and the park's exceptional resources. This plan and detailed management zone map will give Tarangire park headquarters a strict edict for managing and controlling all use, facility and road development within the park, including all activities, use and development associated specifically with the tourism industry. This plan will now allow TANAPA to guide and manage the future of this park in a coordinated, rational, and systematic way, using an approved document that was developed by an interdisciplinary team of park managers, planners, and researchers, using the best available information. Park management will be required to comply with the strict edicts of this management zoning plan in both their day-to-day park activities and in their long range planning for park operations. The guidance and direction provided to park managers by this plan will greatly enhance the overall effectiveness of park operations.

#### **IMPACTS ON PARK OPERATIONS IF THE PLAN IS NOT IMPLEMENTED**

Park management will continue to operate without short-term or long-term guidance and direction. Lack of a coordinated and planned approach as to what "can and cannot" occur within the park will continue to contribute to arbitrary decision-making. Conflicts and controversy over the appropriate use of the park would be

expected to continue and/or escalate between various user groups and TANAPA management.

### **11.10 IMPACTS ON PARK REVENUE**

Special Campsites (see Appendix A) have had a long-standing tradition associated with Tarangire National Park. The revenue for TANAPA for each person using a Special Campsite (maximum 16 beds per Special Campsite) is \$40 US per person/per night. The present TANAPA fee structure requires hotels, wildlife lodges, and permanent tented camps to pay TANAPA ONLY \$10 US per person/per night. Also, TANAPA receives no revenue from food or beverage sales from hotels, lodges and permanent tented camps. The perpetuation of this \$10 US per person/per night fee structure for hotels, lodges, and permanent tented camps is depriving TANAPA of vast sums of revenue (throughout the National Park system as well as Tarangire) while encouraging those types of development that have the greatest adverse impact on park resources.

Unfortunately, the current fee structure and the decision to allow the Consolidated Sopa Hotel (decision made prior to this planning effort) will have a significant negative impact on park revenue. Had Consolidated Sopa Hotel not been built, this plan (staying within the desired "Limits of Acceptable Use") would have been able to recommend the establishment of 10 new additional Special Campsites along with the existing 10 Special Campsites. The revenue generated from 20 Special Campsites would be approximately \$4,556,880 US per year. The revenue generated per year by the 150 bed hotel and the 10 existing Special Campsites would be only approximately \$3,046,655 US. By accepting the Consolidated Sopa hotel, TANAPA loses approximately \$1,520,255 US per year in revenue.

#### **IMPACTS ON PARK REVENUE IF THE PLAN IS NOT IMPLEMENTED**

The pressure to allow additional hotel, lodge and permanent tented camp development within the park will continue, allowing an emphasis in a type of revenue generation that least benefits TANAPA directly. Uncontrolled and difficult to control, poorly planned, and poorly designed tourism developments, like the Consolidated Sopa Hotels allowed recently in Serengeti and Tarangire National Parks and the Ngorongoro Conservation Area would be expected to flourish in other National Parks. This trend may lead to reduced visitor satisfaction over time with loss of revenue to TANAPA due to a park system wide drop in tourist numbers.

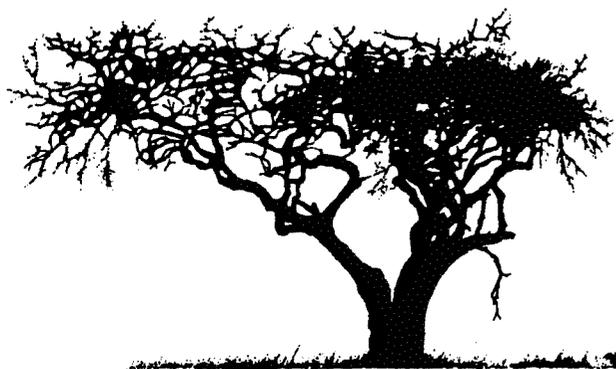
### **11.11 IMPACTS ON CULTURAL RESOURCES**

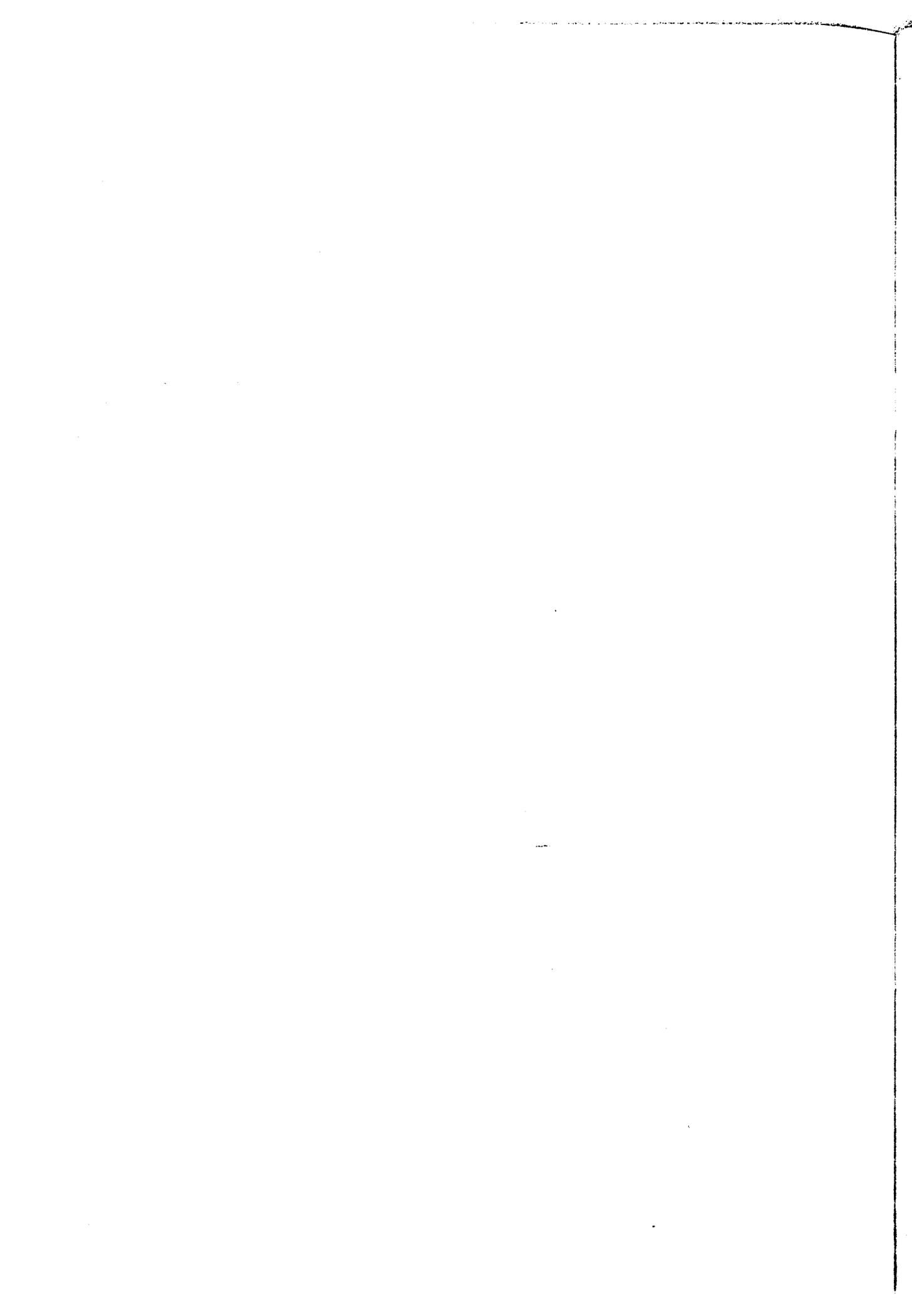
While little is known about the location or status of cultural resources

(archeological or historical sites) within the park, the management zone plan scheme to control and limit the level of development and use within the park will increase overall protection status to all resources in the park. This plan will not directly benefit the three known archeological rock art sites - Kisesse, Kolo, and Pahi - (located approximately 40 kilometers southwest of the park boundary). However, this plan does acknowledge the need to survey and evaluate the protection needs of all significant cultural resources both within and adjacent to the park as part of the comprehensive Tarangire National Park General Management Plan effort.

**IMPACTS ON CULTURAL RESOURCES IF THE PLAN IS NOT IMPLEMENTED**

Uncontrolled and poorly planned developments will greatly increase threats to all park resources, including any archeological and historical sites that may be present but as yet are unidentified.





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## ***PLAN PREPARERS AND TEAM PARTICIPANTS***

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## **APPENDIX A: OVERNIGHT ACCOMMODATION DEFINITIONS\*:**

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- **Hotel:**  
one level, permanent, steel reinforced cement foundations with permanent hard walls, continuous structure with multiple interior bedrooms, dining room, bar, gift shop, offices, reception, and storage under one primary roof structure with interior plumbing and power; swimming pool optional; essential onsite staff housing; essential parking and storage space only. Biodegradable trash buried and burnables burned by tour operator. Non-burnables removed from the park by tour operator.
- **Wildlife Lodge:**  
one level, permanent, steel reinforced cement foundations with permanent hard walls, continuous structure with reception, gift shop, dining room, bar, and offices under one roof with interior plumbing and power; a series of one level, separated, permanent, steel reinforced cement bedroom structures (bandas, cottages etc); swimming pool optional; only essential staff housing; essential parking and storage space only. Biodegradable trash buried and burnables burned by tour operator. Non-burnables removed from the park by tour operator.
- **Permanent Tented Camp:**  
one level, cement or wood platform, tented structure with reception, dining room, and bar; a series of one level, cement or wood platform, separated, permanent tented bedroom structures; swimming pool optional; only essential onsite staff housing; essential parking and storage only. Biodegradable trash buried and burnables burned by tour operator. Non-burnables removed from the park by tour operator.
- **Special Campsites: (NON-PERMANENT TENTED CAMPS):**  
all temporary tented camps; no cement platforms or permanent structures of any type; no permanent toilet structures of any type. All trash packed out by tour operator; camouflage camping techniques.
- **Public Campsites: (NON-PERMANENT TENTED CAMPS):**  
all temporary tented camps, numbered and designated tent sites with perimeter definition for tent locations, fire rings, and parking area; permanent toilet structures; TANAPA regularly scheduled trash pickup collection system and toilet maintenance.
- **Wilderness Campsites: (NON-PERMANENT TENTED CAMPS):**  
non-designated (may be designated in special circumstances) tent campsites and foot trails; access by foot only; no permanent structures or roads of any type. Tour operator or individual user responsible for packing out all trash; camouflage camping techniques.

\* All TANAPA Lease and Non-Lease accommodation categories will prohibit the concessionaire or organisation from establishing any type of procedure that will result in discrimination or "exclusive use" of the facility. Anyone will be allowed to book or reserve accommodations for the above types of accommodations.

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## APPENDIX B: BIBLIOGRAPHY

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The African Wildlife Foundation

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