

CRITICAL ECOSYSTEM
PARTNERSHIP FUND

**Eastern Arc Mountains
and Coastal Forests of
Tanzania and Kenya
Briefing Book**



**EASTERN ARC MOUNTAINS AND COASTAL FORESTS
OF TANZANIA AND KENYA
BRIEFING BOOK**

Table of Contents

I. The Investment Plan

- Ecosystem Profile Fact Sheet
- Ecosystem Profile

II. Implementation

- Overview of CEPF's Portfolio in the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya
 - Charts of Portfolio
 - Conservation Outcomes Map
- Project Map
- List of grants

III. Conservation Highlights

- E-News
- Other Highlights

IV. Leveraging CEPF Investments

- Table of Leveraged Funds

Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya

CEPF INVESTMENT PLANNED IN REGION

\$7 million

QUICK FACTS

In Tanzania, water flowing from the Eastern Arc forests is the source of 90 percent of the country's hydroelectric power. The forests are also the source of water for major cities.

While the Eastern Arc forests once covered more than 23,000 square kilometers in both Kenya and Tanzania, more recent estimates place the remaining forest cover as low as 2,000 square kilometers.

Five monkey species and at least four species of prosimian primates are unique, or endemic, to this region. Found only along the Tana River in Kenya, the Tana River red colobus is Critically Endangered. Only 1,000-1,200 of the Critically Endangered Zanzibar red colobus remain in the wild.

The region is home to 20 out of 21 species of the African violet, which form the basis of a global houseplant trade.

The Eastern Arc Mountains comprise a chain of 12 mountain blocks stretching some 900 kilometers from Tanzania to Kenya.

The Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya region runs along the coasts of these two East African countries and includes Zanzibar.

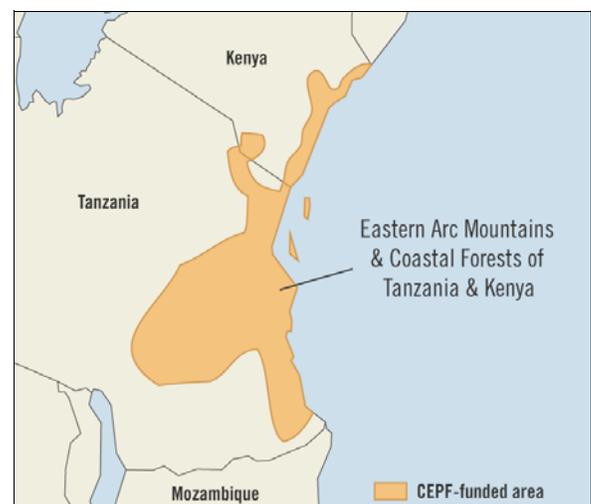
The region has two distinct habitats - the Coastal Forests and the Eastern Arc Mountains. Together, they harbor at least 1,500 plant species found nowhere else, as well as unique mammals, birds, reptiles and amphibians. There are 333 globally threatened species, including the Critically Endangered Aders' duiker (*Cephalophus adersi*) and the Endangered Zanzibar or Kirk's red colobus (*Procolobus kirki*), found only in Zanzibar's Jozani Forest.

Previously classified as a biodiversity hotspot itself, the region now lies within two hotspots—the Eastern Afromontane Hotspot and the Coastal Forests of Eastern Africa Hotspot—identified as part of a hotspots reappraisal released in 2005. Hotspots are Earth's biologically richest places. They hold especially high numbers of species found nowhere else and face extreme threats: Each hotspot has already lost at least 70 percent of its original natural vegetation.

THREATS

The habitats are notably fragmented, making threatened species within key sites highly vulnerable to extinction and further habitat loss. Agricultural encroachment, timber extraction and charcoal production are the greatest threats to habitat in this region, although weak management capacity within government and communities is a serious issue.

The Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya region runs along the Tanzanian and Kenyan coasts and includes Zanzibar.



CEPF STRATEGY

Within the Eastern Arc Mountains and Coastal Forests, the Critical Ecosystem Partnership Fund (CEPF) aims to improve knowledge and appreciation of biodiversity among the local populations and stimulate support for conservation. In conjunction with this, a commitment to scientific best practices will improve biological knowledge in the region and show practical applications of conservation science.

The strategy is underpinned by conservation outcomes—targets against which the success of investments can be measured. These targets are defined at three levels: species (extinctions avoided), sites (areas protected) and landscapes (biodiversity conservation corridors created).

As a result, CEPF investment is focused on conserving the region's 333 globally threatened species, which are primarily found in 160 sites. In addition, key parts of the strategy focus on five select sites for maximum impact (see strategic directions below). The strategy also includes a special focus on the linkages between people and biodiversity conservation.

The five-year strategy, called an ecosystem profile and approved by the CEPF Donor Council in 2003, builds on the results of a number of studies and workshops with diverse stakeholders. CEPF began awarding grants in this region in 2004 and, together with partners, is now actively managing and expanding its investment portfolio.

STRATEGIC FUNDING DIRECTIONS

CEPF investments in the Eastern Arc Mountains and Coastal Forests are guided by five strategic directions and related investment priorities that were agreed upon at a stakeholders meeting in March 2003. Each project must be linked to one of the strategic directions to be approved for funding:

1. Increase the ability of local populations to benefit from and contribute to biodiversity conservation, especially in and around Lower Tana River Forests; Taita Hills; East Usambaras/Tanga; Udzungwas; and Jozani Forest
2. Restore and increase connectivity among fragmented forest patches, especially in Lower Tana River Forests; Taita Hills; East Usambaras/Tanga; and Udzungwas
3. Improve biological knowledge (all 160 sites eligible)
4. Establish a small grants program (all 160 sites eligible) that focuses on Critically Endangered species and small-scale efforts to increase connectivity of biologically important habitat patches
5. Develop and support efforts for further fundraising

ABOUT US

CEPF is a joint initiative of Conservation International (CI), the Global Environment Facility, the Government of Japan, the John D. and Catherine T. MacArthur Foundation and the World Bank. CI acts as the administrative partner.

CEPF provides strategic assistance to nongovernmental organizations, community groups and other civil society partners to help safeguard biodiversity hotspots—the biologically richest and most threatened areas on Earth. A fundamental goal is to ensure civil society is engaged in conserving the hotspots.

In the Eastern Arc Mountains and Coastal Forests region, a coordination unit of four organizations guides CEPF investments and works directly with stakeholders to ensure an effective, efficient and coordinated approach to achieve the outcomes.

The groups are the BirdLife International-Africa Secretariat, the International Centre for Insect Physiology and Ecology, the Tanzania Forest Conservation Group and the WWF East African Regional Programme Office. In Kenya, the BirdLife Partner is Nature Kenya and in Tanzania, the Wildlife Conservation Society of Tanzania.

HOW TO LEARN MORE

For more information about CEPF, the strategy for this region and how to apply for grants, visit www.cepf.net.



ECOSYSTEM PROFILE

EASTERN ARC MOUNTAINS & COASTAL FORESTS OF TANZANIA & KENYA

FINAL VERSION
JULY 31, 2003
(UPDATED: MARCH 2005)

Prepared by:

Conservation International
International Centre of Insect Physiology and Ecology

In collaboration with:

Nature Kenya
Wildlife Conservation Society of Tanzania

With the technical support of:

Centre for Applied Biodiversity Science - Conservation International
East African Herbarium
National Museums of Kenya
Missouri Botanical Garden
Tanzania Forest Conservation Group
Zoology Department, University of Dar es Salaam
WWF Eastern Africa Regional Programme Office
WWF United States

And a special team for this ecosystem profile:

Neil Burgess
Tom Butynski
Ian Gordon
Quentin Luke
Peter Sumbi
John Watkin

Assisted by experts and contributors:

KENYA

Barrow Edmund
Gakahu Chris
Githitho Anthony
Kabii Tom
Kabugi Hewson
Kanga Erustus
Matiku Paul
Mbora David
Mugo Robinson
Ndugire Naftali
Odhiambo Peter
Thompson Hazell
Wandago Ben

TANZANIA

Bakus Rolf D
Bhukoli Alice
Doggart Nike
Howlett David
Hewawasam Indu

Hamdan Sheha Idrissa
Howell Kim
Kajuni A R
Kilahama Felician
Kafumu George R
Kimbwereza Elly D
Lejora Inyasi A.V.
Lulandala Luther
Mallya Felix
Mariki Stephen
Masayanyika Sammy
Mathias Lema
Milledge Simon
Mlowe Edward
Mpemba Erastp
Msuya Charles
Mungaya Elias
Mwasumbi Leonard
Salehe John
Stodsrod Jan Erik
Tapper Elizabeth
Offninga Esther

Perkin Andrew
Verberkmoes Anne Marie
Ward Jessica

BELGIUM

Lens Luc

UK

Burgess Neil

USA

Brooks Thomas
Gereau Roy
Langhammer Penny
Ocker Donnell
Sebunya Kaddu
Struhsaker Tom
Wieczkowski Julie

Editing assistance by Ian Gordon, International Centre of Insect Physiology and Ecology

CONTENTS

| | |
|---|-----------|
| INTRODUCTION..... | 5 |
| THE ECOSYSTEM PROFILE..... | 5 |
| BACKGROUND..... | 6 |
| Geography of the Hotspot..... | 7 |
| The Eastern Arc Mountains | 8 |
| The East African Coastal Forest Mosaic | 10 |
| BIOLOGICAL IMPORTANCE..... | 11 |
| Biodiversity in the Eastern Arc Mountains | 11 |
| Biodiversity in the Coastal Forests | 12 |
| Levels of Protection | 13 |
| CONSERVATION OUTCOMES | 16 |
| Overview of Conservation Outcomes | 17 |
| Species Outcomes..... | 18 |
| Site Outcomes | 19 |
| SOCIOECONOMIC FEATURES | 25 |
| Institutional Framework..... | 25 |
| Policy and Legislation | 29 |
| Economic Situation | 34 |
| Infrastructure and Regional Development | 36 |
| Demography and Social Trends | 37 |
| SYNOPSIS OF CURRENT THREATS | 38 |
| Levels of Threat..... | 39 |
| Main Threats..... | 39 |
| Agriculture..... | 40 |
| Commercial Timber Extraction | 42 |
| Mining | 43 |
| Fires..... | 43 |
| Ranking of Threats in Tanzania..... | 44 |
| Analysis of Root Causes..... | 45 |
| SYNOPSIS OF CURRENT INVESTMENT | 48 |
| Levels of Funding | 48 |
| Types of Project Interventions | 49 |
| Numbers of IBAs with Project Interventions | 49 |
| Spread of Conservation Attention Across Different IBAs..... | 50 |
| Funding Allocation Against Biological Priority..... | 50 |
| CEPF NICHE FOR INVESTMENT..... | 52 |
| CEPF INVESTMENT STRATEGY AND PRIORITIES..... | 54 |
| Program Focus | 54 |
| Strategic Directions..... | 54 |
| SUSTAINABILITY | 62 |
| CONCLUSION..... | 63 |
| ABBREVIATIONS USED IN THE TEXT | 64 |
| REFERENCES | 66 |
| APPENDICES | 71 |

INTRODUCTION

The Critical Ecosystem Partnership Fund (CEPF) is designed to safeguard the world's threatened biodiversity hotspots in developing countries. It is a joint initiative of Conservation International (CI), the Global Environment Facility (GEF), the Government of Japan, the MacArthur Foundation and the World Bank. CEPF supports projects in hotspots, the biologically richest and most endangered areas on Earth.

A fundamental purpose of CEPF is to ensure that civil society is engaged in efforts to conserve biodiversity in the hotspots. An additional purpose is to ensure that those efforts complement existing strategies and frameworks established by local, regional and national governments.

CEPF aims to promote working alliances among community groups, nongovernmental organizations (NGOs), government, academic institutions and the private sector, combining unique capacities and eliminating duplication of efforts for a comprehensive approach to conservation. CEPF is unique among funding mechanisms in that it focuses on biological areas rather than political boundaries and examines conservation threats on a corridor-wide basis to identify and support a regional, rather than a national, approach to achieving conservation outcomes. Corridors are determined through a process of identifying important species, site and corridor-level conservation outcomes for the hotspot. CEPF targets transboundary cooperation when areas rich in biological value straddle national borders, or in areas where a regional approach will be more effective than a national approach.

The Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya hotspot (hereafter referred to as the Eastern Arc Mountains and Coastal Forests hotspot) is one of the smallest of the 25 global biodiversity hotspots.¹ It qualifies by virtue of its high endemism and a severe degree of threat. Although the hotspot ranks low compared to other hotspots in total numbers of endemic species, it ranks first among the 25 hotspots in the number of endemic plant and vertebrate species per unit area (Myers *et al.* 2000). It also shows a high degree of congruence for plants and vertebrates. It is also considered as the hotspot most likely to suffer the most plant and vertebrate extinction for a given loss of habitat and as one of 11 “hyperhot” priorities for conservation investment (Brooks *et al.* 2002).

THE ECOSYSTEM PROFILE

The purpose of the ecosystem profile is to provide an overview of biodiversity values, conservation targets or “outcomes,” the causes of biodiversity loss and current conservation investments in a particular hotspot. Its purpose is to identify the niche where CEPF investments can provide the greatest incremental value.

The ecosystem profile recommends strategic opportunities, called “strategic funding directions.” Civil society organizations then propose projects and actions that fit into these strategic directions and contribute to the conservation of biodiversity in the hotspot. Applicants propose specific projects consistent with these funding directions and investment criteria. The ecosystem profile does not define the specific activities that prospective implementers may propose, but outlines the conservation strategy that guides those activities. Applicants for CEPF grants are required to prepare detailed proposals identifying and describing the interventions and performance indicators that will be used to evaluate the success of the project.

¹ At the time this document was prepared in 2003, the Eastern Arc Mountains and Coastal Forests region was classified as a biodiversity hotspot itself. However, a hotspots reappraisal released in 2005 places this region within two new hotspots - the Eastern Afrotropical Hotspot and the Coastal Forests of Eastern Africa Hotspot. This profile and CEPF investments focus strictly on the Eastern Arc Mountains and Coastal Forests comprising the original hotspot as defined in this document.

BACKGROUND

International interest in the Eastern Arc Mountains and Coastal Forests hotspot has increased over the last three decades as the realization of its biodiversity importance and of the global crisis affecting tropical forests has deepened. Although descriptions of the wealth of biodiversity in the forests of the Eastern Arc Mountains date back to 1860 and there has been outstanding scientific work in the hotspot during the last 100 years, concerns for its conservation are relatively recent. Until about 30 years ago, nearly all the investment in the forests of the area had been in plantations, many of which were established after clearing indigenous forest.

The situation is now greatly changed and the last decade has seen a series of publications, workshops and conferences on the biodiversity and conservation of this hotspot (mostly organized by the United Nations Development Programme/Global Environment Facility (UNDP/GEF) and the WWF Eastern Africa Regional Programme Office (WWF-EARPO). These have produced a wealth of recent information on biodiversity issues (in particular on the distribution of endemic species across sites) and on forest status and management. This information has greatly reduced the time and effort needed to prepare this profile.

Current concerns for the conservation of the Eastern Arc Mountains date back to the 1978 Fourth East African Wildlife Symposium at Arusha. The conference was attended by 150 delegates, most of whom were not especially interested in forest conservation. However, a post-conference trip to Amani in the East Usambaras resulted in a report to the Government of Tanzania, drawing its attention to the biological importance of and threats to the Eastern Arc Mountains (Rodgers 1998).

In 1983, the Tanzania Forest Conservation Group (TFCG) was founded. In December 1997, there was a landmark international conference on the Eastern Arc Mountains at Morogoro, Tanzania attended by more than 250 delegates (Burgess *et al.* 1998a). During this conference, working groups reported on urgent issues such as the status of the remaining forest and participants presented papers on biodiversity, sociology and management. Much of the more recent conservation effort in the Eastern Arc Mountains dates from this conference, although one of the most important of these had already started with a UNDP/DANIDA project. This led in turn to a GEF Project Development Fund (PDF) Block A proposal and grant to characterize the conservation issues in the Eastern Arc Mountains in more detail.

The Block A process started after the December 1997 conference and included preliminary assessments of biodiversity values, conservation concerns, priority actions, financial constraints, sustainable financing opportunities, effectiveness of previous donor interventions and the development of preliminary proposals for GEF projects in the Eastern Arc Mountains. A three-way matrix was constructed showing levels of biodiversity and endemism, the degree of threat and the level and effectiveness of previous interventions. This enabled a ranking exercise that revealed that three of the main forest blocks (East Usambaras, Udzungwas and Ulugurus) were exceptionally diverse and that there was no major donor or public support for the Ulugurus. The Ulugurus, therefore, became a focus in the development of a PDF Block B proposal supported by UNDP and the World Bank. This PDF/B involved extensive stakeholder consultations and resulted in: 1) an outline and plan for a participatory and strategic approach to conservation and management in the Eastern Arc Mountains; 2) proposals for institutional reforms in the forest sector with a particular focus on facilitating participatory forest conservation and management; 3) a needs assessment for priority pilot interventions in the Ulugurus; and 4) the legal establishment of an Eastern Arc Mountains Endowment Fund (EAMCEF). The outcomes from this process were integrated into larger forest biodiversity concerns and into a proposed \$62.2 million Tanzania Forest Conservation and Management Project.

During this time, awareness of the biodiversity values of the East African coastal forests had also grown. In 1983, a team from the International Council for Bird Preservation (ICBP, now BirdLife International) surveyed the avifauna of Arabuko-Sokoke Forest on the north coast of Kenya and drew attention to its globally threatened bird species (Kelsey & Langton, 1984). A detailed survey (Roberston, 1987) of the sacred *Kaya* Forests (conserved by the Mijikenda, a group of nine tribes on the Kenyan coast) highlighted their conservation importance for trees and led to a comprehensive survey of Kenyan coastal forests commissioned by WWF (Robertson & Luke 1993). This focussed on the plant species and on the status of the forests and made recommendations for their conservation.

The Frontier-Tanzania Coastal Forest Research Programme carried out a series of biodiversity surveys from 1989 to 1994 (Lowe & Clarke 2000; Clarke *et al.* 2000; Burgess *et al.* 2000; Broadley & Howell, 2000; Hoffman 2000). In 1993 a workshop on the East African coastal forests was held in Dar es Salaam. This raised the profile and conservation action in these forests and led to a series of status reports on the conservation and management of the Tanzanian coastal forests (Clarke 1995; Clarke & Dickenson 1995; Clarke & Stubblefield 1995). These and other studies are summarized in another landmark publication for the hotspot (Burgess & Clarke, 2000).

More recently, WWF-EARPO organised a series of workshops to develop an Eastern Africa Coastal Forest Programme covering Kenya, Tanzania and Mozambique (WWF-EARPO, 2002). Thirty-one scientists and stakeholders from these three countries attended a regional workshop in Nairobi in February 2002. It aimed at developing a regional synthesis on coastal forest resource issues and a vision, strategy and way forward for realising the coastal forest programme. There was a strong focus on country-based group work. Maps of the region were updated, threats and root causes were analyzed, country conservation targets were agreed on and preliminary logframe action plans were developed for each country. National Coastal Forest Task Force meetings in each of the three countries subsequently refined these action plans. The document resulting from the February 2002 workshop includes comprehensive annexes which list the coastal forest sites (showing their locations, areas, status, altitudes and threats) and the endemic animals, as well as the threat analysis and country action plans. A list of endemic plants, taken from Burgess & Clarke 2000, was supplied to the workshop but not included in the report.

On 12 March 2003, a CEPF workshop was held in Dar es Salaam to define the investment niche for CEPF, building on all the previous effort. Participants included 48 people from scientific and research institutions, government departments, NGOs, field projects and donor organizations, all of whom worked in or had knowledge of the hotspot. The outputs from the workshop were subsequently incorporated into a wide-ranging consultation process that helped to define the investment priorities for CEPF in this hotspot.

Geography of the Hotspot

The Eastern Arc Mountains and Coastal Forests hotspot runs along the Tanzanian and Kenyan coasts from the border with Somalia to the north to that with Mozambique to the south (Figure 1). The bulk of the hotspot is in its western expansion in Tanzania, which takes in the Eastern Arc Mountains and the water catchment system of the Rufiji River. There is a narrow hook-like extension of the hotspot near the Kenya/Tanzania border. This follows the Eastern Arc Mountains to their northernmost limits in the Taita Hills in Kenya. The hotspot also projects northwards for about 100 km in an extension that includes the forests of the Lower Tana River in Kenya. The hotspot includes the Indian Ocean islands of Mafia, Pemba and Zanzibar.

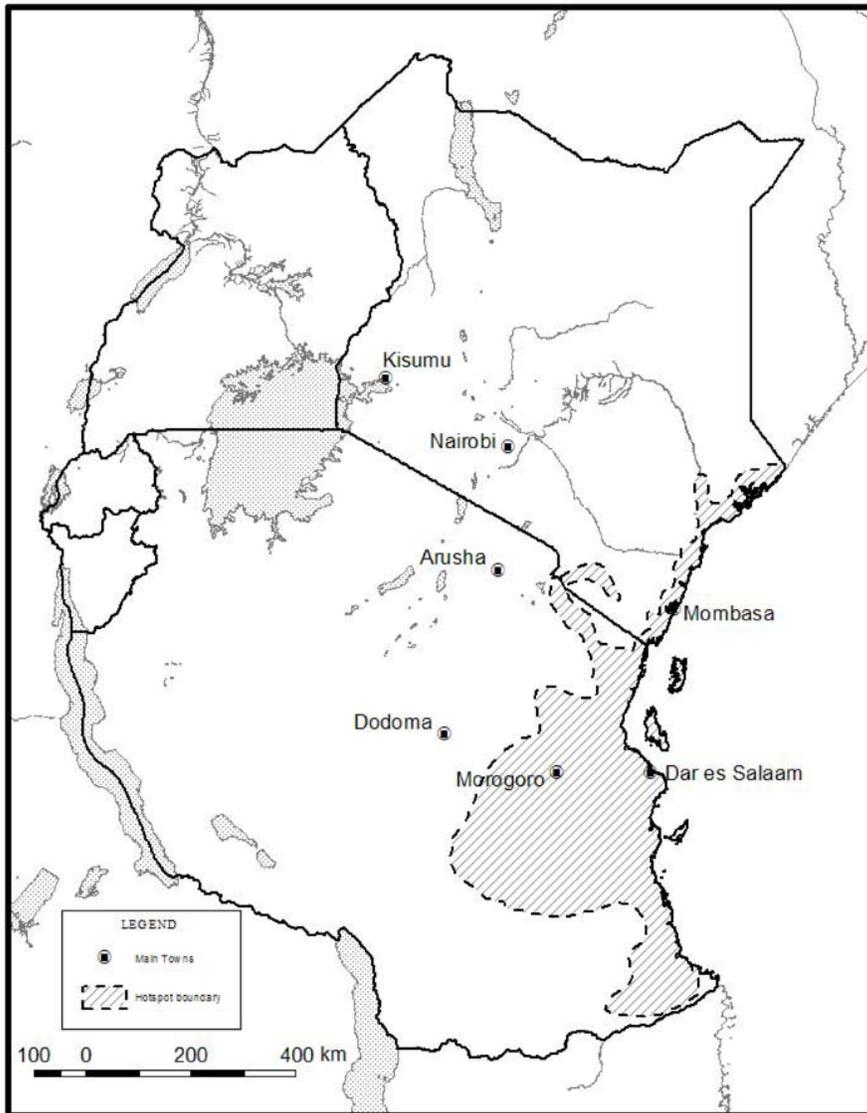
In terms of plant biogeography, the hotspot straddles two ecoregions: Eastern Arc Forest and Northern Zanzibar-Inhambane Coastal Forest Mosaic (WWF-US 2003a, b). These two ecoregions are mostly discontinuous but do meet in the lowlands of the East Usambara, Uluguru, Nguru and Udzungwa Mountains as well as in the Mahenge Plateau (WWF-US 2003a,b; Burgess pers. com.). A considerable proportion of species (e.g. nearly 60 percent of plants) are found in both ecoregions and the distinction between them has been a matter of some debate (Lovett *et al.* 2000). However, each of these forest types contains an impressive number of strict endemics. Lovett *et al.* (2000) conclude that the forests in these two ecoregions are very different, with differences in altitude and rainfall leading to a steep gradient of species replacement with elevation.

The Eastern Arc Mountains

The Eastern Arc Mountains stretch for some 900 km from the Makambako Gap, southwest of the Udzungwa Mountains in southern Tanzania to the Taita Hills in south-coastal Kenya (Figure 2) (Lovett & Wasser 1993; GEF 2002). They comprise a chain of 12 main mountain blocks: from south to north, Mahenge, Udzungwa, Rubeho, Uluguru, Ukaguru, North and South Nguru, Nguu, East Usambara, West Usambara, North Pare, South Pare and Taita Hills. The highest point (Kimhandu Peak in the Ulugurus) is more than 2,600 m in altitude, but most of the ranges peak between 2,200-2,500 m (GEF 2002; WWF-US 2003a). Geologically the mountains are formed mainly from Pre-Cambrian basement rocks uplifted about 100 million years ago (Griffiths 1993). Their proximity to the Indian Ocean ensures high rainfall (3,000 mm/ year on the eastern slopes of the Ulugurus, falling to 600 mm/year in the western rain shadow) (GEF 2002). Climatic conditions are believed to have been more-or-less stable for at least the past 30 million years (Axelrod & Raven 1978). The high rainfall and long-term climatic stability, together with the fragmentation of the mountain blocks, have resulted in forests that are both ancient and biologically diverse.

The original forest cover (2,000 years ago) on the Eastern Arc Mountains is estimated at around 23,000 km², of which around 15,000 km² remained by 1900 and a maximum of 5,340 km² remained by the mid-1990s (Newmark 1998; GEF 2002). At that time the Udzungwas contained the largest area of natural forest (1,960 km²), followed by the Nguru, Uluguru, Rubeho, East Usambaras, South Pare, West Usambaras, Mahenge, Ukaguru, North Pare and Taita Hills (6 km²). These and the following estimates of forest status and losses in the Eastern Arc

Figure 1. Location of the Eastern Arc Mountains & Coastal Forests hotspot



Mountains are all taken from Newmark 1998. Losses were greatest, relative to original cover, in the Taitas (98 percent), Ukaguru (90 percent), Mahenge (89 percent) and West Usambaras (84 percent). The forests had become highly fragmented, with mean and median forest patch sizes estimated at 10 km² and 58 km², respectively. By 1994-96, the Udzungwas and the West Usambaras contained the largest numbers of patches (26 and 17) and only one mountain block (Ukaguru) had more or less continuous forest. At that time there were an estimated 94 forest patches in the Eastern Arc Mountains. Within forest patches there was considerable degradation. Of the closed forest that remained, only 27 percent had closed forest cover. With the exception of a few sites where there has been active intervention, the situation at present is far more likely to have deteriorated than improved since 1996.

The East African Coastal Forest Mosaic

The area defined by the Coastal Forests of Tanzania and Kenya in the hotspot includes the intervening habitats between the coastal forest patches. Although the main biodiversity values are concentrated in the forests there are a significant number of endemics (especially plants) in non-forested habitats. This part of the hotspot is therefore a mosaic, which stretches from the border of Kenya with Somalia, to the border of Tanzania with Mozambique, including the islands of Zanzibar, Mafia and Pemba. This part of the hotspot is, largely for practical reasons, partly defined by national boundaries; coastal forests in Somalia (very little left) and Mozambique (large areas) are poorly known and are excluded. Northern Mozambique could be included with further survey work. With the exception of Somalia, the mosaic, as defined here, corresponds to the WWF ecoregion known as the “Northern Zanzibar-Inhambane Coastal Forest Mosaic” (WWF-US 2003b). This falls within the “Zanzibar-Inhambane Regional Mosaic,” which is one of 18 distinct biogeographical regions that White (1983) recognized for Africa.

In Kenya, the Northern Zanzibar-Inhambane Coastal Forest Mosaic is mostly confined to a narrow coastal strip except along the Tana River where it extends inland to include the forests of the lower Tana River (the northern-most of which occur within the Tana Primate National Reserve) (Figures 1, 2). In Tanzania, the Mosaic runs from border to border along the coast, contracting in the Rufiji Delta region. There are also some outliers located up to ca. 300 km inland at the base of a few of the Eastern Arc Mountains (Udzungwa, Mahenge, Uluguru and Nguru) (WWF-US 2003a). Much of the Mosaic has been converted to subsistence agriculture, interrupted by plantations and human settlements, including the large cities of Mombasa and Dar es Salaam (populations of more than 700,000 and 3 million, respectively).

Geologically, the coastal forest strip has been subject to considerable tectonic activity and to sedimentation and erosion associated with movements of the shoreline (Clarke & Burgess 2000). Most coastal forests are found between 0-50 m and 300-500 m, although in Tanzania they occur up to 1040 m (Burgess *et al.* 2000). Rainfall ranges between 2000 mm/year (Pemba) to 500 mm/year (northern Kenya and southern Tanzania) (Clarke 2000). There are two rainy seasons (long, April-June; short, November-December) in the north, but only one (April-June) in the south. Dry seasons can be severe and El Niño effects dramatic. Climatic conditions are believed to have been relatively stable for the last 30 million years (Axelrod & Raven 1978), although variation from year to year can be considerable, leading to droughts or floods.

By the early 1990s, there were about 175 forest patches in the Coastal Forest Mosaic (Kenya 95, Tanzania 66) covering an area of 1,360 km² (Kenya 660 km², Tanzania 700 km²) (Burgess *et al.* 2000). Mean patch size was 6.7 km² in Kenya and 10.6 km² in Tanzania. Modal patch-size classes were 0 – 1 km² in Kenya and 5-15 km² in Tanzania. The two largest coastal forests are both in Kenya (Arabuko-Sokoke, minimum area 370 km²; Shimba, minimum area 63 km²) (WWF-EARPO 2002), while in Tanzania there are no coastal forests larger than 40 km² (WWF-US 2003b). There is some uncertainty with these figures because of differences in criteria for

patch inclusion in the data set (e.g., the exclusion of all but a few small patches (<2 km²) from the Tanzanian data set and their full inclusion in the Kenya data set). The available information is also somewhat out of date and the current situation is, again, far more likely to have deteriorated than improved. No reliable estimates are available for the coastal forest with intact and contiguous canopies or for the extent of forest loss in recent history.

BIOLOGICAL IMPORTANCE

In this section, biological importance is assessed primarily in terms of endemic species. Subsequently, in the Conservation Outcomes, the emphasis is on the Red Lists of threatened species that occur in the hotspot. Because of the relatively small area of this hotspot, the high degree of threat it faces (Brooks *et al.* 2002) and the current criteria for inclusion in the Red List (IUCN 1994), all, or at least most, of the endemics are candidate “threatened species.” This consideration is perhaps most obvious in the case of the plants where there are more than 1,500 endemic species in the hotspot, but only 236 (16 percent) are currently included in the Red List.

The global biodiversity values of the hotspot are widely recognized (Lovett 1988, 1998a, b, c; Myers 1990; Myers *et al.* 2000; Brooks *et al.* 2001; Brooks *et al.* 2002). This hotspot is home to at least 1,500 endemic plant species, 16 endemic mammals, 22 endemic birds, 50 endemic reptiles and 33 endemic amphibians (Lovett & Wasser, 1993; Burgess *et al.* 1998a; Burgess & Clarke 2000; Myers *et al.* 2000). It is considered as the hotspot most likely to suffer the most plant and vertebrate extinction for a given loss of habitat and as one of 11 “hyperhot” priorities for conservation investment (Brooks *et al.* 2002). Because of the small area of the hotspot, the densities of these endemics are among the highest in the world. At the global level, some 0.37 percent of all species (in eight major taxa) are estimated to be endemic to the Eastern Arc Mountains and 0.20 percent endemic to the Coastal Forest Mosaic (Burgess 2000).

The distribution of these endemic species within the hotspot merits special consideration. First, nearly all the EACF forest patches have biodiversity values and most contain at least one endemic species (Burgess & Clarke 2000). Second, there are many disjunct distributions, particularly amongst the birds and the plants (Burgess & Clarke 2000). Third, there is a huge turnover of species between patches, especially in the less mobile species. Forests that are only 100 km apart can differ in 70 percent of their millipedes (Hoffman, 2000) and in 80 percent of their plants (Clarke *et al.* 2000). In some invertebrate taxa, 80-90 percent of species can be strictly endemic to a single site (Scharff *et al.* 1981; Scharff 1992, 1993; Burgess *et al.* 1998b).

These distribution patterns are commonly found in both the Eastern Arc Mountains and the lowland Coastal Forest Mosaic. They indicate that much of the habitat fragmentation in this area is natural and sufficiently ancient for much speciation to have taken place in isolated patches and for species to have persisted here and there due to stochastic effects. However, over a period of hundreds or perhaps thousands of years, there has also been considerable loss of habitat and habitat continuity between the natural fragments (loss of connectivity), as a result of human activities. This issue needs careful consideration when conservation interventions are planned.

Biodiversity in the Eastern Arc Mountains

In the Eastern Arc Mountains, around 40 percent (800 of more than 2000) of the plant species and 2 percent of genera (16 of about 800) are estimated to be endemic (Lovett & Wasser 1993; Lovett 1998b; GEF 2002). This area is the centre of endemism for the African violet, with 20 out of 21 species being endemic. Trees have attracted the most attention, but non-vascular plants also show significant endemism (32 of about 700 species of bryophytes) (Pocs 1998). The endemics are found in most of the forest types, as well as in intervening habitats such as rocky outcrops, heathland, montane grasslands and wetlands (Lovett 1998b).

The degree of faunal endemism in the Eastern Arc Mountains varies widely across taxa. Six percent of mammals, 3 percent of birds, 68 percent of forest-dependent reptiles, 63 percent of forest-dependent amphibians, 39 percent of butterflies and 82 percent of linyphiid spiders are endemic (GEF 2002). Some of these species have extremely limited distributions. The Kihansi spray toad, described in 1998, is found in an area of less than 1 km² (Poynton *et al.* 1998). Three endemic bird taxa (variously described as full species or subspecies) are restricted to the 6 km² of forest in the Taita Hills (Brooks *et al.* 1998). Records for the Udzungwa partridge are confined to two localities in the Udzungwas and one in Rubeho (Baker & Baker 2002). Amongst some invertebrates (linyphiid spiders, opilionids and carabid beetles), single site endemism exceeds 80 percent (Scharff *et al.* 1981; Scharff 1992, 1993; Burgess *et al.* 1998).

Using a subset of 239 species endemic and near-endemic to the Eastern Arc Mountains, the East Usambaras emerge as the most important site in terms of numbers of endemics, while the Ulugurus rank top for density of endemics (Burgess *et al.* 2001). As expected, the big forest blocks (Usambaras, Ulugurus and Udzungwas) are more species-rich than the smaller blocks (e.g., North Pare, South Pare, Ukaguru and Mahenge). Most of the endemic taxa are not only forest dependent; they are dependent on primary forest. The low-elevation forests are rich in endemics and total numbers of species, but are very limited in overall area, having suffered extensive clearance for agriculture. The uniqueness of the biodiversity in the Eastern Arc Mountains is attributable to both relictual and recently evolved species (Burgess *et al.* 1998c; Roy *et al.* 1997). Biogeographical affinities indicate ancient connections to Madagascar (45 species of bryophytes shared) (Pocs 1998), West Africa (many birds and plant genera) (Lovett 1998b; Burgess *et al.* 1998c) and even Southeast Asia (where close relatives of the Udzungwa forest partridge and the African tailorbird are found) (Dinesen *et al.* 1994).

Biodiversity in the Coastal Forests

The pattern of endemism in the Coastal Forest Mosaic is complex, reflecting the wide range of habitats and heterogeneous forest types, a high degree of turnover of local species between adjacent forest patches and many disjunct distributions (Burgess 2000; WWF-US 2003b). The ecoregion, which includes the islands of Zanzibar and Pemba, is a mosaic of forest patches, savanna woodlands, bushlands, thickets and farmland. The highest biodiversity is found in the various kinds of closed canopy forest vegetation: dry forest, scrub forest, *Brachystegia* (*miombo*) forest, riverine forest, groundwater forest, swamp forest and coastal/afromontane transition forest (Clarke 2000; WWF-US 2003b). Closed canopy forests, however, makes up only 1 percent of the total area of the Coastal Forest Mosaic.

Overall, there are more than 4,500 plant species and 1,050 plant genera (WWF-US 2003b), with around 3,000 species and 750 genera occurring in forest. At least 400 plant species are endemic to the forest patches and about another 500 are endemic to the intervening habitats that make up 99 percent of the ecoregion area (WWF-US 2003b). The majority of these species are woody but there are also endemic climbers, shrubs, herbs, grasses and sedges (Clarke *et al.* 2000). A substantial proportion of the endemic plants are confined to a single forest (for example, Rondo Forest, Tanzania, has 60 strict endemics and Shimba Hills, Kenya, has 12) (Clarke *et al.* 2000). The flora as a whole has affinities with that of West Africa, suggesting an ancient connection with the Guineo-Congolian lowland forests (Lovett 1993). Endemism is primarily relictual rather than recently evolved (Clarke *et al.* 2000; Burgess *et al.* 1998c).

Faunal endemism rates have been estimated for forest species in the Swahelian Regional Centre of Endemism (including the transition zone in Mozambique). These are highest in the invertebrate groups such as millipedes (80 percent of all the forest species), molluscs (68 percent) and forest butterflies (19 percent) (Burgess 2000). Amongst the vertebrates, 7 percent of forest mammals, 10 percent of forest birds, 57 percent of forest reptiles and 36 percent of

forest amphibians are endemic (Burgess 2000). If Mozambique is excluded, endemics include 14 species of birds (including four on Pemba Island), eight mammals, 36 reptiles and five amphibians (WWF-EARPO 2002).

In terms of species richness, there are at least 158 species of mammals (17 percent of all Afrotropical species), 94 reptiles and 1200 molluscs (WWF-US 2003b). As with the plants, endemism is primarily relictual (Burgess *et al.* 1998c) and single site endemism and disjunct distributions are common. This makes it extremely difficult to prioritise the forests in terms of their biodiversity. Burgess (2000) made a preliminary analysis on the basis of species richness and endemism, using vascular plants, birds, mammals, reptiles and amphibians. This showed that different forests are important for different groups. For example, while Arabuko-Sokoke is top for endemic birds and for mammal species richness, it barely makes it into the top ten for plants. Overall, the five most important forests are Rondo (plants and birds), lowland East Usambaras and Arabuko-Sokoke (birds, mammals and reptiles), Shimba (plants and birds) and Pugu Hills (birds and mammals). Pemba Island, with an area of only 101400 ha, is extraordinarily important for birds with four endemic species (Baker & Baker, 2002) while Zanzibar has six endemic mammals and three endemic birds (Siex, pers. comm.).

Levels of Protection

Forests in this hotspot are located in two countries and fall under multiple management regimes. Figure 2 shows the major protected areas in and around the hotspot.

In Kenya, the protected area network at national level consists of national parks, national reserves, forest reserves, nature reserves and national monuments (Bennun & Njoroge 1999). Many of the national monuments on the coast are sacred forests called *Kaya* Forests. At a lower level, many forests are located on trust lands and fall under the control of County and Municipal councils. In Tanzania, the protected area network at national level consists of national parks, game reserves, government catchment forests, game controlled areas, forest reserves and nature reserves (Baker & Baker 2002). Below the national level a large number of forests, particularly in the coastal forest belt, fall under local authorities, owned and managed by the villagers. In both countries, no exploitation is allowed in national parks and protection levels are generally high (but see below for an exception in Kenya). In both countries, confusing and overlapping legislation on the environment and natural resources is being rationalized through the enactment of new polices.

Within the Kenyan area of the hotspot, there is one national park, a 6 km² area to the northwest of Arabuko-Sokoke Forest. This park is, however, somewhat of an anomaly, as it contains no closed forest and exists only on paper. There are four national reserves (Shimba, Tana River, Boni and Dodori) (WWF-EARPO 2002). These fall under the jurisdiction of the Kenya Wildlife Service (KWS). The Shimba Hills were gazetted as National Forest in 1903 and then double-gazetted (with the exception of two small areas that remained as forest reserves under the control of the Forest Department) in 1968 as the Shimba Hills National Reserve (Bennun & Njoroge 1999). Protection levels are higher in the area controlled by KWS, as they have armed rangers and a clearer institutional mandate for conservation. The Tana River Primate National Reserve contains 16 out of the 70 patches of riverine forest found along the lower Tana River (Butynski & Mwangi 1994). These forests have suffered severe damage during the past three decades from farmers clearing land for agriculture and possibly from the construction of several dams up-river that have reduced the incidence of flooding (Butynski & Mwangi 1994, Wieczkowski & Mbori 1999-2000). The biodiversity in Boni and Dodori is poorly known because security problems have prevented biological surveys.

The largest of the Kenyan forest reserves is Arabuko Sokoke (417 km²). For the last 10 years this forest has been under multi-institutional management (KWS, the Forest Department, Kenya Forestry Research Institute (KEFRI) and the National Museums of Kenya, (NMK)) (Arabuko-Sokoke Forest Management Team 2002). This arrangement has been taken as a model for other indigenous forests in Kenya but has been rarely implemented. Protection levels suffer from the proximity of the tourist resorts of Malindi and Watamu and the resultant demand for carving wood and timber. The effectiveness of management has been variable over time, being subject to the commitment of the personnel on the ground, the working relationships between KWS and the Forest Department and the level of resources available. Generally, however, management has been more effective than in the other 17 forest reserves (WWF-EARPO 2002) within the Kenyan coastal forest belt. In the fragmented forests of the Kenyan portion of the Eastern Arc Mountains (Taita Hills), some patches, including plantation, have been gazetted as forest reserve. Others are on trust land administered by the local county council, some of which have been recommended for gazettelement as forest reserves (Bennun & Njoroge 1999).

percent) of the Kenyan coastal forests fall into this category or is totally unprotected (data from WWF-EARPO 2002).

In the Tanzanian portion of the Eastern Arc Mountains, there are two national parks (Udzungwa Mountains National Park, gazetted in 1992, 1,960 km²; and Mikumi National Park, 3,230 km²), two game reserves (Selous and Mkomazi) and a nature reserve (Amani Nature Reserve, gazetted in 1997, 83.8 km²) (GEF 2002; Roe *et al.* 2002). However, more than 90 percent of the total forest area in the Tanzanian portion of the Eastern Arc Mountains and almost 75 percent of the total forests are gazetted as government catchment forest reserves (Burgess pers. com.). These range in area from more than 557,000 ha (Ngindo) to less than 10 ha and include all the larger forests in the Kilimanjaro (e.g., Chome), Tanga (e.g., Nguru North, Shume Magambe) and Morogoro (e.g., Uluguru, Nguru South) regions. Most of the remainder are local authority forests, ranging in size from 57,300 ha (Mbalwe/Mfukulembe) to less than 10 ha, although there are a few private forests, mainly on tea estates (e.g. Ambangulu Tea Estate) and some of which have been covenanted for conservation. In the national park, protection levels are high, but elsewhere they are highly variable. The important catchment forest reserves are, in general, better protected than the local authority forests (Burgess *et al.* 1998).

In the Tanzanian coastal forests, management regimes are more complicated. Most are either forest reserves (80) or are on public land (20) with no protection status (WWF-EARPO 2002). Four are private forest reserves (Magotwe, Kichi Hills, Mlungui and Magoroto). Only three are entirely managed by the district government as local authority forest reserves, although some have double status (two overlapping with forest reserves and two more with private forest reserves). There are two catchment forest reserves (Mselezi, Ziwani) (Burgess and Clarke 2000; WWF-EARPO 2002) managed by the Central Government Forest and Beekeeping Division. Two others, Zaraninge and the former Mkwaja ranch, are being incorporated into the new Sadaani National Park (WWF-EARPO 2002). Some patches are also found in the Selous Game Reserve and others in Mafia Island Marine Park. Offshore protected areas are also found in Zanzibar (Jozani Forest Reserve) and Pemba (Ngezi Forest Reserve). There are also smaller areas in Zanzibar that are important for water catchment (e.g. Masingi) and for endemic species (e.g. Unguja Ukuu Forest Plantation). There is a proposal to upgrade the Jozani Reserve in Zanzibar (now known as the Jozani-Chakwa Bay Conservation Area) to a national park.

Management and protection of most of the forests throughout the hotspot have suffered from inadequate stakeholder involvement, conflicts of interest and corruption. Where forests are gazetted, the boundaries tend to be respected but the forests themselves suffer steady degradation. The levels of protection achieved on the ground are strongly dependent on local factors such as proximity to urban areas, pressure for land, ease of access, presence of valuable timber and the capacity and morale of the local forestry officers (WWF-US 2003a). There is a general move toward various forms of participatory forest management (PFM), in the hope that an exchange of forest user rights for community management responsibilities and ownership (where appropriate) will lead to better protection by the people who often know best what is going on in the forests. Although this hope is widely held, it has not yet been scientifically tested within the hotspot. The alternative strategies of direct payments and easements are being explored, but have not yet been implemented.

CONSERVATION OUTCOMES

This ecosystem profile, together with profiles under development for other regions at this time, includes a new commitment and emphasis on using conservation outcomes—targets against which the success of investments can be measured—as the scientific underpinning for determining CEPF’s geographic and thematic focus for investment.

Conservation outcomes are the full set of quantitative and justifiable conservation targets in a hotspot that need to be achieved in order to prevent biodiversity loss. These targets are defined at three levels: species (extinctions avoided), sites (areas protected) and landscapes (corridors created). As conservation in the field succeeds in achieving these targets, these targets become demonstrable results or outcomes. While CEPF cannot achieve all of the outcomes identified for a region on its own, the partnership is trying to ensure that its conservation investments are working toward preventing biodiversity loss and that its success can be monitored and measured. CI's Center for Applied Biodiversity Science (CABS) is facilitating the definition of conservation outcomes across the 25 global hotspots, representing the benchmarks against which the global conservation community can gauge the success of conservation measures.

Overview of Conservation Outcomes

Conservation outcomes focus on biodiversity across a hierarchical continuum of ecological scales. This continuum can be condensed into the three levels: species, sites and landscapes. The three levels interlock geographically through the presence of species in sites and of sites in landscapes. They are also logically connected. If species are to be conserved, the sites on which they live must be protected and the landscapes must continue to sustain the ecological services on which the sites and the species depend. At the landscape level, conservation corridors (within which sites are nested) can sometimes be defined and investments can be targeted at increasing the amount of habitat with ecological and biodiversity value within these corridors. Given threats to biodiversity at each of the three levels, quantifiable targets for conservation can be set in terms of extinctions avoided, sites protected and, where appropriate, conservation corridors created or preserved. This can only be done when accurate and comprehensive data are available on the distribution of threatened species across sites and landscapes.

Defining conservation outcomes is therefore a bottom-up process through which species-level targets are defined first and based on the species information, site-level conservation targets are identified. Landscape-level targets are delineated subsequently, if appropriate for the region. The process requires knowledge on the conservation status of individual species. This information has been accumulating in the Red Lists of Threatened Species developed by IUCN and partners. The Red List is based on quantitative, globally applicable criteria under which the probability of extinction is estimated for each species. Species outcomes in the hotspot include those species that are globally threatened (Vulnerable, Endangered and Critically Endangered) according to *The 2002 IUCN Red List of Threatened Species*. Outcome definition is a fluid process and, as data become available, species-level outcomes will be expanded to include other taxonomic groups that previously had not been assessed, as well as restricted-range species. Avoiding extinctions means conserving globally threatened species to make sure that their Red List status improves or at least stabilizes. This in turn means that data are needed on population trends; for most of the threatened species, there are no such data.

Recognizing that most species are best conserved through the protection of the sites in which they occur, site outcomes are defined for each target species. Site outcomes are focused on physically and/or socioeconomically discrete areas of land that harbour populations of at least one globally threatened species. These sites need to be protected from ecological transformation to conserve the target species. Sites are scale-independent and, ideally, should be manageable as single units.

Corridor outcomes are focused on landscapes that need to be conserved to allow the persistence of biodiversity over time. Species and site outcomes are nested within corridors. The goal of corridors is to preserve ecological and evolutionary processes, as well as enhance connectivity between important conservation sites by effectively increasing the amount of habitat with biodiversity value near them. Unlike species and site outcomes, the criteria for determining

corridor outcomes are being defined and this is presently an important research front. CABS will make the data on conservation outcomes publicly available on CEPF's Web site, www.cepf.net.

Species Outcomes

To define the species outcomes for this hotspot, all globally threatened species in *The 2002 Red List of Threatened Species* that are found in the Eastern Arc Mountains and Coastal Forests hotspot were identified. Data were compiled for each species on its conservation status and known distribution. Site outcomes were determined by identifying all sites that are important for each globally threatened species. Following a review of the species and site outcomes and expert consultations, corridor outcomes were not defined for this hotspot. Conservation corridors (landscape conservation units consisting of core sites and the surrounding matrix) did not make sense in this naturally fragmented, relatively small hotspot. However, it will be important to reconnect forest patches that have only become isolated in recent decades as a result of human activities. Failure to reconnect forest patches within a formerly continuous site will inevitably mean the extinction of numerous species as the habitat patches fall to sizes that can no longer sustain their biodiversity due to island biogeography effects (Newmark 1991, 2002; Brooks *et al.* 2002).

The definition of the conservation outcomes drew heavily on the research findings of a large number of scientists who have worked intensively in this hotspot over the last three decades and who have contributed to various compilations of primary field data (Lovett & Wasser 1993; Burgess *et al.* 1998, Burgess & Clarke 2000; Newmark 2002; WWF-EARPO 2002; WWF-US 2003a,b). The key sources of data on threatened plants included the Flora of Tropical East Africa (see Beentje & Smith [2001] for details of publication), the TROPICOS database (MBG 2003) and a database compiled by Q. Luke. Data on faunal species distributions in Tanzania were drawn from the University of Dar es Salaam biodiversity database (Howell & Msuya 2003). The work to define national Important Bird Areas (IBAs) was also an important source of data. The IBA process in Kenya and Tanzania (coordinated by Nature Kenya and the Wildlife Conservation Society of Tanzania as the BirdLife International partners for these countries) had already compiled data for threatened and restricted-range birds and their key sites (IBAs). These data were already in the World Bird Database at BirdLife International. The IBAs provided a starting point for including other aspects of the biodiversity of this hotspot to identify key biodiversity areas, or site level conservation outcomes.

The results of the outcome definition indicate that 333 globally threatened (Red List) species occur in the hotspot, with 105 species being represented in Kenya and 307 in Tanzania (Table 1). The globally threatened flora and fauna in the hotspot are represented by 236 plant species, 29 mammal species, 28 bird species, 33 amphibian species and seven gastropod species. Of the 333 globally threatened species in the hotspot, 241 are Vulnerable, 68 are Endangered and 24 are Critically Endangered.

The full list of species outcomes is provided in Appendix 1. The species outcomes are based on the 2002 IUCN Red List, which is quite good for several taxonomic groups. However, Red List data for plants is badly in need of updating. The 2002 Red List includes some widespread plant species in this hotspot, others that are in far greater danger of extinction because their restricted

Table 1. Numbers of Critically Endangered, Endangered and Vulnerable species in five major taxonomic groups in the Eastern Arc Mountains and Coastal Forests hotspot

| Taxonomic Group | Degree of Threat | | | | Country | |
|-----------------|------------------|-----------|------------|------------|------------|------------|
| | CR | EN | VU | Total | Tanzania | Kenya |
| Mammals | 5 | 8 | 16 | 29 | 27 | 9 |
| Birds | 3 | 10 | 15 | 28 | 24 | 10 |
| Amphibians | 4 | 11 | 18 | 33 | 31 | 3 |
| Gastropods | 3 | 3 | 1 | 7 | 4 | 3 |
| Plants | 9 | 36 | 191 | 236 | 221 | 80 |
| Total | 24 | 68 | 241 | 333 | 307 | 105 |

CR = Critically Endangered, EN = Endangered, VU = Vulnerable

ranges have not yet been assessed (Q. Luke & R. Gereau pers. comm.). Gereau and Luke (2003) estimate the total number of globally threatened plant species in the hotspot is probably 1,200 or more, including 973 taxa that are not in the 2002 IUCN Red List and that urgently need to be assessed for degree of threat status.

Noticeably absent from the species outcomes are reptiles, freshwater fish and nearly all the invertebrates. None of the reptiles or fish within this hotspot is currently on the IUCN Red List. This is a result of either (1) a lack of information on these species or simply (2) because nobody has yet made the required “assessment” for possible inclusion in the Red List. Among invertebrates, information was only available for gastropods. It is expected that many more invertebrate species (as well as plants and reptiles) will prove to be threatened once they are assessed using updated IUCN criteria. A list of potentially threatened dragonflies has also been compiled by Viola Clausnitzer of the University of Marburg, Germany.

Table 2 lists the 24 Critically Endangered species in this hotspot (five mammals, three birds, four amphibians, three gastropods and nine plants). Of these 24 species, 12 occur in Tanzania, seven in Kenya and five in both Kenya and Tanzania. If extinctions are to be avoided, the full set of these Critically Endangered species, together with the sites they depend on, must be ranked high among any priorities for conservation action. For example, 17 of the 24 Critically Endangered species in this hotspot are each restricted to a single site. This result is important for the site prioritization process.

There are other species in the hotspot, currently listed as Endangered, which should be re-assessed for threat status. These include the Zanzibar red colobus monkey (*Procolobus kirkii*) (less than 2,000, mostly in Jozani Forest Reserve) and Aders’ duiker (probably less than 800 in a very restricted range with a 50 percent decline within last 15-20 years) (Struhsaker pers. comm.). Two other Endangered species—African Elephant and African Wild Dog—were identified as “landscape species,” indicating that they will likely not be conserved through a site-based approach alone.

Site Outcomes

The definition of site outcomes produced 160 Key Biodiversity Areas for the Eastern Arc Mountains and Coastal Forests hotspot (Appendix 2, Table 3). Among these, 41 sites are important for mammals, 29 for birds, 19 for amphibians, four for gastropods and 140 for plants. In the hotspot, 26 sites are home to 10 or more globally threatened species, 53 sites have two to

nine globally threatened species and 73 are important for at least one globally threatened species among the considered taxonomic groups. Nine more sites are included in Appendix 2, not because they host globally threatened species, but because they are IBAs with restricted-range bird species and globally significant congregations of birds. The full description of site outcomes and the species that occur in them is presented in Appendix 3. Figure 3 shows the location and distribution of the site outcomes in Kenya and Tanzania. The sites were overlaid with other existing geographical information including national boundaries, protected areas, rivers and topography to show their distribution in relation to other features.

Further analysis of the composition of the site outcomes (Appendix 2 and 3) indicates that 51 of the 160 sites are IBAs (Bennun & Njoroge 1999; Baker & Baker 2002). Some sites have high numbers of threatened species. These sites include: East Usambara Mountains, Uluguru Mountains, Udzungwa Mountains National Park, West Usambara Mountains, Udzungwa Mountains, Shimba Hills, Lindi District Coastal Forests, Nguru Mountains, Taita Hills, South Pare Mountains and Kisarawe District Coastal Forests. When the sites are ranked according to the number of threatened species that they contain, 23 of the top 25 sites are IBAs. This suggests that the IBA process succeeds in identifying the key sites for conserving species of global concern, at least on a broad scale.

Table 2. Critically Endangered species and the sites where they occur in the Eastern Arc Mountains and Coastal Forests hotspot

| Taxonomic Group | Scientific Name | Country | Number of Sites | Name of Site(s) |
|---------------------------|---------------------------------------|-----------------|--|--|
| Mammals | <i>Crocidura desperata</i> | Tanzania | 1 | Udzungwa Mountains |
| | <i>Crocidura telfordi</i> | Tanzania | 2 | Udzungwa Mountains, Uluguru Mountains |
| | <i>Diceros bicornis</i> | Tanzania, | 2 | Selous Game Reserve Udzungwa Mountains |
| | <i>Procolobus rufomitratu</i> s | Kenya | 1 | Lower Tana River forests |
| | <i>Pteropus voeltzkowi</i> | Tanzania | 1 | Pemba Island |
| Birds | <i>Apalis fuscicularis</i> | Kenya | 1 | Taita Hills forest |
| | <i>Orthotomus moreaui</i> | Tanzania | 1 | East Usambara Mountains |
| | <i>Turdus helleri</i> | Kenya | 1 | Taita Hills forest |
| Amphibians | <i>Churamiti maridadi</i> | Tanzania | 1 | Ukaguru Mountains |
| | <i>Nectophrynoides asperginis</i> | Tanzania | 1 | Udzungwa Mountains |
| | <i>Nectophrynoides wendyae</i> | Tanzania | 1 | Udzungwa Mountains |
| | <i>Parhoplophryne usambarica</i> | Tanzania | 1 | East Usambara Mountains |
| Gastropods | <i>Gulella taitensis</i> | Kenya | 1 | Taita Hills forest |
| | <i>Thapsia buraensis</i> | Kenya | 1 | Taita Hills forest |
| | <i>Zingis radiolata</i> | Kenya | 1 | Taita Hills forest |
| Plants | <i>Calodendrum eickii</i> | Tanzania | 1 | West Usambara Mountains |
| | <i>Combretum tenuipetiolatum</i> | Tanzania, Kenya | 3 | Kaya Rabai, Nzovuni River, West Usambara Mountains |
| | <i>Cynometra filifera</i> | Tanzania | 2 | Lindi, Lindi creek |
| | <i>Cynometra gillmanii</i> | Tanzania | 1 | Kilwa District coastal forests |
| | <i>Euphorbia tanaensis</i> | Kenya | 1 | Witu forest reserve |
| | <i>Ficus faulkneriana</i> | Tanzania, Kenya | 7 | Dzirihini, East Usambara Mountains, Msambweni, near Buda Forest Reserve, Pangani (Mwera), Pangani District coastal forests, Shimba Hills |
| | <i>Karomia gigas</i> | Tanzania, Kenya | 2 | Kaya Mwarakaya, Kilwa District coastal forests |
| | <i>Platypteroarpus tanganyikensis</i> | Tanzania | 1 | West Usambara Mountains |
| <i>Sorindeia calantha</i> | Tanzania, Kenya | 4 | Mount Kasigau, Nguru Mountains, South Pare Mountains, Udzungwa Mountains National Park | |

Table 3. Numbers of sites with Critically Endangered, Endangered and Vulnerable species in five major taxonomic groups in the Eastern Arc Mountains and Coastal Forests hotspot

| Taxonomic Group | Number of Sites* | | Total |
|-----------------|------------------|----------|------------|
| | Kenya | Tanzania | Sites |
| Mammals | 14 | 26 | 40 |
| Birds | 10 | 19 | 29 |
| Amphibians | 2 | 17 | 19 |
| Gastropods | 1 | 3 | 4 |
| Plants | 52 | 87 | 140 |

*The total number of site outcomes is 160.

An alternative to a simple threatened species richness ranking is to examine the site data for complementarity and to determine: 1) the minimum set of sites that contain all globally threatened species at least once; and 2) those sites that contain a species that occurs nowhere else (i.e. are irreplaceable, even if they only have one species). A preliminary analysis (Rodrigues and Langhammer pers. comm.) indicates that the minimum set consists of 35 sites and that, of these, 26 are irreplaceable. If the sites are ranked by species richness, the top 33 sites contain 97 percent of all threatened species (although it takes 129 sites to capture 100 percent). This means that, except for a few species, the selection of sites by a simple threatened species richness ranking is not a bad prioritization strategy compared with the complementarity set. Among the top 20 sites by species richness, only two (Bagomoya District Forests and North Pare Mountains) fail to make it into the complementarity set and only three are not irreplaceable (Bagomoya District Forests, North Pare Mountains and Mafia Island).

It must be understood, however, that neither strategy should be applied exclusively. There are many reasons for this. First, the survival of a threatened species is likely to require conservation interventions at more than one site. For example, the best known population of Clarke's weaver is in Arabuko-Sokoke Forest, but it doesn't breed there. Second, a species found in several sites may only have viable populations in one or two of them and these critical sites may not be captured by complementarity, or rank highly for species richness. Third, variation in the raw data (numbers of threatened species per site) can be partly accounted for by large site differences in area (over five orders of magnitude: Appendix 3) and/or research investment. Fourth, the outcome analysis is based on a small number of taxonomic groups and in some of these groups (especially the plants) the Red Lists are in serious need of re-assessment. Fifth, prioritizing sites must take into account not only their relative biological importance, but also the degrees of threat to them and the current investments in them.

Figure 3. Location and distribution of site outcomes for the Eastern Arc Mountains and Coastal Forests hotspot

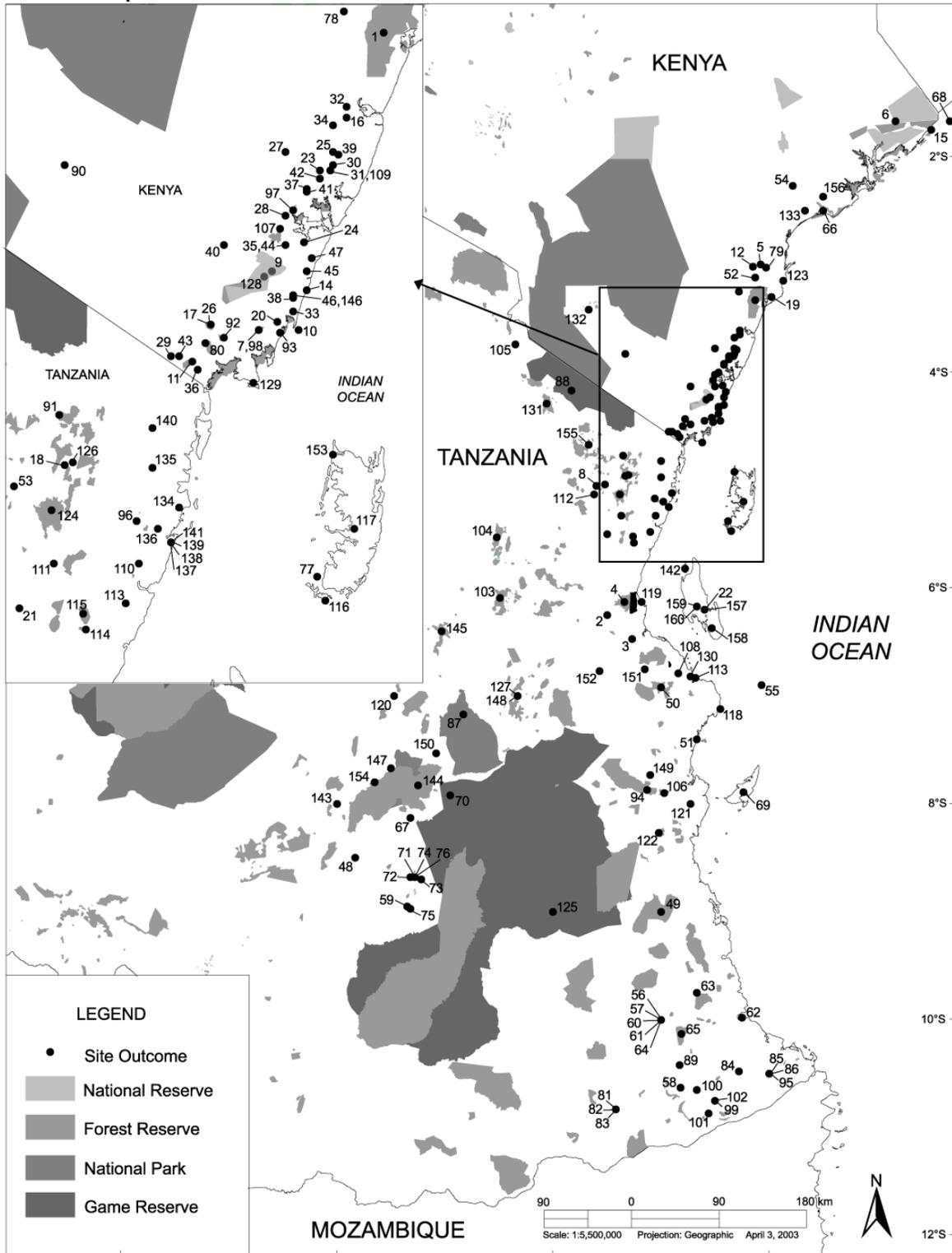


Figure 1 (continued)*

| | | | | | |
|--------|-----------------------------------|-----|---------------------------------------|-----|------------------------------------|
| Site # | Site Name | 55 | Latham Island | 109 | Pangani |
| 1 | Arabuko-Sokoke forest | 56 | Lindi | 110 | Pangani (Bushiri) |
| 2 | Bagamoyo | 57 | Lindi (Kengedi) | 111 | Pangani (Hale-Makinjumbe) |
| 3 | Bagamoyo (Kikoka forest reserve) | 58 | Lindi (Mkindani) | 112 | Pangani (Mauri) |
| 4 | Bagamoyo District coastal forests | 59 | Lindi (Ngongo) | 113 | Pangani (Mwera) |
| 5 | Baricho near Arabuko Sokoke | 60 | Lindi (Nondora) | 114 | Pangani Dam |
| 6 | Boni forest | 61 | Lindi (Nyangao River) | 115 | Pangani District coastal forests |
| 7 | Buda forest reserve | 62 | Lindi (Ras Rungi) | 116 | Panza Island |
| 8 | Bungu | 63 | Lindi (Tendaguru) | 117 | Pemba Island |
| 9 | Cha Simba | 64 | Lindi creek | 118 | Ras Kituani |
| 10 | Chale Island | 65 | Lindi District coastal forests | 119 | River Wami |
| 11 | Chuna forest | 66 | Lower Tana River forests | 120 | Rubeho Mountains |
| 12 | Dakatcha woodland | 67 | Lukoga forest reserve | 121 | Rufiji Delta |
| 13 | Dar es salaam coast | 68 | Lunghi forest | 122 | Rufiji District coastal forests |
| 14 | Diani forest | 69 | Mafia Island | 123 | Sabaki River Mouth |
| 15 | Dodori forest | 70 | Magombera forest reserve | 124 | Sangerawe |
| 16 | Dzitzoni | 71 | Mahenge | 125 | Selous game reserve |
| 17 | Dzombo hill forest | 72 | Mahenge (Kwiro forest) | 126 | Semdoe |
| 18 | East Usambara mountains | 73 | Mahenge (Liondo) | 127 | Shikurufumi forest reserve |
| 19 | Gede Ruins National Monument | 74 | Mahenge (Lipindi) | 128 | Shimba Hills |
| 20 | Gongoni forest reserve | 75 | Mahenge (Sali) | 129 | Shimoni forests |
| 21 | Handeni District coastal forests | 76 | Mahenge Scarp forest reserve | 130 | Sinza River-near University of Dar |
| 22 | Jozani forest reserve, Zanzibar | 77 | Makongwe Island | 131 | South Pare mountains |
| 23 | Kambe Rocks | 78 | Mangea Hill | 132 | Taita Hills forests |
| 24 | Kaya Bombo | 79 | Marafa | 133 | Tana River Delta |
| 25 | Kaya Chonyi | 80 | Marenji forest | | |
| 26 | Kaya Dzombo | 81 | Masasi | 134 | Tanga (Duga) |
| 27 | Kaya Fungo | 82 | Masasi (Nyengedi) | 135 | Tanga (Gombero forest reserve) |
| 28 | Kaya Gandini | 83 | Masasi East | 136 | Tanga (Morongo) |
| 29 | Kaya Gonja | 84 | Mikindani (Mnima) | 137 | Tanga (Nyamaku) |
| 30 | Kaya Jibana | 85 | Mikindani (Mtwara inland) | 138 | Tanga (Pangani) |
| 31 | Kaya Kambe | 86 | Mikindani District (Mtwara-Mikindani) | 139 | Tanga (Sigi River) |
| 32 | Kaya Kauma | 87 | Mikumi National Park | 140 | Tanga North-Kibo Salt Pans |
| 33 | Kaya Kinondo | 88 | Mkomazi game reserve | 141 | Tanga South |
| 34 | Kaya Kivara | 89 | Mnazi Bay | 142 | Tumbatu Island |
| 35 | Kaya Lunguma | 90 | Mount Kasigau | 143 | Udzungwa mountains |
| 36 | Kaya Miungoni | 91 | Mpanga village forest reserve | 144 | Udzungwa National Park |
| 37 | Kaya Mtswakara | 92 | Mrima Hill forest | 145 | Ukaguru mountains |
| 38 | Kaya Muhaka | 93 | Msambweni | 146 | Ukunda |
| 39 | Kaya Mwarakaya | 94 | Mtanza forest reserve | 147 | Ukwama forest reserve |
| 40 | Kaya Puma | 95 | Mtwara | 148 | Uluguru mountains |
| 41 | Kaya Rabai | 96 | Muheza District coastal forests | 149 | Utete (Kibiti) |
| 42 | Kaya Ribe | 97 | Mwache forest reserve | 150 | Uvidunda mountains |
| 43 | Kaya Sega | 98 | near Buda forest reserve | 151 | Uzaramo (Dar to Morogoro) |
| 44 | Kaya Teleza | 99 | Newala (Kitama) | 152 | Uzaramo (Msua) |
| 45 | Kaya Tiwi | 100 | Newala (Kitangari) | 153 | Verani South West |
| 46 | Kaya Ukunda | 101 | Newala (Mahuta) | 154 | Vigola |
| 47 | Kaya Waa | 102 | Newala District coastal forests | 155 | West Usambara mountains |
| 48 | Kilombero valley | | | 156 | Witu forest reserve |
| 49 | Kilwa District coastal forests | 103 | Nguru mountains | 157 | Zanzibar (Kituani) |
| 50 | Kisarawe District coastal forests | 104 | Nguu mountains | 158 | Zanzibar (Muyuni) |
| 51 | Kisiju | 105 | North Pare Mountains | 159 | Zanzibar Island-East Coast |
| 52 | Kisimani wa Ngoa | 106 | Nyumburuni forest reserve | 160 | Zanzibar Island-South Coast |
| 53 | Korogwe (Kwashemshi Sisal Estate) | 107 | Nzovuni River | | |
| 54 | Lango ya simba | 108 | Pande and Dodwe coastal forests | | |

* Please refer to Appendix 3 for more information on each site.

With this background, there is no present justification for the exclusion of any of the 160 site outcomes from possible CEPF funding. Conversely, it would be a waste of the available data not to recognize that some particularly important sites should be targeted. A mixed strategy for site prioritization is therefore recommended.

CEPF investments cannot achieve all of the conservation outcomes identified in this profile, but, by defining these outcomes on the basis of globally threatened species, CEPF can ensure that all its projects in this hotspot will be targeted toward globally significant biodiversity conservation. The outcome definition also means that CEPF and other donors, as well as conservation organizations in general, can track the success of their investments and interventions, by measuring extinctions avoided and sites protected. This is particularly important for a global program like CEPF, which has a responsibility to use resources in ways that achieve biodiversity conservation most effectively at a global scale.

SOCIOECONOMIC FEATURES

Humans evolved in Africa and have inhabited its landscapes for hundreds of thousands of years. Their power to change these landscapes has grown through the successive discoveries of fire, agriculture, technology, trade and fossil fuels. The use of fire in East Africa dates back at least 60,000 years and the ability to smelt iron at least 2,000 years. Charcoal layers and earthenware have been discovered in the soils under good canopy forest in East Usambaras (Rodgers 1998). But it has been the ability of humans to tap the energy locked up in fossil fuels that has most transformed the planet. The population growth that this has enabled means that nearly all conservation problems today involve people and their needs and that socioeconomic considerations must be part of the solutions.

Institutional Framework

In both Tanzania and Kenya, the institutional frameworks that structure the interactions of people and forests are largely an inheritance from the colonial governments. Both countries have a Civil Service structure that includes ministries, permanent secretaries and national institutions (divisions, departments) dealing with different sectors of society and the economy. In Tanzania, the Ministry of Natural Resources and Tourism (MNRT) oversees four divisions (Wildlife (WD), Forest and Beekeeping (FBD), Fisheries and Tourism) and supervises five parastatal wildlife organizations including Tanzania National Parks Authority (TANAPA), Tanzania Forestry Research Institute (TAFORI) and the Tanzania Wildlife Research Institute (TAWIRI). An important function of TAWIRI is to issue research permits for all ecological and biological fieldwork in the country. In Zanzibar, the Zanzibar Department of Commercial Crops, Fruits and Forestry (DCCFF), under the Ministry of Agriculture, Lands and Natural Resources, administers forest resources and the area proposed to become the Jozani-Chwaka Bay National Park. Research permits to work in Zanzibar and Pemba have to go through the Zanzibar authorities.

In Kenya the forests are mostly under the Forest Department, within the Ministry of Environment and Natural Resources. Other forest stakeholder institutions include the Kenya Wildlife Service (KWS), Kenya Forestry Research Institute (KEFRI) and the National Museums of Kenya (NMK). In addition there are a large number of NGOs with interests in environment and conservation in the hotspot.

Government Institutional Framework for Forestry in Tanzania

In Tanzania, the FBD is accountable to the permanent secretary in the Ministry of Natural Resources and Tourism (MNRT) and is responsible for the protection of forests and the productive use of forest lands to meet demands for wood products. Until relatively recently, protection focused on watersheds rather than biodiversity and production involved harvesting of indigenous hardwoods and the establishment of industrial plantations of pine and cypress. Now there is official recognition of the biodiversity values of the indigenous forest reserves within FBD and the harvesting of indigenous hardwoods has been banned in conservation areas, including the Eastern Arc and Coastal Forests. The Government Catchment Forests (mainly in the Uluguru and East Usambara Mountains) and the nature reserves have remained under government control, administered by an FBD staff of eight forest officers and 57 assistant forest officers (GEF 2002). Because of a national policy of decentralization, most of the remaining forests are managed at the district level under a variety of regimes. There are at least six categories of management status: Forest Reserves, Local Authority Forest Reserves, Monuments, Village Forest Reserves, Private Forest Reserves and Public Lands/Public Forest (WWF-EARPO 2002b).

There are three additional management categories in the Eastern Arc Mountains, which are outside the FBD/District level framework for forests: National Parks, Game Reserves and Nature Reserves. There are two national parks (Udzungwa Mountains National Park and Mikumi National Park) managed by the Tanzanian National Park Authority based in Arusha. There are two game reserves (Selous and Mkomazi) and one nature reserve (Amani) managed by the Wildlife Division and the Tanzanian Wildlife Research Institute (TAWIRI). Nature Reserves enjoy a higher level of protection than Forest Reserves.

A number of problems have been identified with the administrative framework of FBD, some of which are exacerbated by the decentralized structure for forest management in Tanzania (GEF 2002). These include:

- emphasis on regulation and enforcement rather than on service delivery;
- weak oversight on forest management, poor accountability and supervision.
- ineffective fiscal procedures in terms of meeting objectives and delivering services;
- poor revenue collection;
- no institutional mechanisms for biodiversity conservation;
- no scope for the public financing of biodiversity conservation;
- no institutional recognition of the needs of local communities; and
- diverse and complex tenure systems.

These and other institutional problems are being addressed by major reforms in the Tanzanian forest sector. A proposed \$62.2 million dollar project (Forest Conservation and Management Project) funded by GEF, World Bank and the IDA would implement the reforms. A major output of this project would be the establishment of the Tanzania Forest Service (TFS), which would be responsible for the implementation of the National Forest Programme (see below).

Government Institutional Framework for Forestry in Kenya

In Kenya, there is a great deal of overlap in the institutional planning, implementation, management and monitoring of environmental policies and legislation. In 1992, the National

Biodiversity Unit included no less than 38 government ministries, departments and parastatal institutions dealing with biodiversity issues. There are four government institutions that are directly involved in forest management and conservation: the Forest Department, KWS, the Kenya Forestry Research Institute and the National Museums of Kenya. At a few sites, all four are represented in multi-institutional management teams (e.g. the Arabuko-Sokoke Forest Management Team at Arabuko-Sokoke Forest).

The Forest Department has the major mandate. It falls under the Ministry of Environment and Natural Resources (MENR) and is responsible for:

- formulation of policies for management and conservation of forests;
- preparation and implementation of management plans;
- management and protection of Kenya's gazetted forests;
- establishment and management of forest plantations;
- promotion of on-farm forestry; and
- promotion of environmental awareness.

The Forest Department operates some 160 forest stations, reporting to 65 District Forest Offices which in turn report to eight Provincial Forest Offices. In the past the department has concentrated on industrial forestry, but is now giving greater attention to afforestation on smallholder farm land and the conservation of natural forests. The department has many of the same problems as the FBD in Tanzania, although its administration does not suffer from the fragmentary effects of decentralization. Resources are limited and staffing levels are inadequate for keeping the department fully operational. A high percentage of the department's total budget goes to salaries and allowances. There are plans for transforming the department into a new body called the Kenya Forest Service. These plans are less advanced than those in Tanzania but they have the same goals.

The KWS is a parastatal and is responsible for the protection of the nation's wildlife. On December 5th 1991, the directors of KWS and the Forest Department signed a memorandum of understanding (MoU), covering the management of selected indigenous forest reserves. Within this MoU, the major responsibilities of KWS are the management of tourism, problem animals and wildlife protection.

The National Museums of Kenya (NMK) was subsequently included in the MoU under an addendum that recognized its role in cataloguing, researching and conserving forest biodiversity. NMK has also been responsible for the surveying and gazettement of sacred coastal forests as national monuments, through the Coastal Forest Conservation Unit (CFCU).

The Kenya Forestry Research Institute (KEFRI) was established in 1986. Its mission is to enhance the social and economic welfare of Kenyans through user-oriented research for sustainable development of forests and allied natural resources. In 2002, it had 94 university graduate research scientists at PhD, MSc and BSc level, in 17 research centres in various ecological zones of Kenya. The Gede Regional Research Centre is responsible for research in the coastal forests.

Nongovernmental Organizations

East Africa has a plethora of environmental and conservation NGOs, many of which have been or are involved in forestry-related activities in the hotspot. It is impossible to do much more than list them in the present context and to highlight a few issues of particular importance. Their interventions have complemented on-going government conservation and development initiatives in the hotspot and have greatly assisted the Forest Department and FBD during periods when donor funding was difficult to get for government departments.

NGOs can provide significant complementarity to government institutions:

- They are able to speak out without adhering to governmental policies and to lobby the government on environmental policies and decisions.
- They have demonstrated accountability to donors because they need to be accountable to survive.
- They can quickly raise and access funding, take decisions and act in response to emergencies or changing circumstances.
- They are often closer to the grassroots and have a stronger relationship with communities.
- Their members are often motivated by strong convictions and are therefore highly committed.
- They are increasingly part of a supportive international network, which can quickly share knowledge and experience on environmental issues and which has a global voice.

They have one fundamental disadvantage: they do not have the national mandates to manage forests and wildlife areas and while they can contribute to park, forest or wildlife management they do not have ultimate authority. This means that their ability to solve problems on the ground in forest reserves or national parks is limited. NGO project management is often challenging and it requires technical, managerial, political and interpersonal skills. High turnover in project managers is not uncommon.

International environmental and conservation NGOs working in East Africa include African Wildlife Foundation (AWF), African Conservation Centre (ACC), BirdLife International, CARE International and CARE Tanzania, Environmental Liaison Centre International, Friends of Conservation (FoC), the IUCN East Africa Regional Office (IUCN-EARO), TRAFFIC and WWF-EARPO. IUCN, WWF, TRAFFIC, BirdLife International and CARE International are global organizations with regional and national offices in Dar es Salaam and/or Nairobi. AWF, ACC and FoC operate throughout Africa, but are linked with parent institutions abroad. All of these well-known organizations have carried out significant activities within the hotspot. WWF-EARPO is spearheading the Eastern Africa Coastal Forest Programme in Kenya, Tanzania and Mozambique.

The East African Wild Life Society (EAWLS) and the East Africa Natural History Society (EANHS) operate only in East Africa, although their membership is international. The EANHS is composed of two partner NGOs: Nature Kenya (NK) and Nature Uganda (NU), both of which are the national partners of BirdLife International in Kenya and Uganda. NK was one of the implementers for BirdLife's IBA project and it published the IBA book for Kenya (Bennun & Njoroge 1999). It has been particularly active in Arabuko-Sokoke Forest. The EAWLS is host to

the Kenya Forests Working Group (KFWG), which is a coalition of NGOs and of anyone interested in forests and which has been an extremely important focus for civil society action against government policies that have threatened Kenyan forests. The EAWLS has also been very active in the Taita Hills.

National NGOs in Kenya include A Rocha Kenya (ARK) in Watamu and the Forest Action Network (FAN) in Nairobi. In Tanzania, national NGOs include TFCG; Frontier-Tanzania; Journalist Environmental Association of Tanzania (JET); the Lawyers Environmental Association of Tanzania (LEAT); and Wildlife Conservation Society of Tanzania (WCST). FAN has been particularly active on policy matters in Kenya and in stimulating networking on Participatory Forest Management. ARK is a Christian conservation organization that is active in bird monitoring and conservation education on the north coast of Kenya. Frontier-Tanzania has been responsible for much of the scientific research in the Eastern Arc Mountains, working together with the University of Dar es Salaam and visiting scientists. The TFCG has a considerable track record of conservation initiatives on the Tanzanian side of the hotspot, particularly in working with local communities and in participatory forest management. The WCST is the BirdLife national partner for Tanzania and has produced the Tanzanian IBA book (Baker & Baker, 2002). LEAT provides important legal support on conservation issues in Tanzania, while JET is invaluable in awareness raising and advocacy.

Among the community-based organizations are the Arabuko-Sokoke Forest-Adjacent Dwellers Association; the Arabuko-Sokoke Forest Guides Association; and the Shimba Hills Support Group. In Tanzania these organizations include the Korogwe Development Environmental Protection Association; Morogoro Environmental Conservation Action Group; Sigi River Conservation Society - Tanga and Usambara Environment Conservation Organization - Lushoto. Many of these are relatively new and need testing and capacity building, but they have the virtues of being on-site and being rooted mostly in the local communities, where support is badly needed.

Policy and Legislation

Both Kenya and Tanzania have recently updated, or are in the process of updating, their policies and legislation on forests and the environment. In both countries, this is opening up new opportunities for conservation interventions.

Kenya

Policy

An updated Kenya Forest Policy has been developed and is in the process of being officially approved. Kenya's Forest Policy has evolved from the Kenya Forestry Master Plan (Forest Department 1994), which was a joint venture of the Ministry of Environment and Natural Resources (MENR) and FINNIDA. The policy contains seven major objectives:

1. Increase the forest and tree cover of the country, in order to ensure an increasing supply of forest products and services, for meeting the basic needs of the present and future generations and for enhancing the role of forestry in socioeconomic development.
2. Conserve the remaining natural habitats and the wildlife therein, rehabilitate them and conserve their biodiversity.
3. Contribute to sustainable agriculture by conserving the soil and water resources by tree planting and appropriate forest management.

4. Support the government policy of alleviating poverty and promoting rural development, by income based on forest and tree resources, by providing employment and by promoting equity and participation by local communities.
5. Fulfil the agreed national obligations under international environmental and other forestry related conventions and principles.
6. Manage the forest resource, assigned for productive use, efficiently for the maximum sustainable benefit, taking into account all direct and indirect economic and environmental impacts and including a review of the ways in which forest and trees are valued, in order to facilitate management decisions.
7. Recognize and maximize the benefits of a viable and efficient forest industry for the national economy and development.

The proposed forest policy on indigenous forest states: “All gazetted indigenous forests; woodlands, bushlands and mangroves should remain reserved. They will be managed by state-approved agencies which will allocate them primarily for: (1) regulated multi-purpose forestry, using zoning concepts which do not endanger the conservation functions of the forest; (2) preservation of biodiversity; (3) conservation of soil and water; and (4) providing products and services mainly locally on a subsistence basis, by community participation where appropriate.”

In the general management principles, the policy states: “The rationale of forest management depends on local conditions set by climate, soil and tree species and on the actual forest related needs of the people, which incorporate both social and cultural aspects. In all circumstances, the forest resources will be managed in a sustainable manner with due regard to environmental conservation. Reliable information on forest resources and their utilisation should be ensured. This information should include forest-health monitoring.”

Up to the end of 2002, the new forest policy had not been implemented on the ground. In 2001 the Government gazetted the excision of 67,185 ha of forest reserves, mainly for settlement, further decreasing the country’s forest cover. There was strong protest from civil society against these excisions. Two court cases were brought against the government’s action and these cases are ongoing. The replanting of harvested plantations, which was also recommended under the new policy, had fallen years behind, but was revived in 2002. On the positive side, joint management of certain forests with communities and environmental NGOs was undertaken on a pilot basis. Since the new government took office at the end of 2002, official statements have indicated that the new forest policy and legislation will soon be approved and put into effect and that the issue of the 2001 excisions will be revisited.

Legislation

The Forestry Department operates through the Forest Act Cap 385 of the Laws of Kenya. However the act is outdated and does not address the current issues, realities and expectations. To address this, a new Forest Bill 2000 was prepared. The bill has gone through all stages of development, but is awaiting tabling in Parliament to become law. The bill is much more comprehensive than the act it will replace and covers issues of community participation and multiple stakeholders in forestry. The bill proposes the establishment of a corporate body called the Kenya Forest Service. Among its responsibilities, this body will:

- (a) formulate policies for the management, conservation and utilization of all types of forest;

- (b) manage the use and conservation of all indigenous state forests;
- (c) monitor and enforce compliance with the provisions of this act in respect of all forests in Kenya; and
- (d) advise the government on all matters pertaining to the establishment, development, conservation and utilization of forests in Kenya.

In addition to the Forest Act, there are about 77 statutes that deal with environmental legislation. Until 1999, there was no environmental legislation framework. Parliament passed the Environmental Management and Coordination Bill, 1999, into law on 15 December 1999. The Environmental Management and Coordination Act (EMCA) came into force on 14th January 2000 and takes priority over all pre-existing legislation. The EMCA establishes national environmental principles and provides guidance and coherence to good environmental management. It also deals with cross-sectional issues such as overall environmental policy formulation, environmental planning, protection and conservation of the environment, environmental impact assessment, environmental audit and monitoring, environmental quality standards, environmental protection orders, institutional coordination and conflict resolution. Owing to financial and bureaucratic constraints, the act has taken several years to become operational. Once fully operational, the act will have impacts on other legislation dealing with environment such as land tenure and land use legislation, forestry legislation, wildlife legislation, water laws and agriculture legislation. The act provides a good avenue for environmental protection and the establishment of an operational framework under the National Environment Management Authority (NEMA).

Tanzania

Policy

The Forest Policy of Tanzania (United Republic of Tanzania 1998) gives the responsibility of managing forest resources to the forest sector in collaboration with key stakeholders. Among the main features of the policy are participatory forest management, decentralization and privatization. These are radical divergences from the earlier policy and legislation, which restricted management to the state authorities and had a different approach to preservation and controlled utilization. These reforms are a result of emerging macroeconomic policies and local and global environmental management trends. They also recognize the rights of the communities and roles of the private sector in managing these resources. The overall goal and objectives are presented in Box 1.

The Forest Policy is implemented through the National Forest Programme (Ministry of Natural Resources and Tourism, 2001). The key challenges for this program are ensuring sustainable utilization of forest produce and meeting the national demand for forest produce such as wood fuel, sawn timber, non-timber forest products and other forest produce. The dependence on forest products by the majority of the rural communities for their livelihoods enables forests to contribute to poverty reduction.

Box 1 National Forest Policy goal and objectives

The overall goal:

“To enhance the contribution of the forest sector to the sustainable development of Tanzania and the conservation and management of her natural resources for the benefit of present and future generations”.

The objectives are:

- ensured sustainable supply of forest products and services by maintaining sufficient forest area under effective management;
- increased employment and foreign exchange earnings through sustainable forest-based industrial development and trade;
- ensured ecosystem stability through conservation of forest biodiversity, water catchments and soil fertility; and
- enhanced national capacity to manage and develop the forest sector in collaboration with other stakeholders.

The program aims to reduce poverty through: (1) increased employment in forest industry and related activities by 25 percent by 2010; and (2) increased income generation from forest resources and services to local communities by 20 percent by 2010. The anticipated major benefits resulting from increased community and private sector participation in the management and sustainable utilization of forests are:

- better recognition of the needs and aspirations of local communities as stakeholders and joint forest owners in natural and plantation forests where land pressure is an issue (e.g., Kilimanjaro, Tanga, Morogoro and Iringa Districts);
- poverty reduction through increased income generation in the most deprived areas (i.e., Lindi, Kigoma and Coast Regions); and
- greater certainty of tenure and supply of forest products and services to encourage investment in forestry and forest industries.

Legislation

Existing legislation pertaining to forest management in Tanzania is the Forest Ordinance CAP 389 of 1957, which was operational from 1959. Basically, this ordinance focuses on restrictive use and, more so, on preservation of forests. The ordinance, to a large extent, has excluded local communities from involvement in management of these resources and recognises them only as beneficiaries. This law governs conservation and management of forests and forest produce. This ordinance, like many others developed during the colonial era, focused on preservation of natural forests. This classical conservation was based on the belief that proper management could be implemented through protection from human interference and exclusion from human use. This exclusion did not, of course, apply to the Government Forestry and Bee-keeping Division and a great deal of natural forest destruction and replacement by plantations, continued under licence after independence.

The main focus in the ordinance is gazettement of forests as reserves. For instance, Part II, Sections 5 to 9 of the ordinance provide for the declaration of central government forest reserves and restrictions over the use of and/or occupation of such areas. The ordinance further provides for the declaration of local authority forest reserves. The requirements for such declarations include: (1) recording of rights preceding such declarations; (2) restrictions on the creation of new rights subsequent to declaration, in respect of unreserved land, of “reserved trees”; and (3)

the granting of licenses for any of the purposes of the ordinance. There was clearly great inconsistency between the ordinance and the new National Forest Policy. Taking account of the weaknesses in the existing ordinance, a Forest Bill, which revised the outdated Forests Ordinance CAP 389 of 1957, was developed to correspond with the National Forest Policy. The bill sought to address the inadequacies of the Forests Ordinance and provided a legal framework to enable the new National Forest Policy to be effectively implemented. The revised Forest Act bestows management rights under respective instruments, including:

- development of collaborative forest management arrangements and management plans for National and Local Authority, Community, Village and Private Forests; and
- development of by-laws and other local instruments to facilitate forest development at the local level.

The Forest Act (approved by the Parliament in April 2002) recognizes such initiatives and the roles of different stakeholders are acknowledged and supported, including allocation of management responsibilities, rights and duties. The act also addresses compliance with international initiatives toward sustainable forest management, including support for bioprospecting that benefits indigenous communities. Development of the Forest Act also recognizes related legislation, which include the Land Act (United Republic of Tanzania 1999a), Village Land Act (United Republic of Tanzania 1999b).

National Forest Programme

In January 2000, the Forestry and Beekeeping Division began developing a National Forest Programme (NFP). The objective of the NFP is to: (1) enhance the contribution of the forest and beekeeping sector to sustainable development of Tanzania; and (2) to enhance the conservation of natural resources for the benefit of present and future generations. The NFP was formulated as an instrument for implementation of the National Forest Policy (United Republic of Tanzania 1998). The NFP is also meant to improve the design and implementation of forest management interventions. This includes streamlining financing in the sector and fostering implementation of international processes towards Sustainable Forest Management (SFM).

The formulation of the NFP included identification of issues through reviews and consultations at national and local levels, their prioritization based on scope, resources and capacity requirements for their implementation. Strategies for implementation were identified and development programmes designed.

In May 2001, the draft NFP was submitted to the government for endorsement. The NFP has four development programmes, namely:

- (a) Forest Resources Conservation and Management Programme that focuses on promoting stakeholders' participation in the management of natural and plantation forests, ecosystems/biodiversity conservation and sustainable utilization of forest resources.
- (b) Institutions and Human Resources Development Programme that addresses strengthening institutional set up, coordination of forest management, establishing sustainable forest sector funding, improvement in research, extension services and capacity building.
- (c) Legal and Regulatory Framework Programme that focuses on development of regulatory frameworks that include Forest Act, rules, regulations and guidelines to facilitate, among other things, operations of the private sector and participatory management.

(d) Forestry Based Industries and Products Programme that attempts to enhance forest industry development, through promoting private sector investment and improving productivity and efficiency.

Program formulation was completed in June 2001. Implementation arrangements are now being developed through partnerships with the main stakeholders, including local communities, the private sector and local governments.

Economic Situation

National Statistics

Both Kenya and Tanzania are grouped among the poorest nations in the world. Three of the major economic indicators from 2001 for these two countries deserve particular attention: the low per capita incomes (\$271 in Kenya, \$260 in Tanzania); the percentages of the populations earning less than one dollar a day (43 percent in Kenya, 50 percent in Tanzania) and; the economic growth rates (1.2 percent in Kenya, 5.6 percent in Tanzania). The post-independence histories of the economies in these two countries have been quite different.

After independence, Kenya built up a strong economic lead over its neighbours in Eastern Africa through the encouragement of market-oriented policies, smallholder agricultural production, public investment, tourism and incentives for private industrial investment. Over a 10-year period from 1963-1973, Gross Domestic Product (GDP) grew by an average of 6.6 percent a year (US State Department Country Reports, 2002a). By 1997 it had dropped to 2.3 percent, then to 1.8 percent in 1999 and became negative (0.4 percent) in 2000 (USAID 2000). A variety of factors were responsible for the long decline. These included unfavourable terms of trade (increased oil prices, decreased tea and coffee prices), government invasion of the private sector, declining tourism, political uncertainties, corruption and sheer bad governance (leading to the suspension of bilateral and multilateral aid in 1991) (USAID 2000). Were it not for vigorous growth in the cut flower and horticultural export industries and the entrepreneurial skills of its people, Kenya would have been in a much worse situation by 2000. A new government was democratically elected at the end of 2002 and there are considerable expectations that the economy will improve.

Tanzania was a one-party state with a socialist mode of development from independence in 1961 until the mid-1980s. Despite a substantial influx of foreign aid, the economy did not prosper. Beginning in 1986, the government began to liberalize its control of the economy and to encourage participation in the private sector. In 1996, a three-year Enhanced Structural Adjustment Facility was agreed between the IMF and the Tanzanian Government. Over the next four years, economic growth averaged around 4 percent, rising to 4.9 percent in 2000 and to 5.6 percent in 2001 (USAID 2002). Economic growth is most evident in Dar es Salaam. Although the figures look good, Tanzania's economy is overwhelmingly donor-dependent, with the external debt at more than \$8 billion and debt servicing absorbing 40 percent of government expenditure (USAID 2002b).

Economic Activities on the Coast

The economic situation on the Kenyan and Tanzanian coasts has worsened during the last decade because of declines in the tourism, textiles and cashew nut industries. Coast tourism is going through particularly bad times, having suffered successive blows from health scares, gulf wars, competition with other tourist destinations (especially South Africa), ethnic clashes (in Kenya) and terrorist activities (both Kenya and Tanzania). Currently there is severe over-capacity in the hotel and tourism service industry. In June 2003, hotel staff in Kenya received reduced pay following the suspension of British Airways flights because of terrorist threats.

In the early 1990s, textile manufacturing was the leading industrial category in coastal Kenya in terms of the numbers of registered companies (24 out of 159: UNEP 1998). Several of these firms have since collapsed as a result of massive importation of cheap second hand clothing (*mitimbu*). The cashew nut industry, which used to be a significant contributor to rural livelihoods, has also suffered severely from competition with India and from internal problems. A cashew nut processing factory at Kilifi, on the north coast of Kenya, finally closed down in the late 1990s after years of problems. As a result of the declines in the tourism, textiles and cashew nut industries, many people have lost jobs and livelihoods, with significant effects to the local economy. Some of the strain has been borne by the forests, which play an important role in mitigating poverty. For example, more than 40 percent of household consumption in the Eastern Arc Mountains is forest-derived (GEF 2002).

Other industrial activities, many of them based on the coast because of maritime access to imports and exports, have been more robust. These include: cement, lime and quarrying; steel rolling mills and iron smelting; oil refining; manufacture of paints, plastics, rubber, chemical and metal products; wood processing (paper, pulp, board and timber); light processing for export of agricultural crops (coffee, groundnuts, cotton and sisal); and food and beverage industries. As elsewhere in the world there has been considerable growth in information technology-based services, although these have been constrained by poor landline facilities, high telephone charges and poor connectivity. There has also been increasing South African investment in the coastal economy, particularly in Tanzania.

Industries outside the major cities and towns are mostly based on mineral resources, especially sand, salt and limestone. Sand for building is mined in many localities along the coast, notably at Mazaras near Mombasa. Silica sand for glass manufacture was formerly mined in Arabuko-Sokoke Forest. (Ironically, the old sand quarries have since become a distinctive biodiversity site within the forest, especially for frogs and birds). Extensive salt works have been established at various sites (e.g. in Tanga District in Tanzania and at Ngomeni, Gongoni and Kurawa in Kenya), where they have been responsible for local destruction of mangrove forests. Limestone deposits are abundant along the coast. They form a 4-8 km band, parallel to the coast and about 70 m thick from across the Kenya-Tanzanian border north to Malindi. All along the coast, coral limestone is quarried as building blocks, but there is local variation in limestone quality, affecting its potential use. In Tiwi on the south Kenyan coast it is used for lime manufacture. In the Bamburi area just north of Mombasa, limestone is quarried on a large scale for cement manufacture by a subsidiary of La Farge, a French-based multinational. This site at Bamburi has become famous for its ecological restoration of quarries and La Farge has recently entered into a partnership agreement with WWF (WWF-EARPO 2002).

Other coastal mineral resources of minor local importance include barites, galena, iron ore, gypsum and rubies. However all of these may be dwarfed by the development of titanium mining in Kenya. There are vast titanium reserves in the Magarini Sands belt, which stretches from Shimoni in the south coast to Mambui in the north. Titanium has traditionally been used to make a white pigment for paint, plastic and paper, but is increasingly in demand for applications in the armaments and space industries. Since 1995, a Canadian-based company (Tiomin Resources Inc.) has been negotiating an agreement with the Kenyan government to mine titanium. Tiomin hopes to start its activities in the Kwale District and expects to generate around \$47 million in annual cash flow.

For the vast majority of people in the rural areas the major economic activity is subsistence farming, supplemented by tree crops and fishing. There are large sisal plantations (e.g. Vipingo in Kenya) and tea estates (e.g. in Iringa and Kagera in Tanzania), which provide limited and poorly paid jobs, but employment opportunities are few and the landless are in desperate straits. Cassava is the major agricultural crop, followed by maize, citrus, coconuts, mangoes and bananas (UNEP 1998). Cassava and maize are the staples everywhere and coconuts yield a variety of products from roofing material to palm wine. Other crops are locally important (e.g. coffee in Kwale District in Kenya). The fishing industry is constrained by the small area of the continental shelf next to the East African coast, the Southeast Monsoon (which restricts the activities of small canoes) and low productivity due to nutrient deficient currents (UNEP 1998). Food security is not a problem within and around the high rainfall areas in the Eastern Arc Mountains, but farmers to the north and north-west of Mombasa need emergency food supplies whenever the rainfall is poor. Complaints of declining soil fertility are widespread.

Other minor but widespread livelihoods are earned from artisan activities (wood carving, furniture making, boat building and handicrafts), service provision (e.g. kiosks for small scale trading, sewing, electronic and other repairs) and the informal *jua kali* (Kiswahili for “fierce sun”) sector, which includes tin smiths, second hand clothing and cobblers.

Infrastructure and Regional Development

There are two large cities within the hotspot, each of which has grown around an important and ancient deep-water seaport on the Indian Ocean. Mombasa is Kenya’s second largest city, with a population of more than 700,000. Despite deteriorating equipment and problems with inefficiency and corruption, it remains one of the most modern ports in Africa. It has 21 berths, two bulk oil jetties and dry bulk wharves and handles all sizes of ships and cargo. It also has large warehousing (including bonded warehousing) and cold storage facilities. It is connected to Nairobi and thence inland to the land locked countries of Uganda, Rwanda, Burundi and the Democratic Republic of Congo by both road and rail. In the mid-to-late 1990s, the Mombasa-Nairobi road was in a very poor state but it is now mostly in good condition. Other roads from Mombasa, south to the border and north past Malindi are paved but have rough stretches. The railway connects Mombasa to Nairobi and to Kisumu on Lake Victoria, but it has suffered from poor maintenance. There is an excellent international airport in Mombasa (Moi International Airport) and domestic air services to Malindi on the north coast and Diani on the south coast.

Dar es Salaam is the largest city of Tanzania with a population of around three million. It is increasingly competitive with Mombasa as the most important seaport in the region. It has eight deep-water berths for general cargo, three berths for container vessels, eight anchorages, a grain terminal, an oil jetty and onshore mooring for supertankers. It underwent major rehabilitation starting in 1997 at a cost of about \$24 million. In addition to Uganda, Rwanda, Burundi and the Democratic Republic of Congo, it also serves Malawi and Zambia. Freight is largely carried by trains and heavy-duty vehicles. Most primary roads (e.g. from Dar north to Tanga and inland to Dodoma, Arusha and Morogoro) are in good condition, but rural and feeder roads are bad and can be impassable in the rains. Major road development and the construction of a bridge over the Rufiji are ongoing and will open up access from Dar es Salaam to the South. The Tanzania Zambia Railway Authority maintains good rail links between Dar es Salaam and Zambia. There are also train services to Tanga on the north coast and to Arusha via Moshi and Mwanza via Morogoro. The Dar-es Salaam International Airport has daily flights to national, regional and international destinations. In addition there are daily ferryboats to Zanzibar and sea transport to other destinations on the Tanzanian coast (Mtwara, Tanga, Kilwa, Lindi and Mafia Island).

Both cities and most of the larger towns in the hotspot have unreliable water supplies and electricity services, but most villages have neither piped water nor electricity, unless they are on the main roads. In Kenya, more than 65 percent of the population depend on pit latrines or the bush (UNEP 1998). Because of a heavy investment in coastal tourism, there are a large number of comfortable hotels along the coast in Kenya and a smaller number on the Tanzanian coast. Good private hospitals are available in Mombasa and Dar es Salaam, but are expensive. Government hospitals and clinics are severely under-resourced. Telephone landlines in Tanzania and Kenya are unreliable, but new mobile phone networks have hugely improved communication in both countries.

Demography and Social Trends

The demographic and social trends in Tanzania and Kenya are similar. The annual population growth rate has slowed down in both countries, but remains high at 2.8 percent in Tanzania (Mariki *et al.* 2003) and 2.7 percent in Kenya (Bennun & Njoroge 1999). At these rates populations will double over the next 25 years. Total populations are about 37.4 million in Tanzania and 30.7 million in Kenya (World Bank 2001). Average population densities are 40 (Tanzania) and 53 (Kenya) persons per km² (calculated from data in USAID 2002a, b), with most people concentrated in areas of high rainfall and good soils. For example, an estimated four million people live within 10 km of one of the Eastern Arc Mountain ranges (GEF 2002). In Kenya, only 18 percent of the land is arable, with another 9 percent marginal and the rest arid or semi-arid (NRI 1996).

Social services in both countries are rudimentary, especially in the rural areas. Only 74 percent (Tanzania) and 73 percent (Kenya) of children attend primary school (USAID 2002a, b). In Kenya in 2003, the incoming government made primary education free of charge, but it is not yet clear whether it will be able to provide the extra resources required by this new policy. The major health problems are malaria and HIV/AIDS. Largely because of the latter, life expectancies have dropped to 50 years (Tanzania) and 49 years (Kenya) and infant mortality rates have increased to 115 (Kenya) and 98 (Tanzania) per 1,000 births (USAID 2002a, b).

The major social trend in both countries is urbanization. Africa's cities are growing faster with lower economic growth than any other region of the world (USAID 2000). Between 1975 and 2000, the percentage of the population living in urban areas in Tanzania increased from 15 percent to 25 percent (Mariki *et al.* 2003). In Kenya this percentage was estimated at 33 percent in 2000 and is projected to reach 48 percent in 2020 (USAID 2000). The population of Nairobi has grown by 600 percent since 1950 and is currently around 4.5 million although it was originally designed for a population of 1 million (USAID 2000). Poor immigrants to the city are forced to live in slum areas, where there is little sanitation or fresh water and where rents are absurdly high for the quality of accommodation that is provided. The fact that urbanisation is nonetheless proceeding at such a high rate indicates that people (particularly the younger generation) see little future for themselves in the rural areas. A major social consequence of urbanisation is the weakening of traditional customs and obligations, including those associated with the extended family. City life also leads to later marriages and less traditional lifestyles among the youth.

Religion is extremely important in the lives of both urban and rural Kenyans and Tanzanians. In Tanzania 45 percent are Muslims and 45 percent are Christians, with 10 percent having indigenous beliefs. In Kenya, the majority (40 percent) are Protestant, 30 percent are Catholic, 20 percent are Muslim and an estimated 10 percent hold indigenous beliefs (USAID 2002a, b). In both countries the proportion of Muslims is much higher on the coast. Even in recent times, there has been tolerance between faiths and the few religious clashes that are reported arise from intra-denominational struggles.

Both Kenya and Tanzania are ethnically diverse with more than 120 different local languages in Tanzania and more than 40 in Kenya (USAID 2002a, b). Ethnic differences have played a large role in Kenyan political and economic alliances, but this has not been the case in Tanzania. This is mainly because of a more even spread of ethnic origins in Tanzania, which prevented any one tribe from dominating national affairs. In both countries, ethnic differences are less important to the younger than the older generations. The official language is Kiswahili in Tanzania and English in Kenya, but both languages are widely understood in both countries. In Kenya, Kiswahili is the predominant language of the coast. Literacy rates for the official languages are 67 percent (Tanzania) and 59 percent (Kenya) (USAIDa, b).

SYNOPSIS OF CURRENT THREATS

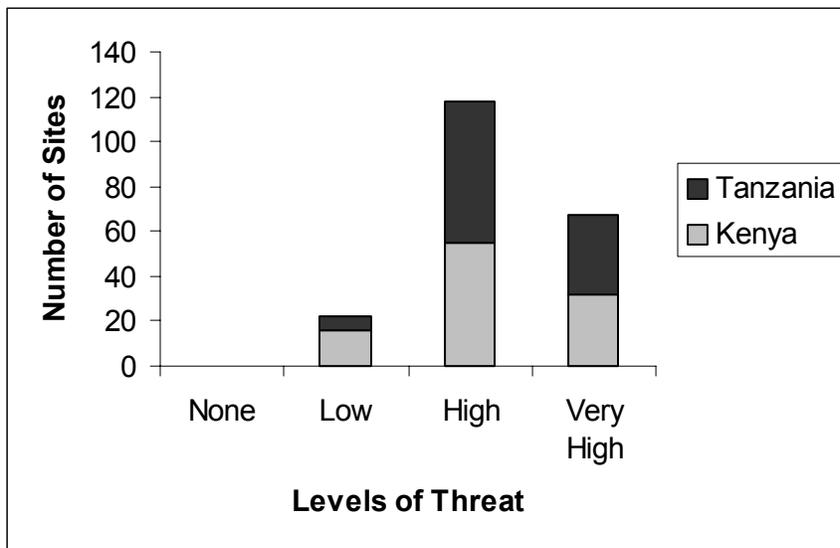
The overriding problem facing the Eastern Arc Mountains and Coastal Forests hotspot is degradation, fragmentation and loss of the only remaining habitat for many known (and unknown) globally threatened species. This is the result of many factors, such as growing human population exerting pressure on forest resources and land; poverty leading to unsustainable use of forest resources; under-resourced government institutions; a legacy of outdated environmental policies and legislation; and lack of political will. The hotspot is dominated by a large and expanding economically impoverished human population. Despite the high biological importance, legal protection for important areas in the hotspot is either weak, lacking altogether or poorly enforced. Most sites lack strategic management and action plans. On the positive side, these problems are widely recognized and various initiatives (including institutional, policy and legislative reforms) have been launched to address them.

Levels of Threat

Over three-quarters of forests in this hotspot are highly or very highly threatened. In the Eastern Arc, 75 percent of the major sites are ranked as highly threatened (South Pare, West Usambara and Mahenge) or very highly threatened (Taita, North Pare, Ukaguru, Rubeho, Uluguru and the lower slopes of the Udzungwas) (GEF 2002: derived from Burgess *et al.* 2001). East Usambara, Nguru and the higher altitudes of the Udzungwas are considered to be under medium threat.

Site-specific levels of threat have also been assessed for 101 coastal forests in Kenya and 103 coastal forests in Tanzania (Figure 4) (data from WWF-EARPO 2002). All of these forests are under some threat and almost 80 percent are judged to be highly (57 percent) or very highly (32 percent) threatened. The levels of threat are very similar in the two countries.

Figure 4. Threat levels for sites in the Coastal Forests of Tanzania and Kenya (Data from WWF-EARPO 2002).



Main Threats

Major threats were identified for the Eastern Arc Mountains as part of the GEF PDF Block B process (GEF 2002) and for the Coastal Forest Mosaic by the WWF-EARPO workshop in 2002 (Table 3). Threats were identified, categorized and analyzed differently by GEF and WWF-EARPO, so caution is necessary in comparing the results. For example, recognition of the distinction between ultimate (e.g. human population growth and negative value systems) and proximate threats (over-exploitation) was inconsistent. A general treatment of the threats follows, amalgamating and re-arranging the categories in Table 3 to facilitate presentation. Table 4 elaborates these threats (e.g. pressure on forest resources) and gives local examples.

Table 3. Major threats in the Eastern Arc Mountains and Coastal Forests hotspot

| Main Threats | |
|----------------------------------|--------------------------------------|
| Eastern Arc Mountains (GEF 2002) | Coastal Forests (WWF-EARPO 2002) |
| Commercial agriculture | Pressure on forest resources |
| Subsistence agriculture | Agriculture |
| Commercial timber | Settlement |
| Domestic timber | Urbanization |
| Intentional fires | Lack of legal protection |
| Household use | Wildlife-human conflicts (elephants) |

Agriculture

Historically, commercial agriculture has been responsible for some clearance and fragmentation of forest. There are large tea estates in Iringa, Tanga and Kagera on land that was formerly forested. Some patches of forest in these estates have been preserved, e.g. at Ambangulu. In the lowlands, sisal estates also cleared large areas of forest, especially around the East Usambaras in Tanzania. The largest current threats, however, come from the commercial cultivation of vegetables, which are sold in the local markets and from the growing of cardamom and other spices under forest cover.

These activities result in forest clearance and the destruction of undergrowth in the forest. They are an important contributor to rural livelihoods and therefore pose a real problem for forest conservation as the population and the demand for arable land grows.

Over the past 100 years, subsistence agriculture (mostly for maize) has been responsible for the disappearance of most areas of unprotected forest. Forest is cleared for farm land, as it has better growing potential, but, after a few years, the soils are exhausted and yields reduce to those of other nearby non-forest agricultural lands. Inappropriate farming practices (shifting cultivation with short fallow periods, slash and burn, cultivation on steep slopes in Eastern Arc Mountains) are common. The inevitable result, which is exacerbated by population growth, is increased demand for land, leading to encroachment on forests. In the absence of expanding urban employment and livelihood opportunities, these problems are certain to increase in the hotspot. Effective agricultural extension, promoting more sustainable and productive farming methods, can help in mitigating this threat, but price incentives, combined with strong controls or constraints on agricultural expansion, are a more potent weapon.

Table 4. Main categories, components and examples of threats in the Eastern Arc Mountains and Coastal Forests hotspot

| Categories | Components | Examples |
|------------------------------|-------------------|---|
| Agriculture | Cultivation | Mainly maize, vegetables and cooking bananas: Ruvu South, Nyumburuni (Tz. Coast); cardamom under forest cover in the Nguru South Mountains; Kaya Kinondo (Ke. Coast). |
| | Encroachment | Mang'alisa FR in Rubeho Mountains, Kazimzumbi FR (Tz. Coast); Mangea Hill (Ke. Coast). |
| | Fire | Usually set deliberately to clear bush or encourage fresh grass for grazing: Amani Nature Reserve and Bombo East in E. Usambaras, Pande GR & Rondo FR (Tz. Coast); Taita Hills. |
| | Grazing | Mgambo and Mlinga FRs in E. Usambaras, Pangani Falls, Tongwe FR (Tz. Coast). |
| Pressure on Forest Resources | Timber | Lutali in S. Udzungwas, Mogoroto Forest in E. Usambaras, Kimbozo FR (Tz. Coast); Dakatcha woodlands & Shimba Hills NR (Ke. Coast). |
| | Polewood | Sagara FR in W.Usambaras, Nyangamara & KoleKole FR (Tz. Coast); Arabuko-Sokoke FR (Ke coast). |
| | Fuelwood | Uluguru Mountain Forests, Litopo & Ndimba FRs, (Tz. Coast); Jozani Forest (Zanzibar); Taita Hills (Ke. Eastern Arc) |
| | Charcoal | Near urban centres: Uzigua & Kazizumbi FRs (Tz. Coast); Jozani Forest (Zanzibar); Madunguni (Ke. Coast). |
| | Carving wood | Forests in Tanga District (Tz. coast) e.g.Kilulu Hills, & Tongwe FR, believed to be exported to Kenya's wood carving trade; Arabuko Sokoke FR (Ke. Coast). |
| | Hunting | New Dabaga/ Ulangambi & W. Kilombero FR in Udzungwa Mountains, Pagale Hill (Tz. Coast); Arabuko-Sokoke FR (Ke. Coast). |
| | Tourism | Coast only: Kiwenga (Zanzibar) & Ngezi FR (Pemba); Kaya Diani & Kaya Kinondo (Ke. Coast). |
| | Salt | Coast only: Coastal forests, especially mangroves, in Tanga District, Pangani Falls, Tongwe (Tz coast); Ngomeni, Gongoni, Kurawa (Ke. Coast) |
| | Mining | Pugu, ruby mining in Ruvu FR (Tz. Coast); titanium mining in Kwale District (Ke. Coast). |
| Development | Settlement | In unprotected forests, e. g. Maforonya Forest, Pangani Falls & Tongwe FR (Tz. Coast); also in Local Council Forests, e.g. Madunguni Forest (Ke. Coast). |
| | Urbanization | Ras Kiuyu (Pemba); Kaya Kinondo (Ke. coast). |
| | Roads | New road to Dar opening access to Kitope, Rondo, & Ngarama FRs, road through Katundu FR (Tz coast). |

Commercial Timber Extraction

There have been national moratoriums on commercial logging in high forests in Tanzania since the early 1990s and in indigenous forests in Kenya since the late 1990s, but enforcement and monitoring have been erratic in both countries. In Tanzania, where the local district forest officers (DFOs) report to the local district authorities rather than to FBD headquarters, the command structure is compromised and local pressure on DFOs to ignore illegal logging can be strong. In Kenya, high-level political connections enabled certain large timber companies to continue to extract indigenous trees despite the moratorium, although their activities have mainly focused on other areas of the country (e. g. Mount Elgon). Throughout both Kenya and Tanzania, the threats are greatest to forests where high value timber like camphor (*Ocotea usambarensis*) or mvule (*Milicia excelsa*) is present.

In practice, the government system of obtaining licenses to log trees from forest reserves is often ignored and the majority of logging being undertaken in the reserves is illegal. There is a great deal of commercial timber extraction by small-scale poachers, responding to the demands of urbanization and tourism development. Very little of the value of this timber goes back to the poachers, who are usually at the bottom end of an exploitative network of foresters, middlemen and contractors. Forests close to tourist areas, such as Arabuko-Sokoke Forest near Malindi and Watamu in Kenya, suffer from the high demand for carving wood (*Brachylaena huillensis*) and timber for the construction of hotels, private residences and tourist attractions. The carving wood industry is much bigger in Kenya than in Tanzania and poaching of carving wood trees is most common in Tanzania near the Kenya/Tanzania border.

Other Forest Resource Extraction

Commercial fuelwood extraction and charcoal production are a problem near urban centres, with Dar es Salaam and Mombasa and the Stone City in Zanzibar as major markets. Fuelwood is also commercially harvested from Udzungwa Mountain National Park for local brewing. As roads are improved, more forests become at risk because of increased access for fuelwood and charcoal merchants. For example, Rondo and Kitope Forest Reserve are threatened by the development of a new road to Dar es Salaam.

Most timber for local construction in the villages close to the forests comes from the forests themselves, mainly in the form of poles of young trees. For larger buildings, doors and window frames planked timber is obtained from pitsawing groups working in the forests. As most of these teams are either operating in areas where logging is not permitted or they lack the licenses for the trees that they are cutting, the majority of timber being used in local construction is illegal. Most of this timber is sold and hence is, in reality, a commercial use of the forests, only to supply the local market.

A range of other products is extracted for various household uses, like medicinal plants, edible fruits, wild honey, grass and fodder for livestock and bamboo collection for tomato basket weaving. These activities can cause local problems, especially where extraction methods are destructive such as careless debarking of medicinal trees. Targeted species are already scarce.

Hunting is historically responsible for the absence of several large mammals (buffalo, rhino, elephant, leopard, bushbuck) from large areas in the hotspot where they used to roam. The local

bushmeat trade threatens the smaller mammals. Although this trade is not on the scale found in West and Central Africa, local consumption of game meat can threaten rare wildlife. For example, the endangered Aders' duiker has been reduced to very low population levels by local hunters in Arabuko-Sokoke Forest, (FitzGibbon *et al.* 1995; Kanga 1996) and also in Jozani Forest in Zanzibar (Struhsaker & Siex, pers. comm.).

Mining

Mining within forests is currently a minor threat, but (as noted earlier) this may change: large reserves of titanium have been discovered on Kenya's coast, from Kwale to Malindi District and underneath Arabuko-Sokoke Forest. Tiomin Resources Inc. plans to strip mine four areas in coastal Kenya, starting with an area of 64 km² in Kwale District, which will be mined for at least 14 years. All vegetation and physical structures will be removed and mineral deposits will be exposed to a depth of more than 30 m. Tiomin has promised to compensate the original landowners and to rehabilitate and return the land to them, but agreement has not yet been reached on its operations. There is considerable public concern about environmental impacts and the distribution of economic benefits, and the new Kenyan government appears to be taking a stricter line with Tiomin on these issues (Reuters 2003).

Fires

Fires are commonly used by rural farmers to clear fields prior to planting. Where population densities are high, vegetation from the fields to be farmed that season is cleared into piles and burned on the site. In general, few of these fires spread into forest margins or montane grasslands. Within the forests, fires are started for forest clearance for cultivation and these can get out of control and burn larger areas. Sometimes, wild honey harvesters start forest fires when they smoke the bees to get their honey. Fires are sometimes started deliberately for political reasons (e.g. in UMNP in 2000 during the election). Where human population density is lower, there is a much higher tendency for the slopes of Eastern Arc Mountains to be subject to wildfires that can have a number of causes and once started will spread up the slope in an uncontrolled fashion. Occasionally, these fires reach the forests and during dry years they can enter the forest and cause considerable damage. They also burn huge areas of upland grass in the Eastern Arc Mountains.

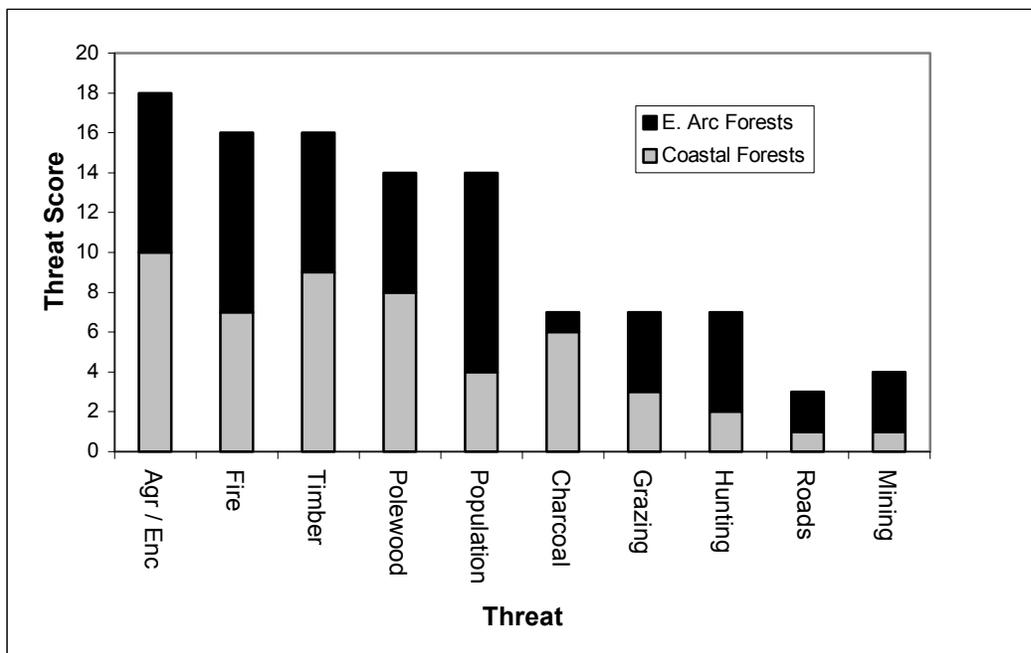
Ranking of Threats in Tanzania

Because of the different ways in which threats have been identified and analyzed in different portions of the hotspot, it is difficult to include all the data in an overall ranking of threats in the hotspot. The most compatible datasets come from site-by-site analyses of threats for 114 sites in the Tanzanian Coastal Forests (WWF-EARPO 2002) and for 136 sites in the Tanzanian Eastern Arc Mountains (data from Neil Burgess). Figure 5 summarizes this data in ranked form for the top 10 threats common to both datasets.

The top 10 overall threats (in ranked order) are agriculture and encroachment, fire, timber extraction, polewood cutting, population growth, charcoal production, grazing, hunting, mining and roads. Population growth was included as a threat in both datasets, although it may be better considered as an ultimate factor, driving the other proximate threats. Two additional threats were identified only for the Eastern Arc Mountains Forests (corruption and medicinal plants) and another seven only for the Coastal Forests (settlement, urbanisation, fuelwood, carving wood, salt, tourism and open access). Of these additional threats, three (carving wood, salt and tourism) may be genuinely restricted to the coastal forests. The apparent restriction of the other additional threats to either the Coastal Forests or the Eastern Arc Mountains is almost certainly an artefact of the different analyses used. For example, corruption and fuelwood extraction are a problem in both ecoregions.

Despite these problems and the exclusion of the Kenyan data, Figure 5 provides a reasonable picture of the relative importance of the overall threats in the hotspot.

Figure 5. Ranking of threats in the Eastern Arc Mountains (136 forests) and Coastal Forests (108 forests)



Population growth, hunting, grazing and mining rank higher in the Eastern Arc Mountains. Agriculture and encroachment, timber extraction, polewood cutting and especially charcoal rank higher in the Coastal Forests. Some of these differences in ranking may result from different degrees of legal protection in the two countries. In both, the most important threats arise from the immediate needs of people, rather than from any large-scale developmental projects or corporate ventures.

Analysis of Root Causes

Root causes of threats in the hotspot were analyzed in workshops during proposal preparation both by GEF and WWF-EARPO (GEF 2002; WWF-EARPO 2003). Table 5 is adapted from the GEF analysis, which broadly captures the root causes identified by WWF-EARPO and lists some of their manifestations. The order of presentation of these root causes is not a ranking of their importance.

Table 5. Summary of root causes of threats to the Eastern Arc Mountains and Coastal Forests hotspot

| Root Cause | Manifestation |
|--|--|
| Population growth | <ul style="list-style-type: none"> • Drives increased demand for resources at all levels. |
| Poverty | <ul style="list-style-type: none"> • Overexploitation of “free” forest resources (timber, polewood, etc). • Lack of opportunity to think beyond immediate needs. • Vulnerability to corruption • Involvement in illegal activities |
| Inefficient land-use practices | <ul style="list-style-type: none"> • Low agricultural yields • Declining soil fertility • Increased demand for land • Agricultural encroachment and clearing of forests |
| Negative value systems re conservation and lack of environmental awareness | <ul style="list-style-type: none"> • Absence of local constituencies for conservation. • Ignorance of consequences of damage to environment. • Low motivation to conserve biodiversity |
| Lack of experience and incentives to develop alternative livelihoods | <ul style="list-style-type: none"> • Little opportunity to change environmentally damaging lifestyles |
| Lack of fora for communal exchange and networking | <ul style="list-style-type: none"> • No transfer of lessons learned • No sharing of common problems • Opportunities for engaging in conservation not communicated |
| Lack of local mechanisms for controlling forest exploitation | <ul style="list-style-type: none"> • Absence or breakdown of traditional conservation practices • Local communities overexploit forest resources • Exploitation of forest resources by outsiders is unchecked • Unprotected forests are lost |
| Limited ecosystem-wide strategic focus | <ul style="list-style-type: none"> • Piecemeal conservation efforts • Short-term projects • Lack of continuity in conservation activities • Lack of co-ordination among different projects • Landscape issues not tackled |
| Weak forest governance | <ul style="list-style-type: none"> • Inadequate stakeholder involvement |

| | |
|---|---|
| | <ul style="list-style-type: none"> • Decision-makers inadequately informed • Lack of monitoring |
| Inadequate and poorly targeted fiscal resources | <ul style="list-style-type: none"> • Inadequate budgets for authorities managing forests • Most money spent on salaries with little for operational costs • Poor morale among staff managing forests |
| Limited effectiveness of protection regimes | <ul style="list-style-type: none"> • High levels of illegal activities in forests • Forest degradation and biodiversity loss • Corrupt practices facilitated • Low morale among forest guards |

In the likely absence of positive macro-economic changes and of large-scale industrialization in the continent, the next generation of rural farmers in Africa will continue to depend heavily on the free resources that they can extract from their surroundings. The first three root causes in Table 5 (population growth, poverty and inefficient land use) will, therefore, continue to generate threats to forests and forest lands for some time to come. What is less clear is how much conservation organizations can do about these problems and what proportion of their limited resources should be invested in the attempt. Development agencies have been active in Africa with far more resources for many decades, yet rural poverty persists. Another difficulty is that the path to development often involves the massive ecological transformation of landscapes and it is precisely this process that is destroying tropical forests. This is what makes conservationists and development practitioners such awkward partners (Struhsaker 1997; Oates 1999; Terborgh 1999).

The fourth root cause in Table 5 is negative value systems re conservation and lack of environmental awareness. A variety of innovative approaches to raising conservation awareness have been developed during the last 50 years and international conservation organizations have succeeded in putting biodiversity issues firmly on global agendas. The hotspot focus of CEPF and the resources it commands, is a good example of this, but the need to reach the rural poor is what is implied in Table 5. This is as urgent as ever, but all too often it generates contradictory messages. Unless awareness can be linked to incentive, only the contradictions are seen. In the absence of material incentives for conservation, it is difficult to change value systems, particularly when poverty gives little opportunity to think beyond short-term needs. The most promising approach in parts of this hotspot may be through innovative awareness raising of water catchment values of the Eastern Arc Mountains.

Many conservation projects have tackled the issues of alternative livelihoods and of communal exchange and networking. The creation of alternative livelihoods is a useful local approach for civil society, especially when combined with good law enforcement by those institutions responsible for forest management. This combination is more rare than it ought to be. The problems of communal exchange and networking are now much less serious than they were, thanks to the growth of communications technology and to the increasing effectiveness of workshop and community outreach techniques. Nonetheless, it is worth noting that the CEPF workshop organized as part of producing this profile was the first time that people working in the Eastern Arc Mountains and the Coastal Forests of Kenya and Tanzania had met to discuss common problems. It is also still true that exchange and networking is much more common among people working in NGOs and government institutions than at the community level.

Workshops and meetings are expensive and they lose value when the same faces repeatedly appear.

The lack of local mechanisms for controlling forest exploitation reflects both a breakdown in cultural traditions and how the Tanzanian and Kenyan governments took such matters out of the hands of the local people sometime ago. That so little forest remains, outside forest and local authority reserves suggests that the government interventions were well advised. Where there has been continuity in forest protection by local communities, as in the case of some of the *Kaya* forests in coastal Kenya, there has been real success and the prospects for replication with other sacred forests in Tanzania are good. Where the continuity is lacking, the prospects are weaker. This is a serious issue for Participatory Forest Management initiatives in the hotspot. Sound technical advice on sustainable offtake is also, obviously, essential. Good networking on these problems should help.

The need for an ecosystem-wide strategic focus has long been recognized in efforts to conserve major water catchments such as the Ulugurus, which supply 3 million people in Dar es Salaam with water. In biodiversity conservation, the lack of such a focus has been the impetus for major conservation investments such as the big GEF project for the Eastern Arc Mountains. The CEPF approach of defining species, sites and corridor outcomes within the context of landscape level hotspots is also a systematic attempt to deal with this difficulty.

Weak forest governance is pervasive in the hotspot and is being increasingly addressed by involving more stakeholders, particularly among the local communities and civil society. Forest management is a multi-stakeholder business. As described in the section on policy and legislation, reform in both Kenya and Tanzania is directly tackling this issue. This reform is creating opportunities for both the private sector and for local communities to become involved in forest management. To date, most conservation organizations have paid far more attention to the latter than the former.

The issue of inadequate and poorly directed fiscal resources afflicts nearly every government department in Kenya and Tanzania. A good example in the hotspot is provided by Arabuko-Sokoke Forest. In the 1998-99 financial year, the Forest Department spent \$106,497 on this 41,700 ha forest (Muriithi & Kenyon 2002), out of which 98 percent (\$104,536) was used to pay salaries. This left only \$2,114 for operational costs. In 1998, \$7,536 was raised from this forest from fines, rents, timber royalties and sales of fuelwood, polewood and Christmas trees. The best that can be said for such a situation is that it is easy to persuade local communities that they have more to gain from their own enterprises than from sharing in official Forest Department revenues. Although the budget for Arabuko-Sokoke is obviously inadequate, it is nonetheless higher than those for most forests in Kenya and Tanzania. It works out at roughly \$2.5 per hectare, compared to overall estimates of \$ 1.08 (Kenya) and \$ 1.01 (Tanzania) per hectare for public expenditure on forestry (Whiteman 2003).

With funding like this, it is surprising that there is any protection at all. It is hard for Forest Department officers to do a good job in such circumstances, particularly when corruption comes from the top (as in the recent past in Kenya) and where the resource is valuable (e.g. carving wood at Arabuko-Sokoke). This problem can only be effectively tackled by a combination of

long-term funding and institutional reforms (GEF 2002) in the context of good governance at national level. Site level interventions (training of guards, provision of uniforms and boots, etc.) are helpful, but their positive effects are at best short-lived unless the larger problem is tackled. Solving the larger problem is also necessary if community partnerships in management are to improve protection. In the absence of better governance from the top, participatory management may simply lengthen the food chain for illegally harvested forest produce.

SYNOPSIS OF CURRENT INVESTMENT

Information was compiled on the projects operational in the Eastern Arc Mountains and Coastal Forest Mosaic as of February 2003. All data from projects that had already finished or that were to be completed in early 2003 were excluded from the study. Data were available for both Tanzania and Kenya, although there were some gaps in the information for both countries.

Data were collected by organization, type of organisation, by two subsets of sites: first, IBA and second, priority site (IBAs and non-IBA sites). The IBAs were selected as a subset because they had already been recognized as sites with global biodiversity values (Bennun & Njoroge 1999; Baker & Baker 2002). The second subset was based on the 20 sites with the greatest numbers of globally threatened species, as determined by this profile.

Although the most important sources of external and government funding for conservation in this hotspot have been captured, some caveats are necessary. There are some gaps in the data and some budget allocations are split between several implementing partners, which made calculations of funding allocations problematic (e.g. Misitu Yetu in Tanzania implemented by the NGOs WCST, TFCG and CARE and the Tanzania Government, with funding from CARE Austria and NORAD). Finally, details of the government budget allocated to conservation activities in this hotspot were hard to come by, although as most sites are managed as reserves by the government their inputs are important. Hence this analysis is biased towards the externally provided funds from various types of agencies.

Levels of Funding

Overall in 2003, more than \$19 million is planned for investment in conservation of the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya, almost exclusively within forest reserves, national parks or other forms of government managed/controlled land.

Eastern Arc Mountains

Within the Eastern Arc Mountains, the majority of the funding (about \$15 million per annum) currently comes from the multilateral donors GEF and World Bank. Much of this is allocated to the restructuring of the Forestry Division in Tanzania and perhaps \$5 million will be spent on activities broadly classed as forest conservation within the hotspot (including the Tanzanian coastal forests) during 2003. The next largest allocation of funding comes from bilateral donors, particularly those from Scandinavia who provide well in excess of \$2 million per annum. Most of this relates to direct conservation activities. NGOs and the Tanzania and Kenya governments provide significantly less funding and most of the funds utilized from NGOs actually come from the bilateral donors. Hence, both the governments and NGOs use less than \$1 million per annum of their own funding in the Eastern Arc Mountains (excluding government salaries).

Coastal Forest Mosaic

Within the Coastal Forest Mosaic, about \$4 million per annum is spent currently on conservation or related development activities, or about 30 percent of that used in the Eastern Arc portion. Conversely to the Eastern Arc, no multilateral funding comes to the coastal forests. The allocation of funding from NGOs appears as the largest single source of funds for these forests, although in actuality most of this funding comes from bilateral donors to the NGOs. Hence the bilateral donors are probably the largest single source of funding for this part of the hotspot. Government funding for implementation is small in the coastal forests, as it is in the Eastern Arc Mountains. Most government funding is allocated to salary support and little remains for investment in conservation activities on the ground. Private investment for conservation in the coastal forests is also small, although hard to quantify.

Types of Project Interventions

The major categories of project intervention were examined against eight possible groupings ranging from research through to capacity building. Overall there is a fairly even spread of interventions, with no one category appearing markedly more preferred amongst the existing projects. In the Eastern Arc Mountains, research (mainly biodiversity) was the most commonly reported activity and, as the data ignored the activities of visiting university scientists, this is an underestimate of the effort put into research. In the coastal forests the highest-ranking activity was livelihood enhancement, which also ranks highly in the Eastern Arc – reflecting the focus of development agencies that fund much of the conservation work in these areas on poverty alleviation. Interventions such as direct conservation payments, purchase of land for conservation or a focus on corridors had zero scores as there were none of these kinds of interventions in the area.

Numbers of IBAs with Project Interventions

The number of IBA sites that have been the attention of conservation projects during the past five years gives an indication of the spread of conservation effort.

Tanzania

Across the range of organizations undertaking different kinds of projects in the hotspot, the Government Forestry Division has the widest coverage, as it manages the forest reserves that comprise the bulk of the IBA sites. After the Forestry Department, the research program of Frontier Tanzania (collaboration between the Society for Environmental Exploration and the University of Dar es Salaam) has worked in the most IBA sites. This is followed by the bilateral agency NORAD (Norwegian aid) and the World Bank (starting activities at the current time). Of the NGOs, the Tanzania Forest Conservation Group and WWF Tanzania have undertaken the most projects in the hotspot. When combined, the NGO sector had undertaken the largest number of projects at IBA sites in Tanzania, followed by the Tanzanian government, the bilateral donors and the multilateral donors.

Kenya

In Kenya a number of different agencies undertake conservation projects in the IBA sites. According to the information provided, the Kenyan Forest Department and the National Museums of Kenya have covered the largest number of sites during the past five years. WWF-EARPO also used to support several forest sites, but their activities are much reduced in recent

years due to a lack of funding. Other major players in Kenyan IBA conservation in this hotspot are the National Museums of Kenya (Kaya sites in particular) and the Government Forestry Division (Forest Reserves). BirdLife International and Nature Kenya provide very significant funding to one IBA site—Arabuko-Sokoke—which is also the largest coastal forest in the hotspot.

Spread of Conservation Attention Across Different IBAs

The conservation attention received by the IBA sites from different agencies was examined as a preliminary indication of gaps in project coverage. Secondary stages in such an analysis would need to consider other factors such as biological value, integrity and size, threats and even feasibility of operating in the area.

Tanzania

A ranked assessment of the degree of conservation attention that different IBA sites have received during the past five years illustrates that the Udzungwa Mountains have received the most conservation attention throughout this period. Conservation efforts have also focused on the East and West Usambaras and the Ulugurus. These are all Eastern Arc Mountains blocks. Eastern Arc IBAs that have received far less attention are Ukaguru, Nguru, Nguu, Rubeho and Uvidundwa. Within the coastal forests the IBAs of Kilwa and Rufiji Districts have had the most conservation projects and IBAs such as those in Newala District have received the least attention.

Kenya

An assessment of the coverage of IBA sites by conservation projects in Kenya shows that Arabuko-Sokoke and the Taita Hills receive the largest attention from conservation projects. The Shimba Hills, Diani and the Tana River Primate Reserve follow these sites in terms of attention they receive. Three IBAs have no conservation projects in recent times: Tana River Delta, Dakacha Woodlands and Dzombo Hills.

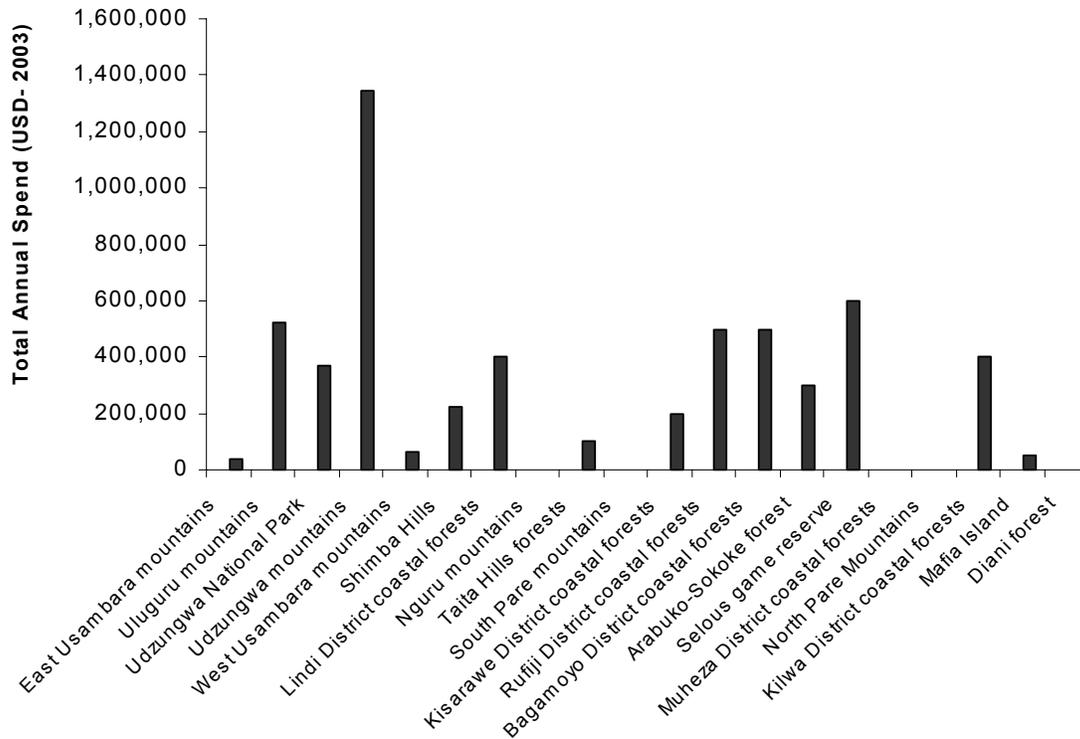
Funding Allocation Against Biological Priority

Figure 6 assesses the match between funding allocation and biological priority. The 20 sites containing the largest numbers of globally threatened species (Appendix 2) vary considerably in the amount of external donor funding they are expected to receive during 2003. This funding excludes the funds that the Tanzanian and Kenyan governments provide to the management of national parks, national reserves and forest reserves and national monuments – which may be significant in some places and very small in others.

Eighty percent of the 20 sites containing the most globally threatened species from this hotspot are in Tanzania. Given that 90 percent of the total forest area in the hotspot is in Tanzania, this is to be expected. Two factors, however, have affected the site ranking. The first is research effort. Tanzanian forests have generally received much less biological study than those in the Kenyan part of the hotspot, with some of the Eastern Arc blocks (e.g., the Rubehos and Nguus and Uvidundwas) and some coastal forests (e.g., those of Newala District) remaining practically unknown. This means that the importance of the Tanzanian sites may be underestimated. The second factor is related to the way in which the sites are defined. In Kenya every small patch of

forest has been assigned to its own site, whereas in Tanzania, many of the sites are amalgamations of several forest

Figure 6. Funding allocation from external agencies for conservation activities during 2003 in the 20 sites containing the most Red List species (Appendix 2) in the Eastern Arc Mountains and Coastal Forests hotspot



Ranked Top-20 sites for threatened species (highest on left, lowest on right)

patches. In some cases, these forest patches are scattered over a wide area and encompassing a wide range of altitudes and climatic conditions. This tends to elevate the importance of the Tanzanian sites in terms of their numbers of threatened species.

Secondly, it is clear that funding is not evenly spread across these sites. The best-funded site in 2003 is the Udzungwa Mountains (although some of this funding is only for the Kihansi Dam area), followed by the Ulugurus. The Selous Game Reserve also receives significant funding but this is mainly to conserve its large mammals, not forests. Also the Selous Game Reserve covers an enormous area.

Thirdly, some sites receiving little external funding in 2003 have received significant funding over long periods in the past. The East Usambaras, which contain the most globally threatened species, is set to receive few funds during 2003. This site benefited from significant investment (\$1 million per annum) during the past 10 years, but that funding has since ceased and the future is unclear. The South and North Pare Mountains also lack funding but until recently had received

GEF-UNDP or GTZ support, as did the West Usambaras which had 10 years of GTZ funding. Should funding stop completely, then much of the progress with forest conservation achieved in these sites over the last 10 years could be jeopardized.

Fourthly, other important sites in Figure 6 have not had any external funding for decades. Most important amongst these is the Nguru Mountains, which has never had an externally funded project intervention and is also relatively poorly known biologically. Within the coastal forests, those of Muheza District have no external support and yet contain important biological values, especially close to the East Usambara Mountains.

Lastly, some sites do not appear in Figure 6 because there is inadequate knowledge of their biodiversity values. These include the Nguu and Rubeho Mountains in Tanzania (which are difficult to access) and Boni and Dodori Forests in Kenya (where there are security problems). They will receive no external conservation support in 2003 and have never received conservation support in the past. Such sites should rank highly as priorities for investment, both in terms of biological study and conservation action.

CEPF NICHE FOR INVESTMENT

The CEPF niche for investment was determined through analysis of the species and site outcomes, threats and current investments and through a participatory workshop involving 48 local, national and international experts on the hotspot. Although the workshop did not prioritize sites for investment, certain sites have been selected for immediate attention under two of the five strategic directions recommended in this profile. This has been done to avoid diluting the impacts of crucial investments by spreading them across too large an area.

The species outcomes define the CEPF niche in terms of global imperatives for biodiversity conservation. The primary focus of the niche for this hotspot is the 333 species, which are most threatened with extinction according to *The 2002 IUCN Red Lists* (Appendix 1). The ultimate test of the success of global conservation investments in the hotspot is the number of these threatened species that survive in the long term. It follows that: (1) only those projects that contribute to the survival of these species should be funded by CEPF and (2) that monitoring the survival of these species is, in itself, an important component of the CEPF investment niche. It must also be recognized that the number of globally threatened species is dynamic and will greatly increase as the IUCN Red List is updated and becomes more comprehensive. The species outcomes will, therefore, need to be updated from time to time.

The site outcomes define the CEPF niche in terms of geographical locations. The 333 globally threatened species identified in Appendix 1 are found in the top 152 sites listed in Appendix 2. An additional nine sites are included in Appendix 2 (making the overall total of 160 sites) because they are IBAs with restricted-range bird species and globally significant congregations of birds. Projects funded by CEPF must be expected to have positive impacts on biodiversity conservation in at least one of these 160 sites. If these impacts are to be measured, site-level monitoring must also be an important part of the niche.

As noted earlier, conservation corridor outcomes were not identified in this hotspot because of the small size of the hotspot and the degree of natural fragmentation that exists, without which

much of the biodiversity would never have evolved in the first place. In other hotspots, the definition of conservation corridors restricts site investments largely to those sites within the corridors. Since no conservation corridors have been defined in this profile, there are no corridor restrictions on site investment in this hotspot. Similarly there are no overall restrictions on site investments arising from prioritization. Nonetheless, some concentration of effort is required. Within the full set of 160 sites, five have been identified for particular attention for two of the strategic funding directions (Table 6). The five were selected on the basis of biological importance, irreplaceability, current investment, partnership potential and the recommendations of experts who are familiar with the sites and their suitability for the interventions proposed in this profile. Under the remaining three strategic funding directions, all 160 sites qualify for CEPF investment.

Although corridor outcomes have not been defined in this profile, there are issues of connectivity between forest patches within large sites. Many bird species in the Eastern Arc Mountains are known to move seasonally from the montane forest to the lowland, and altitudinal forest corridors are necessary for this to occur. This issue particularly relates to maintaining montane to lowland forest transitions in the Eastern Arc Mountains part of the hotspot and is important in the context of global warming. A number of forest patches are also recently isolated from each other, causing the local extinction of species, as habitat patches become too small to support them (see below). Such sites deserve particular attention.

Within the limits of these species and site outcomes, the CEPF niche was further defined by the thematic areas for investment as identified during the March 2003 workshop and by subsequent expert review. The workshop discussion of potential investment themes was guided by the assessments of biological importance, threats and current investments, as well as by the considerable experience of the workshop participants in the hotspot. Nine investment themes were presented to the workshop by the ecosystem profile team and participants added a further three. The themes were prioritized through group work and the results were amalgamated in a plenary session. Although the different groups had different priorities, there was a good consensus in the plenary on the final ranking. This ranking was as follows:

- 1) increase the ability of local populations in the hotspot to benefit from and contribute to biodiversity conservation
- 2) restore and increase connectivity among fragmented forest patches in the hotspot
- 3) improve knowledge of biodiversity in the hotspot;
- 4) improve management of conservation units in the hotspot;
- 5) improve awareness and education about the importance of this hotspot;
- 6) improve coordination among all partners in the hotspot in order to maximize investments;
- 7) engage private sector towards conservation in the hotspot;
- 8) catalyze effective implementation of government policies (National Biodiversity Strategic Action Plans) that affect biodiversity in the hotspot;
- 9) hotspot-wide research and conservation of endangered and critically endangered species;
- 10) monitoring and evaluation of the status of the sites in the hotspot;
- 11) economic evaluation of the goods and services performed by the sites in the hotspot; and
- 12) increase ability to generate long-term funding for conservation in this hotspot.

During the group and plenary discussions it was noted that there were overlaps in these themes and that some could be usefully embedded within others (e. g., themes 5, 9 and 10 with theme 1, themes 9 and 4 with 2). With this understanding, the thematic niche for CEPF investment was defined by themes 1-3 above.

CEPF INVESTMENT STRATEGY AND PRIORITIES

Program Focus

The CEPF program focus is firmly on reducing the extinction risk for the 333 globally threatened species in the hotspot and on improving the protection of the 152 sites in which these species are found (plus the additional nine IBAs). This focus necessarily involves both people and science. Underlying all the threats to the biodiversity in this hotspot is pressure from rapidly increasing and impoverished human populations. These populations have little sympathy or incentive for species and habitat conservation and limited awareness of the importance of maintaining ecosystem services and functions. The CEPF program, therefore, focuses on actions that will address this issue. If these actions are to be effective, they must be grounded in good science. Interventions must be targeted on the most important sites and must be based on scientifically tested best practices. As such, the program also focuses on improving biological knowledge in the hotspot and on practical applications of conservation science. This focus on people and science builds on over three decades of research and conservation effort in the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya.

Strategic Directions

Five strategic directions for the CEPF investment strategy were developed. These were based on the workshop documents, presentations and discussions and on subsequent expert review. The documents and presentations included background on CEPF and its goals, site and species outcomes and the assessments of threats and current investment. The strategic directions are summarised in Table 6, together with investment priorities and are described in more detail below. The order of presentation should not be interpreted as a rank order of importance.

Table 6. CEPF strategic funding directions and investment priorities in the Eastern Arc Mountains and Coastal Forests hotspot (2003-2008)

| Strategic Funding Directions | Investment Priorities |
|--|---|
| 1. Increase the ability of local populations to benefit from and contribute to biodiversity conservation, especially in and around: <ol style="list-style-type: none"> 1. Lower Tana River Forests 2. Taita Hills 3. East Usambaras/Tanga 4. Udzungwas 5. Jozani Forest | <ol style="list-style-type: none"> 1.1 Evaluate community-based forest management initiatives in the hotspot to determine best practices 1.2 Promote nature-based, sustainable businesses that benefit local populations in the hotspot 1.3 Explore possibilities for direct payments and easements (Conservation Concessions) for biodiversity conservation in the hotspot and support where appropriate 1.4 Build the capacity of community-based organizations in the hotspot for advocacy in support of biodiversity conservation at all levels 1.5 Support cultural practices that benefit biodiversity in the hotspot. |

| | |
|--|---|
| | 1.6 Research and promote eco-agricultural options for the local populations of the hotspot |
| 2. Restore and increase connectivity among fragmented forest patches in the hotspot, especially in: 1. Lower Tana River Forests 2. Taita Hills 3. East Usambaras/Tanga 4. Udzungwas | 2.1 Assess potential sites in the hotspot for connectivity interventions 2.2 Support initiatives that maintain or restore connectivity in the hotspot 2.3 Monitor and evaluate initiatives that maintain or restore connectivity in the hotspot 2.4 Support best practices for restoring connectivity in ways that also benefit people |
| 3. Improve biological knowledge in the hotspot (all 160 sites eligible) | 3.1 Refine and implement a standardized monitoring program across the 160 eligible sites 3.2 Support research in the less studied of the 160 eligible sites in the hotspot 3.3 Monitor populations of Critically Endangered and Endangered Species in the hotspot 3.4 Support research in the hotspot to facilitate Red List assessments and re-assessments for plants, reptiles, invertebrates and other taxa. 3.5 Compile and document indigenous knowledge on hotspot sites and species 3.6 Support awareness programs that increase public knowledge of biodiversity values of the hotspot |
| 4. Establish a small grants program in the hotspot (all 160 sites eligible) that focuses on critically endangered species and small-scale efforts to increase connectivity of biologically important habitat patches | 4.2 Support targeted efforts to increase connectivity of biologically important habitat patches 4.3. Support efforts to increase biological knowledge of the sites and to conserve critically endangered species |
| 5. Develop and support efforts for further fundraising for the hotspot | 5.1 Establish a professional resource mobilization unit, within an appropriate local partner institution, for raising long-term funds and resources for the hotspot 5.2 Utilize high-level corporate contacts to secure funding from the private sector for the hotspot 5.3 Train local NGOs and community-based organizations in fundraising and proposal writing |

1. Increase the ability of local populations in the hotspot to benefit from and contribute to biodiversity conservation, especially in and around Lower Tana River Forests, Taita Hills, East Usambaras/Tanga, Udzungwas and Jozani Forest

These sites were selected based on current lack of investment, assessment of opportunities for success and biological prioritization. The paradigm, which links poverty to environmental degradation and biodiversity loss, has driven much of the conservation effort in this hotspot for two decades and it inevitably emerged as a dominant theme in the workshop. CEPF should

concentrate on synergistic and direct linkages between people and biodiversity conservation. There is a rich field here for interventions and the piloting of new approaches, while building on previous conservation efforts in the hotspot. There are opportunities to promote agricultural practices that improve production and enhance biodiversity. These practices include both old and new techniques. They have been brought together under the umbrella term “ecoagriculture” by McNeely and Scherr (2003). There are also opportunities to exploit synergies between different investment priorities. The following investment priorities were identified under this strategic direction.

1.1 Evaluate community-based forest management initiatives in the hotspot to determine best practices. Community-based conservation initiatives include efforts to involve and capacitate local communities in the management of biodiversity sites (mainly forests) in the hotspot. Both in Kenya and Tanzania, new policies are promoting various forms of community participation in forest management (joint forest management, community-based forest management and participatory forest management). There are at least 32 such initiatives in the hotspot. Under these arrangements, community user rights are negotiated in return for responsibilities such as self-policing, with extraction rates based on estimates of sustainability. The effects on community livelihoods, law enforcement and biodiversity protection are all routinely expected to be positive, but a scientific consensus on this expectation is yet to be reached. Strong opinions are much commoner than hard data. Scientific testing of participatory management strategies in the hotspot is badly needed. CEPF will prioritize research and analysis rather than financing applied projects under this investment priority.

1.2 Promote nature-based businesses that benefit local populations. Experience within the hotspot has shown that nature-based businesses that benefit local populations can build significant constituencies for conservation. Because of extreme poverty, even small incomes from such businesses can make real differences in local attitudes towards conservation, provided that the linkage between revenue and the continued existence of the biodiversity resource is direct and obvious. It follows that revenues must be reasonably reliable and that any resource use must be sustainable. Examples include beekeeping, tourism, butterfly farming (Gordon & Ayiamba 2003), cultivation for essential oil extraction and domestication of medicinal plants.

1.3 Explore possibilities for direct payments and easements (conservation concessions) for biodiversity conservation in the hotspot and support where appropriate. Recent reviews (e.g., Ferraro & Kiss 2002) argue that direct payments for conservation are more cost-effective and provide more benefits to biodiversity than community-based interventions such as Integrated Conservation and Development Projects. Under direct payments and easements, communities/land owners are paid directly for the right to manage the site for conservation purposes under leasehold or alternative arrangements. This eliminates the expenditures that so often inflate project costs to no good end and the net benefits that reach the communities are commensurably greater. Running costs become the responsibility of the organization/corporation/individual that makes the payments. Direct payments and easements are relatively untried in Africa, so any attempt at their implementation would need to be on a pilot basis. CEPF could facilitate advice on the appropriateness of this approach in this hotspot and fund training and assistance for local organisations to act as honest brokers in the negotiation of any such arrangement, but could not provide the resources for the direct payments. These

negotiations could include raising funds from the local corporate and private sector, which benefit from the ecological services (water and hydropower) provided by the Eastern Arc Mountains. It should be noted that CEPF cannot capitalize conservation concessions, nor can it purchase land for conservation.

1.4 Build the capacity of community-based organizations in the hotspot for advocacy in support of biodiversity conservation at all levels. Grassroots advocacy for conservation can help to prevent theft/invasion/encroachment/ development of sites with biodiversity value (Gordon & Ayiamba 2003). Many excisions have in recent years been made in the name of squatters or of the local community, while the land was subsequently allocated to the well connected. In such situations, community protests can be more effective than the lobbying of city-based NGOs. Local communities are also effective watchdogs, since they live next to biodiversity sites and know most about what is going on in them. Local communities often include retired senior civil servants and others with relatives in corridors of power and, therefore, have more leverage than may at first be apparent. In Tanzania there are forest and wildlife committees within the village/ward structures that could be supported.

1.5 Support cultural practices that benefit biodiversity in the hotspot. Sacred forests are known from all over Africa, but the protection they have enjoyed for centuries is being rapidly eroded by factors such as cultural change and greatly increased land demand. There are a great number of traditionally protected forests in Tanzania (Mwihomeke *et al.* 1998), but the most well known examples within the hotspot are the *Kaya* Forests of coastal Kenya. These forests contain a high diversity of plants including significant numbers of endemics (Robertson 1987; Robertson & Luke 1993) and Red List plant species (Appendix 2). According to local traditions, the forests historically sheltered small fortified villages. The sites of the original settlements (often marked by forest clearings) were maintained by the communities (led by the elders) as sacred places of ritual and burial grounds. Destruction of vegetation around these sites was prohibited so as to preserve the surrounding ‘*Kaya*’ forest as a screen or buffering environment for the clearings. Since 1992, the Kenyan Government has gazetted a number of them as national monuments, with assistance from the well-known *Kaya* Project of the Coastal Forest Conservation Unit (CFCU) of The National Museums of Kenya. CEPF should support such initiatives throughout the hotspot, with a particular emphasis on contemporary validation of their historical, cultural and biodiversity values.

1.6 Research and promote ecoagricultural options for the local communities of the hotspot. McNeely and Scherr (2003) document 36 case studies where agricultural practices improve productivity and enhance biodiversity. In 25 cases the beneficiaries were subsistence farmers. McNeely and Scherr suggest that ecoagriculture could be usefully promoted around biodiversity hotspots surrounded by poor small-scale farmers. Ecoagriculture includes well-established agricultural practices such as agroforestry, medicinal plant domestication, bioprospecting and organic farming. There is a great deal of ecoagricultural expertise in East Africa, which could be put to use by the local communities in this hotspot. In view of the effectiveness of price incentives, introduction of high value crops (e.g. medicinal plants and plants containing essential oils) could be a good option, particularly if these also have positive biodiversity values and if controls on forest encroachment are adequately enforced.

2. Restore and increase connectivity among fragmented forest patches in the hotspot, especially in Lower Tana River Forests, Taita Hills, East Usambaras/Tanga and Udzungwas

It is a well-established principle in ecology that species richness is positively correlated with area. When a forest is fragmented, each fragment of forest contains fewer species than did the intact forest and large fragments contain more species than small fragments (Laurance *et al.* 2001 and references therein; Newmark 2002). Some species are lost immediately through sampling effects, while others are lost because they need large areas to sustain their populations.

Local extinctions continue well after the fragmentation event, as genetic diversity decreases and isolated populations become more inbred and vulnerable to diseases and random events. Some species disappear because they depend on others that are lost. Edge effects become more important as fragment size decreases, affecting microclimates, exposing trees to winds and other conditions that exceed their physiological tolerance and further reducing the amount of habitat favoured by forest-dependent species. Some species do well in such conditions and there may be local increases in biodiversity, with edge-tolerant species thriving and matrix species penetrating the forest fragments. But for most of the forest-dependent species and these include many of the Red List species in this hotspot, fragmentation further threatens their survival. For example, in the Taita Hills, fragmentation is associated with adverse effects on sex ratios and developmental stability in threatened bird species, including the Critically Endangered Taita thrush (Lens & Van Dogen 1999; Lens *et al.* 1998, 1999a, b, 2001, 2002).

Reconnecting recently fragmented forest patches can save species from extinction. Gene flow can be restored among isolated populations, locally extinct species can be reintroduced through immigration and ecologically complex processes that sustain diversity can be re-established. This is an important research front and the hotspot is an ideal location for such work. There are many opportunities for implementation and investigation in both conservation science and community conservation. Best practices could be replicated over larger areas. The hotspot is also a treasure house for evolutionary biology. A wide variety of taxa, at various levels of speciation, are available to examine issues of genetic divergence and isolation in relation to distance, mobility and vagility. The sites chosen for this strategic direction were assessed from a biological perspective and were determined to present the greatest opportunity for successful connectivity efforts.

2.1 Assess potential sites in the hotspot for connectivity interventions. Not all forest fragments should be reconnected. Where fragmentation is natural and long established, any negative effects will have already been expressed and, over evolutionary time, new subspecies and species will have evolved. There is little doubt that this process of fragmentation and isolation has been responsible, for example, for the extraordinary diversity of some of the invertebrates (millipedes, linyphiid spiders, opilionids and carabid beetles) in the Eastern Arc Mountains, where single site endemism exceeds 80 percent (Scharff *et al.* 1981; Scharff 1992, 1993; Hoffman 1993, 2000; Burgess *et al.* 1998). The most suitable sites for connectivity interventions are, therefore, those in which (1) fragmentation is relatively recent, where (2) detailed scientific background data are available, where (3) this is considered to be a priority conservation action and where (4) this is a realistic activity. It will also be important to identify altitudinal forest corridors, which are, or could be, used for seasonal altitudinal migration.

2.2 *Support initiatives that maintain or restore connectivity in the hotspot.* Where the establishment of biodiversity corridors makes ecological, conservation and practical sense, it should be supported. Examples of narrow gaps between formerly joined forests are numerous in this hotspot. Some of the most important opportunities for restoring connectivity are in the Taita Hills, Lower Tana River Forests, Uluguru Mountains, East Usambara Mountains and Udzungwa Mountains. In several of these sites, connectivity has a direct bearing on the conservation of globally threatened bird species.

2.3 *Monitor and evaluate initiatives that maintain or restore connectivity in the hotspot.* Baseline monitoring, before restoring connectivity, is essential and indicator species should be identified and monitored so as to track impacts. The choice of indicator species should reflect a wide spectrum of mobility (“from a slug to a bird”) and the availability of background knowledge (e.g. on population genetics). Effects on Red List species should be studied in as much detail as funds and circumstances allow. Monitoring of altitudinal connectivity will be particularly interesting in the context of climate change.

2.4 *Support best practices for restoring connectivity in ways that also benefit people.* Lens *et al.* (2003) have drawn attention to the opportunities for benefiting people while establishing biodiversity corridors. These include allowing local farmers to harvest old and neglected plantations, paying them for nurturing regenerating forest and planting indigenous seedlings, improving water catchments and encouraging agroforestry on their farms. The Taita Hills and the East Usambara Mountains are particularly suitable for such activities.

2. Improve knowledge of biodiversity in the hotspot

This profile notes numerous gaps in biological knowledge in the hotspot. Many sites remain little studied and some of these sites are relatively large (e.g., the Nguru Mountains, Nguu Mountains, Rubeho Mountains, Boni Forest, Dodori Forest). Even the better-known sites continue to yield many new species. There has been an extraordinary amount of speciation amongst the invertebrates, yet data on the invertebrate biodiversity in the hotspot is meagre. Indigenous knowledge of the flora and fauna is inadequately documented and is fast being lost. Public awareness of the biodiversity values of this hotspot is very limited, both locally and internationally. Ultimately, our capacity to conserve depends on the range and depth of our knowledge. As such, improving knowledge must be a key element in the CEPF strategy for this hotspot.

3.1 *Refine and implement a standardized monitoring program across sites.* For the purpose of site monitoring, standardised, simple and cost-effective protocols must be established and implemented for selected species that are generalist indicators of habitat health. The number of taxa monitored should be minimal so as to economise on effort and expense. Suitable protocols already exist for a number of taxonomic groups and their systematic application across sites will create a data set with greatly added value. Standardised monitoring protocols are required to assess the impacts of conservation projects and to evaluate project success.

3.2 *Support research in the less studied of the 160 eligible sites in the hotspot.* Little known sites need more biodiversity surveys and other scientific investigations. The focus should be

compiling lists of species and assessing distribution and abundance, so that the necessary data are available for assessing the relative biological importance of sites and the degree of threat status of species.

3.3 Monitor populations of Critically Endangered and Endangered Species in the hotspot. Particular attention must be given to monitoring the 24 Critically Endangered and 68 Endangered species of this hotspot (Table 1, 2, Appendix 3). Their continued existence is the bottom line for CEPF interventions. This calls for a wise use of resources, as the monitoring of rare species can take much time and effort. Expert training of and support for, local field technicians may be one way to compensate for the short field visits of professional scientists. Special care will be necessary to ensure that monitoring activities do not expose endangered species to any added risks.

3.4 Support research in the hotspot to facilitate Red List Assessments and re-assessments for plants, reptiles and other taxa. The deficiencies of the 2002 Red Lists for this hotspot have already been noted. This is dramatically illustrated by the 973 plant taxa in the *List of Potentially Threatened Plants* (Gereau and Luke 2003) that is included in the Outcomes Database for the hotspot. The situation is scarcely any better for the reptiles, where none of the more than 50 endemic reptiles in this hotspot are included in the 2002 Red List. Red List assessments for invertebrates would probably add thousands more species to the conservation outcomes for this hotspot. Red List assessments must be an investment priority.

3.5 Compile and document indigenous knowledge on hotspot sites and species. The values of indigenous knowledge of biodiversity and the urgent need for its documentation are widely recognized. An enormous amount of knowledge on biodiversity and its uses has been accumulated among indigenous peoples in the hotspot and has been transferred orally across the generations. While much of this has been recorded, the literature is scattered and hard to find. It needs to be compiled in both hard copy and database form. In any research in this area, the recognition of Intellectual Property Rights must be a primary consideration and the sources of information must be meticulously recorded.

3.6 Support awareness programs that increase public knowledge and appreciation of biodiversity values in this hotspot. The usefulness of awareness programs in conservation is often questioned. One problem is that they are often limited in their impacts by short project lifecycles, whereas awareness needs to be continually re-enforced (as shown by commodity marketing). Another is that awareness of biodiversity is seldom linked to any real benefits for the target communities. Innovative approaches are needed that circumvent these difficulties. Ways need to be found to put a bright and constant spotlight on the ecological services provided by the hotspot's forests (particularly water catchment and hydropower). Current public awareness of the global biodiversity values of the hotspot also needs to be boosted at all levels.

4. Establish a Small Grants Program for all the 160 important sites identified for the hotspot, that focuses on critically endangered species and small scale efforts to increase connectivity of biologically important habitat patches

Experience, particularly in the GEF, shows that small grants can be cost effective. Small grants should be made available through CEPF for community-based organizations and NGOs working to save Critically Endangered species and threatened sites in this hotspot. The intention is not to duplicate or compete with existing small grants programs on conservation issues, but to seek synergies and leverage funds for NGOs, community-based organizations and institutions of learning. Small grants programs incur high administration costs (per grant dollar) because of the burden of dealing with several small projects at once. Costs are also incurred because the beneficiaries are usually less well established than those receiving large grants and require closer monitoring and guidance on the ground. CEPF will evaluate the possibility of partnering with an in-region organization to host its small (>10,000 per grant) grants program.

A focus on the threatened sites and species in this hotspot will be a mandatory criterion for funding and selection of proposals will be made on the strength of this focus and the likelihood of positive impacts. In order to ensure a wide distribution of the available funds over these sites and species, the ceiling on grants for any one proposal will be \$10,000.

4.1 Support targeted efforts to increase connectivity of biologically important habitat patches in the hotspot. Community-based organizations should be encouraged to engage in efforts to increase small-scale connectivity. It is widely recognized that project ownership at the community level is a key factor in project sustainability. There may also be opportunities for the contribution of labor, for corridor establishment and maintenance, to be accepted as payment in kind for other community development projects. Any such arrangement will require that appropriate monitoring systems are in place to ensure that all obligations are met.

4.2 Support efforts to increase biological knowledge of the sites and efforts to conserve Critically Endangered Species in the hotspot. Small grants programs can be extremely useful and cost-effective in supporting low-cost research. There are a number of universities in Kenya and Tanzania with active postgraduate programmes in biology and conservation. Small grant support for field research by postgraduate students within the hotspot will bear dividends in terms of both capacity building and new knowledge. Small grant support should also be given to projects that directly reduce threats to Critically Endangered species.

5. Develop and support efforts for further fundraising for the hotspot

Although fundraising was not seen as a priority theme by the 12 March workshop in Dar es Salaam, it is prudent to plan ahead. Most of the larger grant-dependent institutions now have full time Resource Mobilization Units (RMUs) or Project Development Departments. These have been very successful in obtaining funds in an increasingly competitive environment and in preventing funding gaps for projects that need long-term financing. Efforts to secure long-term funding can be greatly enhanced through:

- coordinated, centralized and choreographed project marketing and improved investor relations;
- centralized information centres for resource mobilization and proposal development;
- training and institutional development in resource mobilization, proposal development and writing and project marketing; and
- strategically intertwined and targeted resource mobilization and public awareness.

CEPF will support efforts to raise further funds for this hotspot in partnership with an institution working in Tanzania or Kenya.

5.1 Establish a professional Resource Mobilization Unit, within an appropriate local partner institution, for raising funds and resources for the hotspot. An appropriate institution in Tanzania or Kenya should be identified to host or co-host an RMU for the Eastern Arc and Coastal Forests hotspot. Depending on the arrangements, this RMU could provide services to both that institution and CEPF or it could concentrate on hotspot funding alone.

5.2 *Utilize high-level corporate contacts to secure funding from the private sector for the hotspot.* There has been relatively little private sector involvement in the hotspot. In a few cases (notably with TFCG in Tanzania), private sector support has been obtained, but this has mostly been through local approaches to mid-level management and the funding obtained has been small-scale. Given the global importance of the hotspot and the interest this has stimulated, it is time to move up the corporate ladder and seek support from higher levels of management, particularly within the multinationals that have interests in East Africa. CEPF is in a good position to facilitate this process and a professional RMU would quickly follow up any opportunities that might arise.

5.3 *Train local NGOs and community-based organizations in fundraising and proposal writing for the hotspot.* Although many of the local NGOs and some community-based organizations have developed skills in fundraising and proposal writing, the standard is still low in the international context in which funding is being sought. The RMU could be of great assistance in raising this standard through workshops, publications, sharing databases and collaboration with local NGOs and community-based organizations in proposal development from the inception of an idea to the submission of the document.

SUSTAINABILITY

The issue of sustainability for conservation interventions is usually addressed by one or a combination of five strategies:

1. establishing sustainable funding mechanisms such as a Trust or Endowment Fund;
2. building local human capacity to manage conservation issues;
3. fostering private sector involvement in conservation;
4. establishing/assisting commercially viable conservation projects; and
5. leveraging further donor funding.

An Endowment Fund for the Eastern Arc Mountains is one of the outcomes for the big GEF project (GEF 2002). An alternative sustainable funding mechanism is suggested in this profile: a Resource Mobilization Unit. This unit will become self-sustaining through the funds it raises. Local human capacity will be built by 14 of the investment priorities. Fostering private sector involvement can be done through four of them. Commercially viable conservation projects are the outcome of two-three investment priorities. Leveraging of further donor funding is the only possible strategy for five of the investment priorities. It will also be necessary if the small grants are to continue and it should be pursued by the RMU for all priorities as opportunity arises.

CONCLUSION

The biological importance of the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya is well recognized. There have been a considerable number of biodiversity investigations and conservation efforts in this hotspot during the last three decades. Despite this investment, there are significant gaps in our biological knowledge. There are also important opportunities for the further application of conservation science, particularly with respect to forest fragmentation. The major threats to the hotspot arise from the needs of impoverished local people, rather than from any large-scale developmental projects or corporate ventures. These considerations have led to a definition of the CEPF niche that builds on previous work through a focus on people and science.

The people focus will be on the interface between biodiversity and development and will address ways in which local populations can benefit from and contribute to, biodiversity conservation in the hotspot. The science focus will be on opportunities for improving connectivity in fragmented forests and on gaps in our biological knowledge of the hotspot. In each case, projects funded by CEPF must have a positive effect on at least one of the 333 threatened species and/or the 160 sites identified in this profile. Building local human capacity is the major element in the sustainability strategy. No matter how global the world becomes, it will be local actions that will largely determine the future of biodiversity hotspots. The prospects for the hotspots will be greatly improved if these local actions are motivated by conservation concerns and guided by good science.

ABBREVIATIONS USED IN THE TEXT

| | |
|-----------|--|
| ACC | African Conservation Centre |
| AWF | African Wildlife Foundation |
| BP | Before Present |
| CD-ROM | Compact Disc - Read Only Memory |
| CFCU | Coastal Forest Conservation Unit |
| CEPF | Critical Ecosystem Partnership Fund |
| CFCU | Coastal Forest Conservation Unit |
| CI | Conservation International |
| DANIDA | Danish International Development Agency |
| DFO | District Forest Officer |
| DRC | Democratic Republic of Congo |
| EAMCEF | Eastern Arc Mountains Endowment Fund |
| EANHS | East Africa Natural History Society |
| EAWLS | East African Wildlife Society |
| ELCI | Environmental Liaison Centre International |
| EMCA | Environmental Management and Coordination Act (Kenya) |
| FAN | Forest Action Network |
| FBD | Forestry and Beekeeping Division (Tanzania) |
| FD | Forest Department (Kenya) |
| FINNIDA | Finnish International Development Assistance Agency |
| FoC | Friends of Conservation |
| FR | Forest Reserve |
| GEF | Global Environment Facility |
| GEF/SGP | Global Environment Facility / Small Grants Programme |
| GDP | Gross Domestic Product |
| GIS | Geographic Information System |
| GTZ | German Agency for Technical Cooperation |
| HIV-AIDS | Human Immunodeficiency Virus - Acquired Immunodeficiency Syndrome |
| IBA | Important Bird Area (according to Birdlife International) |
| ICBP | International Council for Bird Preservation (now BirdLife International) |
| ICDP | Integrated Conservation and Development Project |
| IDA | International Development Assistance |
| IUCN | International Union for the Conservation of Nature (World Conservation Union) |
| IUCN-EARO | International Union for the Conservation of Nature - East African Regional Programme |
| JET | Journalist Environmental Association of Tanzania |
| KEFRI | Kenya Forestry Research Institute |
| KFWG | Kenya Forest Working Group |
| KWS | Kenya Wildlife Service |
| LEAT | Lawyers Environmental Association of Tanzania |
| MENR | Ministry of Environment and Natural Resources (Kenya) |
| MNRT | Ministry of Natural Resources and Tourism (Tanzania) |

| | |
|-----------|--|
| MoU | Memorandum of Understanding |
| NEMA | National Environment Management Authority (Kenya) |
| NEMC | National Environment Management Council (Tanzania) |
| NFP | National Forest Programme |
| NGO | Nongovernmental Organization |
| NK | Nature Kenya |
| NMK | National Museums of Kenya |
| NORAD | Norwegian Agency for Development Cooperation |
| NR | National Reserve |
| NRI | Natural Resources Institute |
| NU | Nature Uganda |
| PACT | Private Agencies Collaborating Together |
| PDF | Project Development Fund |
| PDF/B | Project Development Fund / Block B |
| PFM | Participatory Forest Management |
| RMU | Resource Management Unit |
| SFM | Sustainable Forest Management |
| TAFORI | Tanzania Forestry Research Institute |
| TANAPA | Tanzania National Parks Authority |
| TAWIRI | Tanzania Wildlife Research Institute |
| TFCG | Tanzania Forest Conservation Group |
| TFS | Tanzania Forest Service (to be established) |
| UMNP | Udzungwa Mountains National Park |
| UNDP | United Nations Development Programme |
| USAID | United States Agency for International Development |
| WCST | Wildlife Conservation Society of Tanzania |
| WD | Wildlife Department, Tanzania |
| WWF-EARPO | WWF Eastern African Regional Programme Office |
| WWF-US | WWF United States |

REFERENCES

- Axelrod, D.I. & P.H. Raven. 1978. Late Cretaceous and Tertiary vegetation history of Africa.. In *Biogeography and Ecology of Southern Africa*. M.J.A. Werger, ed.. Dr. W. Junk Publications, The Hague. Pp 77–130.
- Arabuko-Sokoke Forest Management Team. 2002. *Arabuko-Sokoke Strategic Forest Management Plan 2002–2027*. BirdLife International, Cambridge.
- Baker, N. & E. Baker. 2002. *Important Bird Areas of Tanzania: A First Inventory*. Wildlife Conservation Society of Tanzania, Dar es Salaam, Tanzania.
- Beentje, H. & S. Smith. 2001. FTEA and after. *Syst. Geogr. Pl.* 71: 265–290.
- Bennun, L.A. & P. Njoroge. 1999. *Important Bird Areas in Kenya*. Nairobi, Africa: Nature Kenya.
- Broadley, D.G. & K.M. Howell. 2000. Reptiles. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 191–199.
- Brooks, T.M., L. Lens, M. De Meyer, E. Waiyaki, & C. Wilder. 1998. Avian Biogeography of the Taita Hills, Kenya. *Journal of East African Natural History* 87: 189–194.
- Brooks, T.M., A. Balmford, N.D. Burgess, J. Fjeldsa, L.A. Hansen, J. Moore, C. Rahbek & P. Williams. 2001. Towards a blueprint for Conservation in Africa. *Bioscience* 51: 613–624.
- Brooks, T.M., R.A. Mittermeier, C.G. Mittermeier, G.A.B. da Fonseca, A.B. Rylands, W.R. Konstant, P. Flick, J. Pilgrim, S. Oldfield, G. Magin & C. Hilton-Taylor. 2002. Habitat Loss and Extinction in the Hotspots of Biodiversity. *Conservation Biology* 16: 909–923.
- Burgess, N.D. 2000. Global importance and patterns in the distribution of coastal forest species. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 235–248
- Burgess, N.D. & G.P. Clarke, eds.. 2000. *The Coastal Forests of Eastern Africa*. IUCN: Cambridge and Gland.
- Burgess, N.D., G.P. Clarke, & W.A. Rodgers. 1998c. Coastal Forests of eastern Africa: status, species endemism and its possible causes. *Biological Journal of the Linnean Society* 64: 337–367.
- Burgess, N.D., J. Fjeldsa & R. Botterweg. 1998b. The faunal importance of the Eastern Arc Mountains. *Journal of East African Natural History* 87:37–58.
- Burgess, N.D., J.C. Lovett & S. Muhagama. 2001. Biodiversity conservation and sustainable forest management in the Eastern Arc Mountains. Unpublished Report prepared for GEF/PDFB Eastern Arc Strategy Process.
- Burgess, N.D., G.P. Clarke, J. Madgewick, S.A. Robertson & A. Dickinsen. 2000. Distribution and Status. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 71–81.
- Burgess, N.D., D. Kock, A. Cockle, C. FitzGibbon, P. Jenkins, & P. Honess. 2000. Mammals. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 173–190.
- Burgess, N.D., M. Nummelin, J. Fjeldsa, K.M Howell, K. Lukumbyzya, L. Mhando, P. Phillipson, & E. Vanden Berghe, editors. 1998a. *Biodiversity and Conservation of the Eastern Arc Mountains of Tanzania and Kenya*. *Journal of the East African Natural History Society* (special issue) 87: 367pp.
- Butynski, T.M. & G. Mwangi. 1994. Conservation status and distribution of the Tana River red colobus and crested mangabey. Unpublished report for Zoo Atlanta, National Museums of Kenya, Institute of Primate Research and East African Wildlife Society. Pp. 67.

- Clarke, G.P. 1995. *Status reports for 6 Coastal Forests in Lindi Region, Tanzania*. Frontier-Tanzania Technical Report No. 18. Pp 63. The Society for Environmental Exploration/The University of Dar es Salaam, London and Dar es Salaam.
- Clarke, G.P. 2000. Climate and climatic history. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 47–67.
- Clarke, G.P. & N.D. Burgess. 2000. Geology and Geomorphology. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 29–39.
- Clarke, G.P. & A. Dickinson. 1995. *Status reports for 11 Coastal Forests in Coast Region, Tanzania*. Frontier-Tanzania Technical Report No. 17. Pp. 113. The Society for Environmental Exploitation/The University of Dar es Salaam, London and Dar es Salaam.
- Clarke, G.P. & S.A. Robertson. 2000. Vegetation Communities. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 83–102.
- Clarke, G.P. & L. K. Stubblefield. 1995. *Status Reports for 7 Coastal Forests in Tanga Region, Tanzania*. Frontier-Tanzania Technical Report No. 16. 67 pp. The Society for Environmental exploration/The University of Dar es Salaam, London and Dar es Salaam.
- Clarke, G.P., K. Vollesen, & L.B. Mwasumbi. 2000. Vascular Plants. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 129–147.
- Dinesen, L., T. Lehmborg, J.O. Svendsen, L.A. Hansen & J. Fjeldsa. 1994. A new genus and species of perdicine bird (Phasianidae, Perdicini) from Tanzania: a relict form with Indo-Malayan affinities. *Ibis* **136**: 2–11.
- Ferraro, P.J. & A. Kiss. 2002. Direct payments to conserve biodiversity. *Science* **298**: 1718–1719.
- FitzGibbon, C.D., H. Mogaka & J. Fanshawe. 1995. Subsistence hunting in Arabuko-Sokoke Forest and its effects on mammal populations. *Conservation Biology* **9**: 1116–1126.
- Forest Department. 1994. The Kenya Forestry Plan. FINNIDA/Forest Department, Karura, Nairobi.
- Gereau, R. & Q.L. Luke. 2003. List of Potentially Threatened Plants in the Eastern Arc Mountains and Coastal Forest Biodiversity Hotspot of Kenya and Tanzania. Unpublished report.
- GEF. 1998. *Overall Performance Study* (Washington DC, 1998)
- GEF. 2002. Project Brief: Conservation and Management of the Eastern Arc Mountain Forests, Tanzania. GEF Arusha, Tanzania.
- Gordon, I. & W. Ayiamba. 2003. Harnessing butterfly biodiversity for improving livelihoods and forest conservation: the Kipepeo Project. *The Journal of Environment and Development* **12**: 82–98.
- Griffiths C.J 1993. The geological evolution of Eastern Africa. In *Biogeography and Ecology of the rain forest of eastern Africa*. J.C. Lovett & S.K Wasser, eds. Cambridge University Press, Cambridge. Pp. 9–21.
- Hoffman, R.L. 1993. Biogeography of East African montane forest millipedes. In *Biogeography and Ecology of the rain forest of eastern Africa*. J.C. Lovett & S.K Wasser, eds. Cambridge University press, Cambridge. Pp. 103–115.
- Hoffman, R.L. 2000. Millipedes. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 211–218.
- IUCN. 1994. *The 1994 IUCN Red list of the Threatened Species*. IUCN, Cambridge and Gland.
- IUCN. 2002. *The 2002 IUCN Red List of the Threatened Species*. IUCN, Cambridge and Gland.
- Kanga, E. 1996. Survey of Aders' Duiker *Cephalophus adersi* and other ungulates in the Arabuko-Sokoke Forest Reserve, Kenya. Unpublished Report, national Museums of Kenya and Zoo Atlanta.

- Kesley, M. G. & T. E. S. Langton. 1984. *The Conservation of Arabuko-Sokoke Forest*. ICBP Study Report No.4. International Council for Bird Preservation, Cambridge.
- Kenya Forest Department. 1994. The Kenya Forestry Plan. FINNIDA/Forest Department, Karura, Nairobi.
- Laurance, W.F, T.E. Lovejoy, H.L. Vasconcelos, E.M. Bruna, R.K. Didham, P.C. Stouffer, C. Gascon, R.O. Bierregaard, S.G. Laurance & E. Sampaio. Ecosystem Decay of Amazonian Forest fragment: a 22-year Investigation. *Conservation Biology* **16**: 605-618.
- Lens, L. & S. Van Dongen. 1999. Evidence for organism-wide asymmetry in five bird species of a fragmented afro-tropical forest. *Proceedings of the Royal Society of London, Series B* **266**: 1055–1060.
- Lens, L, F. Adriaensen, & E. Matthysen. 1999a. Dispersal studies in recently and historically fragmented forests—a comparison between Kenya and Belgium. In *Proceedings of the 22nd International Ornithological Congress*. N. Adams & R. Slotow, eds. University of Natal, Durban, Natal. Pp. 2480–2491.
- Lens, L., K. Wakanene, B. Bytebier & M. De Meyer. 2003. Forest restoration in the Taita Hills. Unpublished concept paper.
- Lens, L, P. Galbusera, T. Brooks, E. Waiyaki, & T. Schenck. 1998. Highly skewed sex ratios in the critically endangered Taita Thrush as revealed by CHD genes. *Biodiversity and Conservation* **7**: 869–873.
- Lens, L., S. Van Dongen, K. Norris, M. Githiru & E. Matthysen. 2002. Avian persistence in fragmented rain forest. *Science* **298**: 1236–1238.
- Lens L, S. Van Dongen, C.M. Wilder, T. Brooks & E. Matthysen. 1999b. Fluctuating asymmetry increase with habitat disturbance in seven bird species of a fragmented afro-tropical forest. *Proceedings of the Royal Society of London, Series B* **266**: 1241–1246.
- Lovett, J.C. 1988. Endemism and affinities of the Tanzanian montane forest flora. In *Monographs in Systematic Botany*. P. Goldblatt & P.P. Lowry, eds. *Missouri Botanical Gardens* **25**:491–496.
- Lovett, J.C. 1993. Temperate and tropical floras in the mountains of eastern Tanzania. *Opera Botanica* **121**:217–227
- Lovett, J.C. 1998a. Continuous changes in Tanzania moist forest tree communities with elevation. *Journal of Tropical Ecology* **14**:719–722
- Lovett, J.C. 1998b Importance of the Eastern Arc mountains for vascular plants. *Journal of East African Natural History* **87**:59–74.
- Lovett, J.C. 1998c. Eastern tropical African centre of endemism: a candidate for World Heritage Status? *Journal of East African Natural History* **87**: 359–366.
- Lowe, A.J. & G.P. Clarke. 2000. Vegetation Structure. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 103–113.
- Lovett, J.C. & S.K. Wasser, eds. 1993. *Biogeography and Ecology of the Rain Forests of Eastern Africa*. Cambridge University Press, Cambridge
- Lovett, J.C., J.R. Hansen & V. Holrlyck. 2000. Comparison with eastern Arc Forests. In *The Coastal Forests of Eastern Africa*. N.D. Burgess & G.P. Clarke, eds. IUCN: Cambridge and Gland. Pp. 115–125.
- Mariki, S.W., F. Shechambo & J. Salehe. 2003. The contribution of environmental goods and services to Tanzania's economy: with reference to poverty reduction. IUCN-EARO, Nairobi.
- McNeely, J.A. & S.J. Scherr. 2003. *Ecoagriculture*. Island Press, Washington.

- Ministry of Natural Resources and Tourism. 2001. National Forest Programme. Forestry and Beekeeping Division, Dar es Salaam, Tanzania.
- Missouri Botanical Garden (MBG). 2003. TROPICOS database. Online at www.mobot.mobot.org/W3T/Search/vast.html. Last accessed March 15, 2003.
- Muriithi, S. & W. Kenyon. 2002. Conservation of biodiversity in Arabuko-Sokoke Forest, Kenya. *Biodiversity and Conservation* **11**: 1437–1450.
- Mwihomeke, S.T., T.H. Msangi, C.K Mabula, J. Ylhaisi, & K.C.H. Mndeme. Traditionally protected forest and nature Conservation in the north Pare mountains and Handeni District, Tanzania. *Journal of East African Natural History* **87**:279–290.
- Myers, N. 1990. The biological challenge: extended hot spot analysis. *The Environmentalist* **10**: 243–256.
- Myers, N., R.A Mittermeier, C.G. Mittermeier, G.A.B. da Fonseca & J. Kent. 2000. Biodiversity hotspots for conservation priorities. *Nature* **403**: 853–858.
- National Biodiversity Unit. 1992. The costs, benefits and unmet needs of biological diversity conservation in Kenya. A study prepared for the Government of Kenya and the United Nations Environmental Programme. Nairobi, National Biodiversity Unit.
- NRI. 1996. *Kenya Natural Resources Profile*. Chatham, UK: Natural Resources Institute.
- Newmark, W.D. 1991. Tropical forest fragmentation and the local extinction of understorey birds in the eastern Usambara Mountains, Tanzania. *Conservation Biology* **5**: 67–78.
- Newmark, W. 1998. Forest area, fragmentation and loss in the Eastern Arc Mountains: implications for the conservation of biological diversity. *Journal of East African Natural History* **87**: 29–36.
- Newmark, W.D. 2002. Conservation biodiversity in Eastern African forests: a study of the Eastern Arc Mountains. *Ecological Studies*, Vol. **155**, Springer, Berlin, Germany.
- Oates, J. 1999. *Myth and Reality in the Rain Forests*. University of California Press, London, England.
- Pocs, T. 1998. Distribution of bryophytes along the Eastern Arc Mountains. *Journal of East African Natural History* **87**: 75–84.
- Poynton, J.C., K.M. Howell, B.T. Clarke & J.C. Lovett. 1998. A critically endangered new species of *Nectophrynoides* (Anura: Bufonida) from the Kihansi Gorge, Udzungwa Mountains, Tanzania. *African Journal of Herpetology* **47**: 59–67.
- Pressey, R.L. 1994. *Ad hoc* reservations: forward or backward steps in developing representative reserve systems. *Conservation Biology* **8**: 662–668.
- Robertson, S.A. 1987. Preliminary Floristic Survey of Kaya Forest on Coastal Kenya. Unpublished Report. National Museums of Kenya, Nairobi.
- Robertson, S.A. & W. R.Q. Luke. 1993. Kenya Coastal Forests. WWF, Nairobi.
- Rodgers, W. A., 1998. An introduction to the Eastern Arc Mountains. *Journal of East African Natural History* **87**:7–18.
- Roe, D., T. Mulliken, S Milledge, J. Mremi, S. Mosha, & M. Grieg-Gran. 2002. *Making a killing or making a living? Wildlife trade, trade controls and rural livelihoods*. Biodiversity and Livelihood Issues No. 6. IIED, London, UK.
- Roy, M.S., J.M.C. da Silva, P. Arctander, J. Garcia-Moreno & J. Fjeldsa. 1997. The role of montane regions in the speciation of South American and African birds. In *Avian Molecular Evolution and Systematics*. D.P. Mindell, ed. Academic Press, London and New York.
- Reuters. 2003. Kenya says Canada miner must hike land payout.
> <http://www.planetark.org/dailynewsstory.cfm/newsid/20936/story.htm>
- Scharff, N. 1992. The Linyphiid fauna of eastern Africa (Araneae: Linyphiidae)—distribution

- patterns, diversity and endemism. *Biological Journal of the Linnean Society of London* **45**: 117–154.
- Scharff, N. 1993. The Linyphiid spider fauna (Araneae: Lyniphiidae) of mountain forests in the Eastern Arc Mountains. In *Biogeography and Ecology of the rainforests of Eastern Africa*. J.C. Lovett & S.K. Wasser, eds. Cambridge University Press, Cambridge. Pp. 115–132
- Scharff, N., M. Stoltze & F.P. Jensen. 1981. The Uluguru mountains, Tanzania: Report of a Study-Tour, 1981. Zoological Museum of The University of Copenhagen, Copenhagen.
- Struhsaker, T. 1997. *Ecology of an African Rain Forest: Logging in Kibale and the Conflict between Conservation and Exploitation*. Gainesville, University Press, Florida.
- Terborgh, J. 1999. *Requiem for Nature*. Island Press, Washington, D.C
- UNEP. 1998, Eastern Africa Atlas of Coastal Resources: Kenya. UNEP, Nairobi
- United Republic of Tanzania. 1998. *The Forest Policy of Tanzania*. Dar es Salaam, Tanzania.
- United Republic of Tanzania. 1999a. *Land Act (Act No. 6 of 1999)*. Dar es Salaam, Tanzania.
- United Republic of Tanzania. 1999b. *Village Land Act (Act No. 7 of 1999)*. Dar es Salaam, Tanzania.
- United States Department of State. 2002a. Background Note: Kenya. <http://www.state.gov/r/pa/ei/bgn/2962/htm>
- United States Department of State. 2002b. Background Note: Tanzania. <http://www.state.gov/r/pa/ei/bgn/2843/htm>
- USAID. 2003. http://www.usaid.gov/regions/afr/country_info/kenya.html
- USAID. 2000. USAID Kenya Strategic Plan: Environmental threats and opportunities assessment. USAID, Nairobi. <http://www.frameweb.org/pdf/Kenya.PDF>
- White, F. 1983. The vegetation of Africa. A descriptive memoir to accompany the UNESCO/AETFAT/UNSO Vegetation Map of Africa. Paris, UNESCO
- Whiteman, A. 2003. Recent trends in fiscal policies in the forest sector in Africa. In *State of the Worlds Forests 2003*, pp 108-121. FAO, Rome
- Wieczkowski, J. & D.N.M. Mbori. 1999–2000. Increasing threats to the conservation of endemic endangered primates and forests of the lower Tana River, Kenya. *African Primates* **4**: 32–40.
- World Bank. 2001. www.worldbank.org/data/quickreference/quickref.html)
- WWF-EARPO. 2002. Eastern African Coastal Forest Programme. Regional Workshop Report. Nairobi 4–7 February 2002.
- WWF-US 2003a. Ecoregional reports: Eastern Arc Forest. Eastern and Southern Africa Biomes. J. Schipper & N. Burgess, authors.
- WWF-US 2003b. Ecoregional reports: Northern Zanzibar-Inhambane coastal Forest Mosaic. Eastern and Southern Africa Bioregions. J. Schipper & N. Burgess, authors.

APPENDICES

Appendix 1. Globally threatened species in the Eastern Arc Mountains and Coastal Forests hotspot (*The IUCN 2002 Red List of Threatened Species*)

| Scientific Name* | IUCN STATUS | | | DISTRIBUTION | |
|--------------------------------|-----------------------|------------|------------|--------------|----------|
| | Critically Endangered | Endangered | Vulnerable | Tanzania | Kenya |
| Mammals | 5 | 8 | 16 | 27 | 9 |
| <i>Beamys hindei</i> | | | + | X | X |
| <i>Cephalophus adersi</i> | | + | | X | X |
| <i>Cephalophus spadix</i> | | | + | X | |
| <i>Crocidura desperata</i> | + | | | X | |
| <i>Crocidura elgonius</i> | | | + | X | |
| <i>Crocidura monax</i> | | | + | X | |
| <i>Crocidura tansaniana</i> | | | + | X | |
| <i>Crocidura telfordi</i> | + | | | X | |
| <i>Crocidura usambarae</i> | | | + | X | |
| <i>Crocidura xantippe</i> | | | + | X | |
| <i>Dendrohyrax validus</i> | | | + | X | |
| <i>Diceros bicornis</i> | + | | | X | |
| <i>Galago rondoensis</i> | | + | | X | |
| <i>Loxodonta africana</i> | | + | | X | X |
| <i>Lycaon pictus</i> | | + | | X | |
| <i>Myonycteris relicta</i> | | | + | X | X |
| <i>Myosorex geata</i> | | + | | X | |
| <i>Otomops martiensseni</i> | | | + | X | |
| <i>Paraxerus palliatus</i> | | | + | X | X |
| <i>Paraxerus vexillarius</i> | | | + | X | |
| <i>Procolobus gordonorum</i> | | | + | X | |
| <i>Procolobus kirkii</i> | | + | | X | |
| <i>Procolobus rufomitratu</i> | + | | | | X |
| <i>Pteropus voeltzkowi</i> | + | | | X | |
| <i>Rhynchocyon chrysopygus</i> | | + | | | X |
| <i>Rhynchocyon cirnei</i> | | | + | X | |
| <i>Rhynchocyon petersi</i> | | + | | X | X |
| <i>Sylvisorex howelli</i> | | | + | X | |

| | | | | | | |
|------------------------------------|----------|-----------|-----------|-----------|--|-----------|
| <i>Taphozous hildegardeae</i> | | + | | X | | X |
| Birds | 3 | 10 | 15 | 24 | | 10 |
| <i>Anthreptes pallidigaster</i> | | + | | X | | X |
| <i>Anthreptes rubritorques</i> | | | + | X | | |
| <i>Anthus sokokensis</i> | | + | | X | | X |
| <i>Apalis chariessa</i> | | | + | X | | |
| <i>Apalis fuscigularis</i> | + | | | | | X |
| <i>Ardeola idae</i> | | | + | X | | |
| <i>Bathmocercus winifredae</i> | | | + | X | | |
| <i>Bubo vosseleri</i> | | | + | X | | |
| <i>Cinnyricinclus femoralis</i> | | | + | X | | X |
| <i>Hirundo atrocaerulea</i> | | | + | X | | |
| <i>Hyltiota usambarae</i> | | + | | X | | |
| <i>Malaconotus alius</i> | | + | | X | | |
| <i>Modulatrix orostruthus</i> | | | + | X | | |
| <i>Nectarinia rufipennis</i> | | | + | X | | |
| <i>Orthotomus moreaui</i> | + | | | X | | |
| <i>Otus ireneae</i> | | + | | X | | X |
| <i>Ploceus burnieri</i> | | | + | X | | |
| <i>Ploceus golandi</i> | | + | | | | X |
| <i>Ploceus nicolli</i> | | + | | X | | |
| <i>Sheppardia gunningi</i> | | | + | X | | X |
| <i>Sheppardia lowei</i> | | | + | X | | |
| <i>Sheppardia montana</i> | | + | | X | | |
| <i>Swynnertonia swynnertoni</i> | | | + | X | | |
| <i>Turdus helleri</i> | + | | | | | X |
| <i>Xenoperdix udzungwensis</i> | | | + | X | | |
| <i>Zoothera guttata</i> | | + | | X | | X |
| <i>Zosterops silvanus</i> | | + | | | | X |
| <i>Zosterops winifredae</i> | | | + | X | | |
| Amphibians | 4 | 11 | 18 | 31 | | 3 |
| <i>Afrivalus sylvaticus</i> | | | + | X | | X |
| <i>Afrivalus uluguruensis</i> | | | + | X | | |
| <i>Arthroleptides martiensseni</i> | | + | | X | | |
| <i>Arthroleptides yakusini</i> | | + | | X | | |
| <i>Arthroleptis tanneri</i> | | | + | X | | |
| <i>Boulengerula taitana</i> | | | + | | | X |
| <i>Bufo brauni</i> | | | + | X | | |
| <i>Bufo udzungwensis</i> | | | + | X | | |
| <i>Churamiti maridadi</i> | + | | | X | | |
| <i>Hoplophryne rogersi</i> | | + | | X | | |
| <i>Hoplophryne uluguruensis</i> | | | + | X | | |

| | | | | | |
|-------------------------------------|----------|-----------|------------|------------|-----------|
| <i>Hyperolius kihangensis</i> | | + | | | X |
| <i>Hyperolius minutissimus</i> | | | + | | X |
| <i>Hyperolius rubrovermiculatus</i> | | + | | | X |
| <i>Hyperolius tannerorum</i> | | + | | | X |
| <i>Leptopelis barbouri</i> | | | + | | X |
| <i>Leptopelis parkeri</i> | | | + | | X |
| <i>Leptopelis uluguruensis</i> | | | + | | X |
| <i>Leptopelis vermiculatus</i> | | | + | | X |
| <i>Nectophrynoides asperginis</i> | + | | | | X |
| <i>Nectophrynoides cryptus</i> | | | + | | X |
| <i>Nectophrynoides minutus</i> | | + | | | X |
| <i>Nectophrynoides tornieri</i> | | | + | | X |
| <i>Nectophrynoides wendyae</i> | + | | | | X |
| <i>Parhoplophryne usambarica</i> | + | | | | X |
| <i>Phlyctimantis keithae</i> | | | + | | X |
| <i>Phrynobatrachus krefftii</i> | | + | | | X |
| <i>Phrynobatrachus uzungwensis</i> | | + | | | X |
| <i>Probreviceps uluguruensis</i> | | | + | | X |
| <i>Schoutedenella xenodactyla</i> | | | + | | X |
| <i>Scolecormorphus vittatus</i> | | | + | | X |
| <i>Stephopaedes howelli</i> | | + | | | X |
| <i>Stephopaedes usambarae</i> | | + | | | X |
| Gastropods | 3 | 3 | 1 | 4 | 3 |
| <i>Gulella amboniensis</i> | | | + | | X |
| <i>Gulella taitensis</i> | + | | | | X |
| <i>Lanistes alexandri</i> | | + | | | X |
| <i>Lanistes farleri</i> | | + | | | X |
| <i>Lanistes stuhlmanni</i> | | + | | | X |
| <i>Thapsia buraensis</i> | + | | | | X |
| <i>Zingis radiolata</i> | + | | | | X |
| Plants | 9 | 36 | 191 | 221 | 80 |
| <i>Adenopodia rotundifolia</i> | | | + | | X |
| <i>Allanblackia stuhlmannii</i> | | | + | | X |
| <i>Allanblackia ulugurensis</i> | | | + | | X |
| <i>Allophylus chirindensis</i> | | | + | | X |
| <i>Alsodeiopsis schumannii</i> | | | + | | X |
| <i>Angylocalyx braunii</i> | | | + | | X |
| <i>Annickia kummeriae</i> | | | + | | X |
| <i>Aoranthe penduliflora</i> | | | + | | X |
| <i>Aristogeitonia monophylla</i> | | | + | | X |
| <i>Baikiaea ghesquiereana</i> | | + | | | X |
| <i>Baphia kirkii</i> | | | + | | X |

| | | | |
|---|---|---|---|
| <i>Baphia macrocalyx</i> | + | X | |
| <i>Baphia pauloi</i> | + | X | |
| <i>Baphia puguensis</i> | + | X | |
| <i>Baphia semseiana</i> | + | X | |
| <i>Bauhinia loeseneriana</i> | + | X | |
| <i>Bauhinia mombassae</i> | + | | X |
| <i>Beilschmiedia kweo</i> | + | X | |
| <i>Berlinia orientalis</i> | + | X | |
| <i>Bersama rosea</i> | + | X | |
| <i>Bertiera pauloi</i> | + | X | |
| <i>Bussea eggelingii</i> | + | X | |
| <i>Buxus obtusifolia</i> | + | X | X |
| <i>Calodendrum eickii</i> | + | X | |
| <i>Camptolepis ramiflora</i> | + | | X |
| <i>Canthium impressinervium</i> | + | X | |
| <i>Canthium kilifiense</i> | + | | X |
| <i>Canthium pseudoverticillatum</i> | + | X | X |
| <i>Canthium rondoense</i> | + | X | |
| <i>Canthium shabanii</i> | + | X | |
| <i>Canthium siebenlistii</i> | + | X | |
| <i>Canthium vollesenii</i> | + | X | |
| <i>Casearia engleri</i> | + | X | |
| <i>Cephalosphaera usambarensis</i> | + | X | X |
| <i>Chassalia albiflora</i> | + | X | |
| <i>Chytranthus obliquinervis</i> | + | X | X |
| <i>Cladolejeunea aberrans</i> | + | X | |
| <i>Coffea costatifructa</i> | + | X | |
| <i>Coffea fadenii</i> | + | X | X |
| <i>Coffea mongensis</i> | + | X | |
| <i>Coffea pocsii</i> | + | X | |
| <i>Coffea pseudozanguebariae</i> | + | X | X |
| <i>Coffea zanguebariae</i> | + | X | |
| <i>Cola octoloboides</i> | + | | X |
| <i>Cola porphyrantha</i> | + | | X |
| <i>Cola scheffleri</i> | + | X | |
| <i>Combretum tenuipetiolatum</i> | + | X | X |
| <i>Craterispermum longipedunculatum</i> | + | X | |
| <i>Croton dictyophlebodes</i> | + | X | |
| <i>Croton jatrophoides</i> | + | X | |
| <i>Cuviera migeodii</i> | + | X | |
| <i>Cuviera schliebenii</i> | + | X | |
| <i>Cuviera tomentosa</i> | + | X | |
| <i>Cynometra brachyrrhachis</i> | + | X | X |
| <i>Cynometra engleri</i> | + | X | |

| | | | |
|--------------------------------------|---|---|-----|
| <i>Cynometra filifera</i> | + | X | |
| <i>Cynometra gillmanii</i> | + | X | |
| <i>Cynometra longipedicellata</i> | | + | X |
| <i>Cynometra lukei</i> | | + | X X |
| <i>Cynometra suaheliensis</i> | | + | X X |
| <i>Cynometra ulugurensis</i> | | + | X |
| <i>Cynometra webberi</i> | | + | X X |
| <i>Dalbergia acariiantha</i> | | + | X |
| <i>Dalbergia vacciniifolia</i> | | + | X X |
| <i>Dasylepis integra</i> | | + | X X |
| <i>Dialium holtzii</i> | | + | X X |
| <i>Diospyros amaniensis</i> | | + | X X |
| <i>Diospyros greenwayi</i> | | + | X X |
| <i>Diospyros magogoana</i> | | + | X |
| <i>Diospyros shimbaensis</i> | | + | X X |
| <i>Diphasiopsis fadenii</i> | | + | X |
| <i>Dombeya amaniensis</i> | | + | X |
| <i>Drypetes gerrardinoides</i> | | + | X |
| <i>Drypetes sclerophylla</i> | | + | X |
| <i>Ehretia glandulosissima</i> | | + | X |
| <i>Englerodendron usambarensense</i> | | + | X |
| <i>Erythrina haerdii</i> | | + | X |
| <i>Erythrina sacleuxii</i> | | + | X X |
| <i>Euphorbia lividiflora</i> | | + | X |
| <i>Euphorbia tanaensis</i> | | + | X |
| <i>Euphorbia wakefieldii</i> | | + | X X |
| <i>Fernandoa lutea</i> | | + | X |
| <i>Ficus faulkneriana</i> | | + | X X |
| <i>Garcinia acutifolia</i> | | + | X |
| <i>Garcinia bifasciculata</i> | | + | X |
| <i>Garcinia semsei</i> | | + | X |
| <i>Gardenia transvenulosa</i> | | + | X X |
| <i>Gigasiphon macrosiphon</i> | | + | X X |
| <i>Guibourtia schliebenii</i> | | + | X |
| <i>Hirtella megacarpa</i> | | + | X |
| <i>Intsia bijuga</i> | | + | X |
| <i>Isoberlinia scheffleri</i> | | + | X |
| <i>Isolona heinsenii</i> | | + | X |
| <i>Ixora albersii</i> | | + | X |
| <i>Julbernardia magnistipulata</i> | | + | X X |
| <i>Karomia gigas</i> | | + | X X |
| <i>Keetia koritschoneri</i> | | + | X |
| <i>Keetia purpurascens</i> | | + | X |
| <i>Khaya anthotheca</i> | | + | X |

| | | | |
|------------------------------------|---|---|---|
| <i>Kotschya platyphylla</i> | + | X | |
| <i>Kraussia speciosa</i> | + | X | X |
| <i>Lagynias pallidiflora</i> | + | X | X |
| <i>Lasianthus grandifolius</i> | + | X | |
| <i>Lasianthus pedunculatus</i> | + | X | |
| <i>Lasianthus wallacei</i> | + | X | |
| <i>Leptactina papyrophloea</i> | + | X | |
| <i>Lettowianthus stellatus</i> | + | X | X |
| <i>Lijndenia brenanii</i> | + | X | |
| <i>Lingelsheimia silvestris</i> | + | X | |
| <i>Lovoa swynnertonii</i> | + | X | X |
| <i>Macaranga conglomerata</i> | + | X | X |
| <i>Mammea usambarensis</i> | + | X | |
| <i>Memecylon greenwayii</i> | + | X | |
| <i>Memecylon teitense</i> | + | X | X |
| <i>Mesogyne insignis</i> | + | X | |
| <i>Micrococca scariosa</i> | + | X | X |
| <i>Mildbraedia carpinifolia</i> | + | X | X |
| <i>Millettia bussei</i> | + | X | |
| <i>Millettia elongatistyla</i> | + | X | |
| <i>Millettia eriocarpa</i> | + | X | |
| <i>Millettia micans</i> | + | X | |
| <i>Millettia sacleuxii</i> | + | X | |
| <i>Millettia schliebenii</i> | + | X | |
| <i>Millettia semsei</i> | + | X | |
| <i>Millettia sericantha</i> | + | X | |
| <i>Mimusops acutifolia</i> | + | X | |
| <i>Mimusops penduliflora</i> | + | X | |
| <i>Mimusops riparia</i> | + | X | |
| <i>Mkilua fragrans</i> | + | X | X |
| <i>Monotes lutambensis</i> | + | X | |
| <i>Morinda asteroscepa</i> | + | X | |
| <i>Multidentia castaneae</i> | + | X | |
| <i>Multidentia sclerocarpa</i> | + | X | X |
| <i>Neohemsleya usambarensis</i> | + | X | |
| <i>Newtonia paucijuga</i> | + | X | X |
| <i>Ocotea kenyensis</i> | + | X | X |
| <i>Octoknema orientalis</i> | + | X | |
| <i>Ouratea scheffleri</i> | + | X | |
| <i>Ouratea schusteri</i> | + | X | X |
| <i>Oxystigma msou</i> | + | X | X |
| <i>Paranecepsia alchorneifolia</i> | + | X | |
| <i>Pavetta axillipara</i> | + | X | |
| <i>Pavetta holstii</i> | + | X | |

| | | | | |
|---------------------------------------|---|---|---|---|
| <i>Pavetta linearifolia</i> | | + | X | X |
| <i>Pavetta lynesii</i> | | + | X | |
| <i>Pavetta manyanguensis</i> | | + | X | |
| <i>Pavetta nitidissima</i> | | + | X | |
| <i>Pavetta sparsipila</i> | | + | X | |
| <i>Pavetta tarenoides</i> | | + | | X |
| <i>Pittosporum goetzei</i> | | + | X | |
| <i>Platypterotheca tanganyikensis</i> | + | | X | |
| <i>Polyceratocarpus scheffleri</i> | | + | X | |
| <i>Polysphaeria macrantha</i> | | + | X | |
| <i>Populus ilicifolia</i> | | + | | X |
| <i>Pouteria pseudoracemosa</i> | | + | X | |
| <i>Premna hans-joachimii</i> | | + | X | |
| <i>Premna schliebenii</i> | | + | X | |
| <i>Premna tanganyikensis</i> | | + | X | |
| <i>Prunus africana</i> | | + | X | X |
| <i>Psychotria alsophila</i> | | + | X | X |
| <i>Psychotria crassipetala</i> | | + | X | X |
| <i>Psychotria cyathicalyx</i> | | + | X | |
| <i>Psychotria elachistantha</i> | | + | X | |
| <i>Psychotria megalopus</i> | | + | X | |
| <i>Psychotria megistantha</i> | | + | X | |
| <i>Psychotria peteri</i> | | + | X | |
| <i>Psychotria petiti</i> | | + | | X |
| <i>Psychotria pseudoplatyphylla</i> | | + | X | X |
| <i>Psychotria taitensis</i> | | + | | X |
| <i>Psydrax faulknerae</i> | | + | X | X |
| <i>Psydrax kibuwae</i> | | + | X | |
| <i>Psydrax micans</i> | | + | X | |
| <i>Pycnocoma littoralis</i> | | + | X | X |
| <i>Pycnocoma macrantha</i> | | + | X | |
| <i>Renauldia lycopodioides</i> | + | | X | X |
| <i>Rhipidantha chlorantha</i> | | + | X | |
| <i>Rhus brenanii</i> | + | | X | |
| <i>Rothmannia macrosiphon</i> | | + | X | X |
| <i>Rytigynia binata</i> | | + | X | |
| <i>Rytigynia caudatissima</i> | | + | X | |
| <i>Rytigynia eickii</i> | | + | X | X |
| <i>Rytigynia hirsutiflora</i> | | + | X | |
| <i>Rytigynia longipedicellata</i> | + | | X | |
| <i>Rytigynia nodulosa</i> | | + | X | |
| <i>Rytigynia pseudolongicaudata</i> | | + | X | |
| <i>Schefflera lukwangulensis</i> | | + | X | |
| <i>Shirakiopsis triloculare</i> | | + | X | X |

| | | | | |
|------------------------------------|---|---|---|---|
| <i>Sibangea pleioneura</i> | | + | X | |
| <i>Sorindeia calantha</i> | + | | X | X |
| <i>Sterculia schliebenii</i> | | + | X | X |
| <i>Strychnos mellodora</i> | | + | | X |
| <i>Stuhlmannia moavi</i> | | + | X | |
| <i>Suregada lithoxyla</i> | | + | X | |
| <i>Synsepalum kaessneri</i> | | + | X | X |
| <i>Synsepalum subverticillatum</i> | | + | | X |
| <i>Tannodia swynnertonii</i> | | + | X | |
| <i>Tapiphyllum schliebenii</i> | | + | X | |
| <i>Tarenna drummondii</i> | | + | X | X |
| <i>Tarenna luhomeroensis</i> | | + | X | |
| <i>Tarenna quadrangularis</i> | | + | X | |
| <i>Ternstroemia polypetala</i> | | + | X | |
| <i>Tessmannia densiflora</i> | | + | X | |
| <i>Tetrorchidium ulugurense</i> | | + | X | |
| <i>Toussaintia orientalis</i> | | + | X | X |
| <i>Tricalysia acidophylla</i> | | + | X | |
| <i>Tricalysia pedicellata</i> | | + | X | |
| <i>Tricalysia schliebenii</i> | | + | X | |
| <i>Trichilia lovettii</i> | | + | X | |
| <i>Trichocladus goetzei</i> | | + | X | |
| <i>Turraea kimbozensis</i> | | + | X | |
| <i>Uvariadendron gorgonis</i> | | + | X | X |
| <i>Uvariadendron kirkii</i> | | + | X | X |
| <i>Uvariadendron oligocarpum</i> | | + | X | |
| <i>Uvariadendron pycnophyllum</i> | | + | X | |
| <i>Uvariadendron usambarense</i> | | + | X | |
| <i>Uvariopsis bisexualis</i> | | + | X | |
| <i>Vangueria bicolor</i> | | + | X | |
| <i>Vangueriopsis longiflora</i> | | + | X | X |
| <i>Vepris sansibarensis</i> | | + | X | X |
| <i>Vismia pauciflora</i> | | + | X | |
| <i>Vitellariopsis cuneata</i> | | + | X | |
| <i>Vitellariopsis kirkii</i> | | + | X | X |
| <i>Vitex amaniensis</i> | | + | X | |
| <i>Vitex zanzibarensis</i> | | + | X | X |
| <i>Warburgia elongata</i> | | + | X | |
| <i>Warburgia stuhlmannii</i> | | + | X | X |
| <i>Xylopiella collina</i> | | + | X | |
| <i>Zanthoxylum deremense</i> | | + | X | |
| <i>Zanthoxylum holtzianum</i> | | + | X | X |
| <i>Zanthoxylum lindense</i> | | + | X | |
| <i>Zenkerella egregia</i> | | + | X | |

| | | | |
|--------------------------------|---|---|---|
| <i>Zenkerella perplexa</i> | + | x | |
| <i>Zimmermannia capillipes</i> | + | x | |
| <i>Zimmermannia nguruensis</i> | + | x | |
| <i>Zimmermannia ovata</i> | + | | x |
| <i>Ziziphus robertsoniana</i> | + | | x |

* There are currently no reptiles or fish in this hotspot that are listed as globally threatened on the IUCN Red List.

Appendix 2. Sites in the Eastern Arc Mountains and Coastal Forests hotspot ranked according to the total number of globally threatened species that they contain

| Site Name | Country | ANIMALS | | | | PLANTS | | | | Grand Total |
|-----------------------------------|---------|-----------------------|----|----|-------|-----------------------|----|----|-------|-------------|
| | | IUCN Red List Status* | | | | IUCN Red List Status* | | | | |
| | | CR | EN | VU | Total | CR | EN | VU | Total | |
| East Usambara Mountains | TZ | 2 | 9 | 25 | 36 | 1 | 5 | 69 | 75 | 111 |
| Uluguru Mountains | TZ | 1 | 6 | 19 | 26 | | 7 | 48 | 55 | 81 |
| Udzungwa National Park | TZ | | 1 | 9 | 10 | 1 | 2 | 56 | 59 | 69 |
| Udzungwa Mountains | TZ | 5 | 6 | 27 | 38 | | 2 | 27 | 29 | 67 |
| West Usambara Mountains | TZ | | 6 | 17 | 23 | 3 | 2 | 38 | 43 | 66 |
| Shimba Hills | KE | | 5 | 5 | 10 | 1 | 5 | 40 | 46 | 56 |
| Lindi District Coastal Forests | TZ | | 4 | 4 | 8 | | 13 | 24 | 37 | 45 |
| Nguru Mountains | TZ | | | 9 | 9 | 1 | 2 | 30 | 33 | 42 |
| South Pare Mountains | TZ | | 1 | 3 | 4 | 1 | | 28 | 29 | 33 |
| Taita Hills Forests | KE | 5 | 1 | 2 | 8 | | 1 | 23 | 24 | 32 |
| Kisarawe District Coastal Forests | TZ | | 4 | 4 | 8 | | 2 | 20 | 22 | 30 |
| Rufiji District Coastal Forests | TZ | | 2 | 4 | 6 | | 5 | 11 | 16 | 22 |
| Bagamoyo District Coastal Forests | TZ | | 4 | 4 | 8 | | 2 | 11 | 13 | 21 |
| Arabuko-Sokoke Forest | KE | | 8 | 3 | 11 | | | 8 | 8 | 19 |
| Selous Game Reserve | TZ | 1 | 1 | | 2 | | 2 | 14 | 16 | 18 |
| Muheza District Coastal Forests | TZ | | 2 | 5 | 7 | | | 6 | 6 | 13 |
| North Pare Mountains | TZ | | | 2 | 2 | | | 11 | 11 | 13 |
| Kilwa District Coastal Forests | TZ | | 2 | 2 | 4 | 2 | 1 | 5 | 8 | 12 |
| Mafia Island | TZ | | 2 | 2 | 4 | | 1 | 7 | 8 | 12 |
| Diani Forest | KE | | 2 | 1 | 3 | | 1 | 7 | 8 | 11 |
| Gongoni Forest Reserve | KE | | | | | | 2 | 9 | 11 | 11 |
| Kaya Ribe | KE | | | | | | 3 | 7 | 10 | 10 |
| Kilombero Valley | TZ | | | 3 | 3 | | | 7 | 7 | 10 |
| Mrima Hill Forest | KE | | 2 | 1 | 3 | | 3 | 4 | 7 | 10 |
| Pangani District Coastal Forests | TZ | | 2 | 3 | 5 | 1 | | 4 | 5 | 10 |
| Lower Tana River Forests | KE | 1 | | 3 | 4 | | 1 | 5 | 6 | 10 |
| Buda Forest Reserve | KE | | | | | | 1 | 8 | 9 | 9 |
| Handeni District Coastal Forests | TZ | | 1 | 2 | 3 | | | 6 | 6 | 9 |
| Mangea Hill | KE | | | | | | | 9 | 9 | 9 |
| Pangani | KE | | | | | | 3 | 6 | 9 | 9 |
| Ukaguru Mountains | TZ | 1 | | 3 | 4 | | 1 | 4 | 5 | 9 |
| Witu Forest Reserve | KE | | | | | 1 | | 8 | 9 | 9 |
| Dzombo Hill Forest | KE | | 1 | | 1 | | 2 | 5 | 7 | 8 |
| Jozani Forest Reserve, Zanzibar | TZ | | 4 | 4 | 8 | | | | | 8 |

| | | | | | | | | |
|----------------------------------|----|---|---|---|---|---|---|---|
| Kaya Jibana | KE | | | | 1 | 7 | 8 | 8 |
| Kaya Rabai | KE | | | | 1 | 1 | 6 | 8 |
| Mahenge | TZ | 1 | 1 | 2 | | 1 | 5 | 6 |
| Pande and Dodwe Coastal Forests | TZ | 2 | 1 | 3 | | | 5 | 5 |
| Boni Forest | KE | 2 | | 2 | | | 5 | 5 |
| Kaya Muhaka | KE | | | | 2 | 5 | 7 | 7 |
| Marenji Forest | KE | 2 | | 2 | | | 5 | 5 |
| Rubeho Mountains | TZ | 1 | 4 | 5 | | 1 | 1 | 6 |
| Kaya Gandini | KE | 2 | | 2 | | | 3 | 3 |
| Mwache Forest Reserve | KE | | | | 2 | 3 | 5 | 5 |
| Kaya Kivara | KE | | | | | | 4 | 4 |
| Kaya Mtswakara | KE | | | | | | 4 | 4 |
| Mkomazi Game Reserve | TZ | 1 | | 1 | | | 3 | 3 |
| Mount Kasigau | KE | | | | 1 | 3 | 4 | 4 |
| Pemba Island | TZ | 1 | 2 | 3 | | | 1 | 1 |
| Cha Simba | KE | | | | 2 | 1 | 3 | 3 |
| Chale Island | KE | | | | 1 | 2 | 3 | 3 |
| Kaya Kambe | KE | | | | 1 | 2 | 3 | 3 |
| Kaya Kauma | KE | | | | | | 3 | 3 |
| Kaya Kinondo | KE | | | | | | 3 | 3 |
| Kaya Lunguma | KE | | | | | | 3 | 3 |
| Magombera Forest Reserve | TZ | | 1 | 1 | 1 | 1 | 2 | 3 |
| Newala District Coastal Forests | TZ | | | | | | 3 | 3 |
| Ukunda | KE | 1 | 1 | 2 | 1 | | 1 | 3 |
| Bagamoyo | TZ | | | | | | 2 | 2 |
| Dakatcha Woodland | KE | 2 | | 2 | | | | 2 |
| Gede Ruins National Monument | KE | 1 | 1 | 2 | | | | 2 |
| Kaya Chonyi | KE | | | | | | 2 | 2 |
| Kaya Miungoni | KE | | | | | | 2 | 2 |
| Kaya Tiwi | KE | | 1 | 1 | | | 1 | 1 |
| Kaya Ukunda | KE | | | | | | 2 | 2 |
| Kaya Waa | KE | 2 | | 2 | | | | 2 |
| Kisimani wa Ngoa | KE | | | | | | 2 | 2 |
| Lango ya Simba | KE | | | | | 1 | 1 | 2 |
| Lindi | TZ | | | | 1 | | 1 | 2 |
| Lindi (Nyangao River) | TZ | | 1 | 1 | | | 1 | 1 |
| Mtanza Forest Reserve | TZ | | | | | | 2 | 2 |
| Nguu Mountains | TZ | 1 | 1 | 2 | | | | 2 |
| Nyumburuni Forest Reserve | TZ | 1 | 1 | 2 | | | | 2 |
| Pangani (Mwera) | TZ | | | | 1 | | 1 | 2 |
| River Wami | TZ | 1 | | 1 | | | 1 | 1 |
| Semdoe | TZ | 1 | 1 | 2 | | | | 2 |
| Shimoni Forests | KE | | 1 | 1 | | | 1 | 1 |
| Utete (Kibiti) | TZ | | | | | | 2 | 2 |
| Uvidunda Mountains | TZ | | 1 | 1 | | | 1 | 1 |
| ** | TZ | 2 | | 2 | | | | 2 |
| Bagamoyo (Kikoka Forest Reserve) | TZ | | | | | | 1 | 1 |
| Baricho near Arabuko Sokoke | KE | | | | | | 1 | 1 |

| | | | | | | |
|---------------------------------------|----|---|---|---|---|---|
| Bungu | TZ | | | 1 | 1 | 1 |
| Chuna Forest | KE | | | 1 | 1 | 1 |
| Dar es salaam Coast | TZ | | | 1 | 1 | 1 |
| Dodori Forest | KE | 1 | 1 | | | 1 |
| Dzitzoni | TZ | | | 1 | 1 | 1 |
| Kambe Rocks | KE | | | 1 | 1 | 1 |
| Kaya Bombo | KE | | | 1 | 1 | 1 |
| Kaya Dzombo | KE | 1 | 1 | | | 1 |
| Kaya Fungo | KE | | | 1 | 1 | 1 |
| Kaya Gonja | KE | | | 1 | 1 | 1 |
| Kaya Mwarakaya | KE | | | 1 | 1 | 1 |
| Kaya Puma | KE | | | 1 | 1 | 1 |
| Kaya Sega | KE | | | 1 | 1 | 1 |
| Kaya Teleza | KE | | | 1 | 1 | 1 |
| Kisiju | TZ | 1 | 1 | | | 1 |
| Korogwe (Kwashemshi Sisal Estate) | TZ | | | 1 | 1 | 1 |
| Lindi (Kengedi) | TZ | | | 1 | 1 | 1 |
| Lindi (Mkindani) | TZ | | | 1 | 1 | 1 |
| Lindi (Ngongo) | TZ | | | 1 | 1 | 1 |
| Lindi (Nondora) | TZ | | | 1 | 1 | 1 |
| Lindi (Ras Rungi) | TZ | | | 1 | 1 | 1 |
| Lindi (Tendaguru) | TZ | | | 1 | 1 | 1 |
| Lindi Creek | TZ | | | 1 | 1 | 1 |
| Lukoga Forest Reserve | TZ | | | 1 | 1 | 1 |
| Lunghi Forest | KE | | | 1 | 1 | 1 |
| Mahenge (Kwiro Forest) | TZ | | | 1 | 1 | 1 |
| Mahenge (Liondo) | TZ | | | 1 | 1 | 1 |
| Mahenge (Lipindi) | TZ | | | 1 | 1 | 1 |
| Mahenge (Sali) | TZ | | | 1 | 1 | 1 |
| Mahenge Scarp Forest Reserve | TZ | | | 1 | 1 | 1 |
| Makongwe Island | TZ | | | 1 | 1 | 1 |
| Marafa | KE | | | 1 | 1 | 1 |
| Masasi | TZ | | | 1 | 1 | 1 |
| Masasi (Nyengedi) | TZ | | | 1 | 1 | 1 |
| Masasi East | TZ | | | 1 | 1 | 1 |
| Mikindani (Mnima) | TZ | | | 1 | 1 | 1 |
| Mikindani (Mtwara inland) | TZ | | | 1 | 1 | 1 |
| Mikindani District (Mtwara-Mikindani) | TZ | | | 1 | 1 | 1 |
| Mikumi National Park | TZ | | | 1 | 1 | 1 |
| Mpanga Village Forest Reserve | TZ | | | 1 | 1 | 1 |
| Msambweni | KE | | | 1 | 1 | 1 |
| Mtwara | TZ | | | 1 | 1 | 1 |
| near Buda Forest Reserve | KE | | | 1 | 1 | 1 |
| Newala (Kitama) | TZ | | | 1 | 1 | 1 |
| Newala (Kitangari) | TZ | | | 1 | 1 | 1 |
| Newala (Mahuta) | TZ | | | 1 | 1 | 1 |
| Nzovuni River | KE | | | 1 | 1 | 1 |
| Pangani (Bushiri) | TZ | | | 1 | 1 | 1 |

| | | | | | | |
|--|----|---|---|---|---|---|
| Pangani (Hale-Makinjumbe) | TZ | | | 1 | 1 | 1 |
| Pangani (Mauri) | TZ | | | 1 | 1 | 1 |
| Pangani Dam | TZ | | | 1 | 1 | 1 |
| Panza Island | TZ | | | 1 | 1 | 1 |
| Ras Kituani | TZ | | | 1 | 1 | 1 |
| Sangerawe | TZ | | | 1 | 1 | 1 |
| Shikurufumi Forest Reserve | TZ | | | 1 | 1 | 1 |
| Sinza River-near University of Dar es salaam | TZ | | | 1 | 1 | 1 |
| Tanga (Duga) | TZ | | | 1 | 1 | 1 |
| Tanga (Gombero Forest Reserve) | TZ | | | 1 | 1 | 1 |
| Tanga (Morongo) | TZ | | | 1 | 1 | 1 |
| Tanga (Nyamaku) | TZ | | | 1 | 1 | 1 |
| Tanga (Pangani) | TZ | | | 1 | 1 | 1 |
| Tanga (Sigi River) | TZ | | | 1 | 1 | 1 |
| Tumbatu Island | KE | 1 | 1 | | | 1 |
| Ukwama Forest Reserve | TZ | | | 1 | 1 | 1 |
| Uzaramo (Dar to Morogoro) | TZ | | | 1 | 1 | 1 |
| Uzaramo (Msua) | TZ | | | 1 | 1 | 1 |
| Verani South West | TZ | | | 1 | 1 | 1 |
| Vigola | TZ | | | 1 | 1 | 1 |
| Zanzibar (Kituani) | TZ | | | 1 | 1 | 1 |
| Zanzibar (Muyuni) | TZ | | | 1 | 1 | 1 |
| Latham Island | TZ | | | | | 0 |
| Mnazi Bay | TZ | | | | | 0 |
| Rufiji Delta | TZ | | | | | 0 |
| Sabaki River Mouth | KE | | | | | 0 |
| Tana River Delta | KE | | | | | 0 |
| Tanga North-Kibo Salt Pans | TZ | | | | | 0 |
| Tanga South | TZ | | | | | 0 |
| Zanzibar Island-East Coast | TZ | | | | | 0 |
| Zanzibar Island-South Coast | TZ | | | | | 0 |

*IUCN STATUS: conservation "degree of threat" status according to *The 2002 IUCN Red List of Threatened Species* (CR=Critically Endangered, EN=Endangered, VU=Vulnerable).

**Sites were not identified for these two species due to lack of data.

Appendix 3. Sites in the Eastern Arc Mountains and Coastal Forests hotspot that host globally threatened species, restricted range birds and globally significant congregations of birds.

| Site Name | Country | Latitude (S) | Longitude (E) | Area (ha) | Globally Threatened Species | Status* | Taxonomic Group** | Range Restricted Species | Globally Significant Congregations | IBA |
|--|---------|--------------|---------------|-----------|-------------------------------------|---------|-------------------|--------------------------|------------------------------------|-----|
| Arabuko-Sokoke Forest | KE | 3.33 | 39.87 | 41600 | <i>Anthreptes pallidigaster</i> | EN | B | + | | + |
| | | | | | <i>Anthus sokokensis</i> | EN | B | | | |
| | | | | | <i>Aristogeitonia monophylla</i> | VU | P | | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | | |
| | | | | | <i>Buxus obtusifolia</i> | VU | P | | | |
| | | | | | <i>Canthium kilifiense</i> | VU | P | | | |
| | | | | | <i>Canthium pseudoverticillatum</i> | VU | P | | | |
| | | | | | <i>Cephalophus adersi</i> | EN | M | | | |
| | | | | | <i>Cynometra webberi</i> | VU | P | | | |
| | | | | | <i>Gardenia transvenulosa</i> | VU | P | | | |
| | | | | | <i>Loxodonta africana</i> | EN | M | | | |
| | | | | | <i>Newtonia paucijuga</i> | VU | P | | | |
| | | | | | <i>Otus ireneae</i> | EN | B | | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | | |
| | | | | | <i>Ploceus gollandi</i> | EN | B | | | |
| | | | | | <i>Rhynchocyon chrysopygus</i> | EN | M | | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | | |
| <i>Sheppardia gunningi</i> | VU | B | | | | | | | | |
| <i>Zoothera guttata</i> | EN | B | | | | | | | | |
| Bagamoyo | TZ | 6.25 | 38.50 | | <i>Baphia kirkii</i> | VU | P | | | |
| | | | | | <i>Vitex zanzibarensis</i> | VU | P | | | |
| Bagamoyo (Kikoka Forest Reserve) | TZ | 6.47 | 38.73 | | <i>Pavetta linearifolia</i> | VU | P | | | |
| Bagamoyo District Coastal Forests (Zaraninge FR) | TZ | 6.13 | 38.66 | 17800 | <i>Africalus sylvaticus</i> | VU | A | + | | + |
| | | | | | <i>Anthus sokokensis</i> | EN | B | | | |
| | | | | | <i>Baphia kirkii</i> | VU | P | | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | | |

| | | | | | | | | |
|------------------------------------|----|------|-------|-------------------------------------|----|---|--|--|
| | | | | <i>Buxus obtusifolia</i> | VU | P | | |
| | | | | <i>Croton jatrophioides</i> | VU | P | | |
| | | | | <i>Diospyros shimbaensis</i> | EN | P | | |
| | | | | <i>Gardenia transvenulosa</i> | VU | P | | |
| | | | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | <i>Loxodonta africana</i> | EN | M | | |
| | | | | <i>Lycaon pictus</i> | EN | M | | |
| | | | | <i>Millettia elongatistyla</i> | VU | P | | |
| | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | <i>Psydrax faulknerae</i> | VU | P | | |
| | | | | <i>Pycnocomma littoralis</i> | VU | P | | |
| | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | <i>Stuhlmannia moavi</i> | VU | P | | |
| | | | | <i>Tapiphyllum schliebenii</i> | EN | P | | |
| | | | | <i>Toussaintia orientalis</i> | VU | P | | |
| Baricho near Arabuko Sokoke | KE | 3.00 | 39.92 | <i>Vitellariopsis kirkii</i> | VU | P | | |
| Boni Forest | KE | 1.67 | 41.17 | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | <i>Dalbergia vacciniifolia</i> | VU | P | | |
| | | | | <i>Loxodonta africana</i> | EN | M | | |
| | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | <i>Rhynchocyon chrysopygus</i> | EN | M | | |
| | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| Buda Forest Reserve | KE | 4.45 | 39.40 | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | <i>Chytranthus obliquinervis</i> | VU | P | | |
| | | | | <i>Diospyros shimbaensis</i> | EN | P | | |
| | | | | <i>Lagynias pallidiflora</i> | VU | P | | |
| | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | <i>Sterculia schliebenii</i> | VU | P | | |
| | | | | <i>Synsepalum</i> | VU | P | | |

| | | | | | | | | | | |
|----------------------------|----|------|-------|-------|-------------------------------------|----|---|---|---|---|
| | | | | | <i>subverticillatum</i> | | | | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | | |
| Bungu | TZ | 5.05 | 38.40 | | <i>Uvariadendron pycnophyllum</i> | EN | P | | | |
| Cha Simba | KE | 4.23 | 39.45 | | <i>Cola octoloboides</i> | EN | P | | | |
| | | | | | <i>Euphorbia wakefieldii</i> | EN | P | | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | | |
| Chale Island | KE | 4.45 | 39.55 | | <i>Buxus obtusifolia</i> | VU | P | | | |
| | | | | | <i>Vitex zanzibarensis</i> | VU | P | | | |
| | | | | | <i>Ziziphus robertsoniana</i> | EN | P | | | |
| Chuna Forest | KE | 4.57 | 39.15 | | <i>Warburgia stuhlmannii</i> | VU | P | | | |
| Dakatcha Woodland | KE | 3.02 | 39.85 | 32000 | <i>Anthus sokokensis</i> | EN | B | + | | + |
| | | | | | <i>Ploceus golandi</i> | EN | B | | | |
| Dar es salaam Coast | TZ | 6.83 | 39.32 | 61000 | <i>Coffea pseudozanguebariae</i> | VU | P | | + | + |
| Diani Forest | KE | 4.30 | 39.58 | 80 | <i>Canthium pseudoverticillatum</i> | VU | P | + | | + |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | | |
| | | | | | <i>Dalbergia vacciniifolia</i> | VU | P | | | |
| | | | | | <i>Diospyros greenwayi</i> | VU | P | | | |
| | | | | | <i>Psydrax faulknerae</i> | VU | P | | | |
| | | | | | <i>Pycnocomma littoralis</i> | VU | P | | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | | |
| | | | | | <i>Synsepalum subverticillatum</i> | VU | P | | | |
| | | | | | <i>Taphozous hildegardeae</i> | VU | M | | | |
| | | | | | <i>Ziziphus robertsoniana</i> | EN | P | | | |
| | | | | | <i>Zoothera guttata</i> | EN | B | | | |
| Dodori Forest | KE | 1.75 | 41.50 | | <i>Loxodonta africana</i> | EN | M | | | |
| Dzitzoni | KE | 3.65 | 39.73 | | <i>Euphorbia wakefieldii</i> | EN | P | | | |
| Dzombo Hill Forest | KE | 4.43 | 39.22 | 295 | <i>Anthus sokokensis</i> | EN | B | + | | + |
| | | | | | <i>Buxus obtusifolia</i> | VU | P | | | |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | | |
| | | | | | <i>Cola octoloboides</i> | EN | P | | | |

| | | | | | | | | | |
|---|----|------|-------|-------|-------------------------------------|----|---|---|---|
| | | | | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | | <i>Ziziphus robertsoniana</i> | EN | P | | |
| East Usambara Mountains | TZ | 4.96 | 38.67 | 42413 | <i>Afrixalus sylvaticus</i> | VU | A | + | + |
| (Lutindi FR, Nkombola FR, Kilanga FR, Mtai FR, Kwangumi FR, Bamba FR, Segoma FR, Manga FR, Longuza FR, Kihuhwi-Sigi FR, Amani East FR, Amani West FR, Amani FR, Mnyusi Scarp FR, Kwamkoro FR, Kihuhwi FR, Kwamsambia FR, Amani-Sigi FR) | | | | | <i>Afrixalus uluguruensis</i> | VU | A | | |
| | | | | | <i>Allanblackia stuhlmannii</i> | VU | P | | |
| | | | | | <i>Allophylus chirindensis</i> | VU | P | | |
| | | | | | <i>Alsodeiopsis schumannii</i> | VU | P | | |
| | | | | | <i>Angylocalyx braunii</i> | VU | P | | |
| | | | | | <i>Annickia kummeriae</i> | VU | P | | |
| | | | | | <i>Anthreptes pallidigaster</i> | EN | B | | |
| | | | | | <i>Anthreptes rubritorques</i> | VU | B | | |
| | | | | | <i>Aoranche penduliflora</i> | VU | P | | |
| | | | | | <i>Aristogeitonia monophylla</i> | VU | P | | |
| | | | | | <i>Arthroleptides martiensseni</i> | EN | A | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | |
| | | | | | <i>Beilschmiedia kweo</i> | VU | P | | |
| | | | | | <i>Bubo vosseleri</i> | VU | B | | |
| | | | | | <i>Bufo brauni</i> | VU | A | | |
| | | | | | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | | <i>Canthium sieberlistii</i> | VU | P | | |
| | | | | | <i>Cephalosphaera usambarensis</i> | VU | P | | |
| | | | | | <i>Chassalia albiflora</i> | VU | P | | |
| | | | | | <i>Chytranthus obliquinervis</i> | VU | P | | |
| | | | | | <i>Cladolejeunea aberrans</i> | EN | P | | |
| | | | | | <i>Coffea mongensis</i> | VU | P | | |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |

| | | | | | | | | | |
|--|--|--|--|--|------------------------------------|----|---|--|--|
| | | | | | <i>Cola scheffleri</i> | VU | P | | |
| | | | | | <i>Crocidura elgonius</i> | VU | M | | |
| | | | | | <i>Crocidura monax</i> | VU | M | | |
| | | | | | <i>Crocidura tansaniana</i> | VU | M | | |
| | | | | | <i>Crocidura xantippe</i> | VU | M | | |
| | | | | | <i>Cynometra brachyrrhachis</i> | VU | P | | |
| | | | | | <i>Cynometra engleri</i> | VU | P | | |
| | | | | | <i>Cynometra longipedicellata</i> | VU | P | | |
| | | | | | <i>Cynometra suaheliensis</i> | VU | P | | |
| | | | | | <i>Cynometra webberi</i> | VU | P | | |
| | | | | | <i>Dendrohyrax validus</i> | VU | M | | |
| | | | | | <i>Dialium holtzii</i> | VU | P | | |
| | | | | | <i>Diospyros amaniensis</i> | VU | P | | |
| | | | | | <i>Dombeya amaniensis</i> | VU | P | | |
| | | | | | <i>Englerodendron usambarense</i> | VU | P | | |
| | | | | | <i>Erythrina sacleuxii</i> | VU | P | | |
| | | | | | <i>Ficus faulkneriana</i> | CR | P | | |
| | | | | | <i>Gigasiphon macrosiphon</i> | EN | P | | |
| | | | | | <i>Hoplophryne rogersi</i> | EN | A | | |
| | | | | | <i>Hyllota usambarae</i> | EN | B | | |
| | | | | | <i>Isoberlinia scheffleri</i> | VU | P | | |
| | | | | | <i>Isolona heinsenii</i> | EN | P | | |
| | | | | | <i>Julbernardia magnistipulata</i> | VU | P | | |
| | | | | | <i>Khaya anthotheca</i> | VU | P | | |
| | | | | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | | <i>Lagynias pallidiflora</i> | VU | P | | |
| | | | | | <i>Leptopelis barbouri</i> | VU | A | | |
| | | | | | <i>Leptopelis parkeri</i> | VU | A | | |
| | | | | | <i>Leptopelis uluguruensis</i> | VU | A | | |
| | | | | | <i>Leptopelis vermiculatus</i> | VU | A | | |
| | | | | | <i>Lettowianthus stellatus</i> | VU | P | | |
| | | | | | <i>Lijndenia brenanii</i> | VU | P | | |
| | | | | | <i>Memecylon greenwayii</i> | VU | P | | |

| | | | | | | | | | |
|--|--|--|--|--|------------------------------------|----|---|--|--|
| | | | | | <i>Mesogyne insignis</i> | VU | P | | |
| | | | | | <i>Mildbraedia carpinifolia</i> | VU | P | | |
| | | | | | <i>Millettia sacleuxii</i> | VU | P | | |
| | | | | | <i>Modulatrix orostruthus</i> | VU | B | | |
| | | | | | <i>Morinda asteroscepa</i> | VU | P | | |
| | | | | | <i>Multidentia sclerocarpa</i> | VU | P | | |
| | | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | | <i>Nectophrynoides tornieri</i> | VU | A | | |
| | | | | | <i>Newtonia paucijuga</i> | VU | P | | |
| | | | | | <i>Orthotomus moreau</i> | CR | B | | |
| | | | | | <i>Otomops martiensseni</i> | VU | M | | |
| | | | | | <i>Otus irenae</i> | EN | B | | |
| | | | | | <i>Ouratea scheffleri</i> | VU | P | | |
| | | | | | <i>Ouratea schusteri</i> | VU | P | | |
| | | | | | <i>Oxystigma msou</i> | VU | P | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | | <i>Parhoplophryne usambarica</i> | CR | A | | |
| | | | | | <i>Pavetta holstii</i> | VU | P | | |
| | | | | | <i>Phrynobatrachus krefftii</i> | EN | A | | |
| | | | | | <i>Ploceus nicolli</i> | EN | B | | |
| | | | | | <i>Polyceratocarpus scheffleri</i> | VU | P | | |
| | | | | | <i>Polysphaeria macrantha</i> | VU | P | | |
| | | | | | <i>Pouteria pseudoracemosa</i> | VU | P | | |
| | | | | | <i>Premna schliebenii</i> | VU | P | | |
| | | | | | <i>Prunus africana</i> | VU | P | | |
| | | | | | <i>Psychotria peteri</i> | VU | P | | |
| | | | | | <i>Pycnocomma macrantha</i> | VU | P | | |
| | | | | | <i>Renauldia lycopodioides</i> | EN | P | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | | <i>Rytigynia eickii</i> | VU | P | | |
| | | | | | <i>Schoutedenella xenodactyla</i> | VU | A | | |
| | | | | | <i>Scolecormorphus vittatus</i> | VU | A | | |

| | | | | | | | | | |
|-------------------------------------|----|------|-------|----|-----------------------------------|----|---|---|---|
| | | | | | <i>Sheppardia gunningi</i> | VU | B | | |
| | | | | | <i>Stephopaedes usambarae</i> | EN | A | | |
| | | | | | <i>Suregada lithoxyla</i> | VU | P | | |
| | | | | | <i>Swynnertonia swynnertonii</i> | VU | B | | |
| | | | | | <i>Sylvisorex howelli</i> | VU | M | | |
| | | | | | <i>Synsepalum kaessneri</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | | <i>Tricalysia acidophylla</i> | VU | P | | |
| | | | | | <i>Uvariadendron gorgonis</i> | VU | P | | |
| | | | | | <i>Uvariadendron kirkii</i> | VU | P | | |
| | | | | | <i>Uvariadendron oligocarpum</i> | VU | P | | |
| | | | | | <i>Uvariadendron pycnophyllum</i> | EN | P | | |
| | | | | | <i>Uvariadendron usambarensis</i> | VU | P | | |
| | | | | | <i>Vangueria bicolor</i> | VU | P | | |
| | | | | | <i>Vepris sansibarensis</i> | VU | P | | |
| | | | | | <i>Vitellariopsis cuneata</i> | VU | P | | |
| | | | | | <i>Vitex amaniensis</i> | VU | P | | |
| | | | | | <i>Zanthoxylum deremense</i> | VU | P | | |
| | | | | | <i>Zanthoxylum holtzianum</i> | VU | P | | |
| | | | | | <i>Zenkerella egregia</i> | VU | P | | |
| | | | | | <i>Zimmermannia capillipes</i> | VU | P | | |
| Gede Ruins National Monument | KE | 3.30 | 40.02 | 44 | <i>Beamys hindei</i> | VU | M | + | + |
| | | | | | <i>Rhynchocyon chrysopygus</i> | EN | M | | |
| Gongoni Forest Reserve | KE | 4.42 | 39.47 | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Diospyros shimbaensis</i> | EN | P | | |
| | | | | | <i>Gigasiphon macrosiphon</i> | EN | P | | |
| | | | | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | | <i>Micrococca scariosa</i> | VU | P | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | | <i>Sterculia schliebenii</i> | VU | P | | |

| | | | | | | | | | |
|---|----|------|-------|------|-------------------------------------|----|---|---|---|
| | | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | | <i>Vitex zanzibarensis</i> | VU | P | | |
| Handeni District Coastal Forests | TZ | 5.50 | 38.50 | 5519 | <i>Buxus obtusifolia</i> | VU | P | + | + |
| (Mtunguru FR, Gendagenda North FR, Gendagenda South FR) | | | | | <i>Diospyros greenwayi</i> | VU | P | | |
| | | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | | <i>Pycnocomma littoralis</i> | VU | P | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | | <i>Stuhlmannia moavi</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | | <i>Tricalysia acidophylla</i> | VU | P | | |
| Jozani Forest Reserve, Zanzibar | TZ | 6.20 | 39.40 | 1100 | <i>Cephalophus adersi</i> | EN | M | + | + |
| | | | | | <i>Dendrohyrax validus</i> | VU | M | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | | <i>Procolobus kirkii</i> | EN | M | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | | <i>Sheppardia gunningi</i> | VU | B | | |
| | | | | | <i>Stephopaedes howelli</i> | EN | A | | |
| | | | | | <i>Taphozous hildegardeae</i> | VU | M | | |
| Kambe Rocks | KE | 3.85 | 39.63 | 25 | <i>Euphorbia wakefieldii</i> | EN | P | | |
| Kaya Bombo | KE | 4.12 | 39.57 | 10 | <i>Vitellariopsis kirkii</i> | VU | P | | |
| Kaya Chonyi | KE | 3.78 | 39.68 | 200 | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| Kaya Dzombo | KE | 4.43 | 39.22 | | <i>Rhynchocyon petersi</i> | EN | M | | |
| Kaya Fungo | KE | 3.78 | 39.50 | 100 | <i>Warburgia stuhlmannii</i> | VU | P | | |
| Kaya Gandini | KE | 4.02 | 39.50 | 150 | <i>Angylocalyx braunii</i> | VU | P | + | + |
| | | | | | <i>Anthus sokokensis</i> | EN | B | | |
| | | | | | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | | <i>Vitellariopsis kirkii</i> | VU | P | | |

| | | | | | | | | | |
|-----------------------|----|------|-------|-----|------------------------------------|----|---|--|--|
| | | | | | <i>Zoothera guttata</i> | EN | B | | |
| Kaya Gonja | KE | 4.55 | 39.07 | | <i>Vitellariopsis kirkii</i> | VU | P | | |
| Kaya Jibana | KE | 3.83 | 39.68 | 150 | <i>Angylocalyx braunii</i> | VU | P | | |
| | | | | | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Diospyros shimbaensis</i> | EN | P | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Multidentia sclerocarpa</i> | VU | P | | |
| | | | | | <i>Shirakiopsis triloculare</i> | VU | P | | |
| | | | | | <i>Uvariadendron gorgonis</i> | VU | P | | |
| Kaya Kambe | KE | 3.85 | 39.67 | 75 | <i>Angylocalyx braunii</i> | VU | P | | |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Cola octoloboides</i> | EN | P | | |
| Kaya Kauma | KE | 3.61 | 39.73 | 100 | <i>Buxus obtusifolia</i> | VU | P | | |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Vitellariopsis kirkii</i> | VU | P | | |
| Kaya Kinondo | KE | 4.38 | 39.53 | 30 | <i>Vitex zanzibarensis</i> | VU | P | | |
| | | | | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| Kaya Kivara | KE | 3.68 | 39.68 | 150 | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Newtonia paucijuga</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| Kaya Lunguma | KE | 4.13 | 39.50 | 150 | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Vitellariopsis kirkii</i> | VU | P | | |
| Kaya Miungoni | KE | 4.60 | 39.17 | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| Kaya Mtswakara | KE | 3.92 | 39.58 | 120 | <i>Aristogeitonia monophylla</i> | VU | P | | |
| | | | | | <i>Buxus obtusifolia</i> | VU | P | | |
| | | | | | <i>Pavetta linearifolia</i> | VU | P | | |

| | | | | | | | | | |
|-----------------------|----|------|-------|-----|-------------------------------------|----|---|--|--|
| | | | | | <i>Vitellariopsis kirkii</i> | VU | P | | |
| Kaya Muhaka | KE | 4.33 | 39.53 | 150 | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | | <i>Cola octoloboides</i> | EN | P | | |
| | | | | | <i>Gigasiphon macrosiphon</i> | EN | P | | |
| | | | | | <i>Lettowianthus stellatus</i> | VU | P | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| Kaya Mwarakaya | KE | 3.79 | 39.70 | | <i>Karomia gigas</i> | CR | P | | |
| Kaya Puma | KE | 4.13 | 39.27 | | <i>Pavetta linearifolia</i> | VU | P | | |
| Kaya Rabai | KE | 3.93 | 39.58 | 150 | <i>Angylocalyx braunii</i> | VU | P | | |
| | | | | | <i>Bauhinia mombassae</i> | EN | P | | |
| | | | | | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Combretum tenuipetiolatum</i> | CR | P | | |
| | | | | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| Kaya Ribe | KE | 3.88 | 39.63 | 100 | <i>Angylocalyx braunii</i> | VU | P | | |
| | | | | | <i>Bauhinia mombassae</i> | EN | P | | |
| | | | | | <i>Buxus obtusifolia</i> | VU | P | | |
| | | | | | <i>Cola octoloboides</i> | EN | P | | |
| | | | | | <i>Cynometra brachyrrhachis</i> | VU | P | | |
| | | | | | <i>Diospyros shimbaensis</i> | EN | P | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Sterculia schliebenii</i> | VU | P | | |
| | | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| | | | | | <i>Vitellariopsis kirkii</i> | VU | P | | |
| Kaya Segga | KE | 4.55 | 39.10 | 50 | <i>Vitellariopsis kirkii</i> | VU | P | | |
| Kaya Teleza | KE | 4.13 | 39.50 | 100 | <i>Canthium</i> | VU | P | | |

| | | | | | | | | | |
|--|----|------|-------|--------|------------------------------------|----|---|---|---|
| | | | | | <i>pseudovercillatum</i> | | | | |
| Kaya Tiwi | KE | 4.23 | 39.58 | <10 | <i>Canthium pseudovercillatum</i> | VU | P | | |
| | | | | | <i>Taphozous hildegardeae</i> | VU | M | | |
| Kaya Ukunda | KE | 4.32 | 39.53 | 20 | <i>Lettowianthus stellatus</i> | VU | P | | |
| | | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| Kaya Waa | KE | 4.18 | 39.60 | 20 | <i>Rhynchocyon petersi</i> | EN | M | + | + |
| | | | | | <i>Zoothera guttata</i> | EN | B | | |
| Kilombero Valley | TZ | 8.50 | 36.17 | 400000 | <i>Ardeola idae</i> | VU | B | + | + |
| | | | | | <i>Beamys hindei</i> | VU | M | | |
| | | | | | <i>Dalbergia acariantha</i> | VU | P | | |
| | | | | | <i>Erythrina haerdii</i> | VU | P | | |
| | | | | | <i>Millettia elongatistyla</i> | VU | P | | |
| | | | | | <i>Mimusops riparia</i> | VU | P | | |
| | | | | | <i>Paranecepsia alchorneifolia</i> | VU | P | | |
| | | | | | <i>Ploceus burnieri</i> | VU | B | | |
| | | | | | <i>Toussaintia orientalis</i> | VU | P | | |
| | | | | | <i>Vangueriopsis longiflora</i> | VU | P | | |
| Kilwa District Coastal Forests (Kitope FR, Tong'omba FR, Mbinga FR, Mitundumbea FR, Pindiuro FR, Ngarama South FR) | TZ | 9.00 | 39.00 | 106000 | <i>Baikiaea ghesquiereana</i> | EN | P | | + |
| | | | | | <i>Cuviera tomentosa</i> | VU | P | | |
| | | | | | <i>Cynometra gillmanii</i> | CR | P | | |
| | | | | | <i>Dalbergia acariantha</i> | VU | P | | |
| | | | | | <i>Karomia gigas</i> | CR | P | | |
| | | | | | <i>Loxodonta africana</i> | EN | M | | |
| | | | | | <i>Millettia bussei</i> | VU | P | | |
| | | | | | <i>Millettia micans</i> | VU | P | | |
| | | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | | <i>Psydrax micans</i> | VU | P | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| Kisarawe District Coastal Forests (Pugu FR, Kazimzumbwe FR, Ruvu South FR) | TZ | 6.92 | 39.00 | 42000 | <i>Vitellariopsis kirkii</i> | VU | P | + | + |
| | | | | | <i>Africalus sylvaticus</i> | VU | A | | |

| | | | | | | | | |
|--|----|------|-------|----------------------------------|----|---|--|--|
| | | | | <i>Anthus sokokensis</i> | EN | B | | |
| | | | | <i>Aorathe penduliflora</i> | VU | P | | |
| | | | | <i>Aristogeitonia monophylla</i> | VU | P | | |
| | | | | <i>Baphia puguensis</i> | EN | P | | |
| | | | | <i>Beamys hindei</i> | VU | M | | |
| | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | <i>Dalbergia acariiantha</i> | VU | P | | |
| | | | | <i>Dalbergia vacciniifolia</i> | VU | P | | |
| | | | | <i>Garcinia acutifolia</i> | VU | P | | |
| | | | | <i>Gardenia transvenulosa</i> | VU | P | | |
| | | | | <i>Loxodonta africana</i> | EN | M | | |
| | | | | <i>Mesogyne insignis</i> | VU | P | | |
| | | | | <i>Millettia micans</i> | VU | P | | |
| | | | | <i>Multidentia castaneae</i> | VU | P | | |
| | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | <i>Newtonia paucijuga</i> | VU | P | | |
| | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | <i>Rytigynia binata</i> | VU | P | | |
| | | | | <i>Sheppardia gunningi</i> | VU | B | | |
| | | | | <i>Shirakiopsis triloculare</i> | VU | P | | |
| | | | | <i>Sterculia schliebenii</i> | VU | P | | |
| | | | | <i>Synsepalum kaessneri</i> | VU | P | | |
| | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | <i>Toussaintia orientalis</i> | VU | P | | |
| | | | | <i>Vitex zanzibarensis</i> | VU | P | | |
| | | | | <i>Warburgia elongata</i> | EN | P | | |
| | | | | <i>Zoothera guttata</i> | EN | B | | |
| Kisiju | TZ | 7.40 | 39.33 | <i>Rhynchocyon petersi</i> | EN | M | | |
| Kisimani wa Ngoa | KE | 3.12 | 39.87 | <i>Buxus obtusifolia</i> | VU | P | | |
| | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| Korogwe (Kwashemshi Sisal Estate) | TZ | 5.04 | 38.48 | <i>Vitellariopsis cuneata</i> | VU | P | | |
| Lango ya Simba | KE | 2.27 | 40.22 | <i>Angylocalyx braunii</i> | VU | P | | |

| | | | | | | | | | |
|---|----|-------|-------|-------|---------------------------------|----|---|--|---|
| | | | | | <i>Cynometra lukei</i> | EN | P | | |
| Latham Island | TZ | 6.90 | 39.93 | <3 | | | | | + |
| Lindi | TZ | 10.00 | 39.00 | | <i>Cola scheffleri</i> | VU | P | | |
| | | | | | <i>Cynometra filifera</i> | CR | P | | |
| Lindi (Kengedi) | TZ | 10.00 | 39.00 | | <i>Baphia macrocalyx</i> | VU | P | | |
| Lindi (Mkindani) | TZ | 10.63 | 39.18 | | <i>Millettia schliebenii</i> | VU | P | | |
| Lindi (Ngongo) | TZ | 8.95 | 36.65 | | <i>Premna hans-joachimii</i> | VU | P | | |
| Lindi (Nondora) | TZ | 10.00 | 39.00 | | <i>Baphia macrocalyx</i> | VU | P | | |
| Lindi (Nyangao River) | TZ | 10.00 | 39.00 | | <i>Millettia bussei</i> | VU | P | | |
| | | | | | <i>Otomops martiensseni</i> | VU | M | | |
| Lindi (Ras Rungi) | TZ | 9.98 | 39.75 | | <i>Zanthoxylum lindense</i> | VU | P | | |
| Lindi (Tendaguru) | TZ | 9.75 | 39.33 | | <i>Cuviera migeodii</i> | VU | P | | |
| Lindi Creek | TZ | 10.00 | 39.00 | | <i>Cynometra filifera</i> | CR | P | | |
| Lindi District Coastal Forests (Ndimba FR, Ruawa FR, Chitoo FR, Litipo FR, Rondo FR, Nyangamara FR) | TZ | 10.13 | 39.19 | 27499 | <i>Buxus obtusifolia</i> | VU | P | | + |
| | | | | | <i>Millettia schliebenii</i> | VU | P | | |
| | | | | | <i>Premna hans-joachimii</i> | VU | P | | |
| | | | | | <i>Allophylus chirindensis</i> | VU | P | | |
| | | | | | <i>Aorathe penduliflora</i> | VU | P | | |
| | | | | | <i>Bauhinia loeseneriana</i> | VU | P | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | |
| | | | | | <i>Berlinia orientalis</i> | VU | P | | |
| | | | | | <i>Bussea eggelingii</i> | EN | P | | |
| | | | | | <i>Canthium impressinervium</i> | VU | P | | |
| | | | | | <i>Canthium rondoense</i> | EN | P | | |
| | | | | | <i>Cuviera schliebenii</i> | EN | P | | |
| | | | | | <i>Dalbergia acariantha</i> | VU | P | | |
| | | | | | <i>Diospyros magogoana</i> | EN | P | | |
| | | | | | <i>Drypetes sclerophylla</i> | VU | P | | |
| | | | | | <i>Ehretia glandulosissima</i> | EN | P | | |
| | | | | | <i>Fernandoa lutea</i> | EN | P | | |
| | | | | | <i>Galago rondoensis</i> | EN | M | | |
| | | | | | <i>Gardenia transvenulosa</i> | VU | P | | |

| | | | | | | | | | |
|------------------------------|----|------|-------|---------|-----------------------------------|----|---|--|---|
| | | | | | <i>Gigasiphon macrosiphon</i> | EN | P | | |
| | | | | | <i>Guibourtia schliebenii</i> | VU | P | | |
| | | | | | <i>Leptactina papyrophloea</i> | EN | P | | |
| | | | | | <i>Lettowianthus stellatus</i> | VU | P | | |
| | | | | | <i>Loxodonta africana</i> | EN | M | | |
| | | | | | <i>Millettia eriocarpa</i> | VU | P | | |
| | | | | | <i>Mimusops acutifolia</i> | VU | P | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Monotes lutambensis</i> | EN | P | | |
| | | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | | <i>Newtonia paucijuga</i> | VU | P | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | | <i>Premna tanganyikensis</i> | VU | P | | |
| | | | | | <i>Psydrax faulknerae</i> | VU | P | | |
| | | | | | <i>Psydrax micans</i> | VU | P | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | | <i>Rytigynia longipedicellata</i> | EN | P | | |
| | | | | | <i>Sheppardia gunningi</i> | VU | B | | |
| | | | | | <i>Sterculia schliebenii</i> | VU | P | | |
| | | | | | <i>Tapiphyllum schliebenii</i> | EN | P | | |
| | | | | | <i>Tricalysia schliebenii</i> | VU | P | | |
| | | | | | <i>Trichilia lovettii</i> | VU | P | | |
| | | | | | <i>Vismia pauciflora</i> | EN | P | | |
| | | | | | <i>Xylopi collina</i> | EN | P | | |
| | | | | | <i>Zanthoxylum deremense</i> | VU | P | | |
| | | | | | <i>Zoothera guttata</i> | EN | B | | |
| Lukoga Forest Reserve | TZ | 8.13 | 36.68 | | <i>Kraussia speciosa</i> | VU | P | | |
| Lunghi Forest | KE | 1.67 | 41.67 | | <i>Canthium kilifiense</i> | VU | P | | |
| Mafia Island | TZ | 7.89 | 39.76 | 115 000 | <i>Aristogeitonia monophylla</i> | VU | P | | + |
| | | | | | <i>Baphia kirkii</i> | VU | P | | |
| | | | | | <i>Coffea costatifructa</i> | VU | P | | |
| | | | | | <i>Dendrohyrax validus</i> | VU | M | | |
| | | | | | <i>Diospyros greenwayi</i> | VU | P | | |
| | | | | | <i>Diospyros shimbaensis</i> | EN | P | | |
| | | | | | <i>Euphorbia lividiflora</i> | VU | P | | |

| | | | | | | | | | |
|-------------------------------------|----|------|-------|--------|-------------------------------------|----|---|---|---|
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | | <i>Stephopaedes howelli</i> | EN | A | | |
| | | | | | <i>Zanthoxylum lindense</i> | VU | P | | |
| Magombera Forest Reserve | TZ | 7.92 | 37.05 | | <i>Isolona heinsenii</i> | EN | P | | |
| | | | | | <i>Keetia purpurascens</i> | VU | P | | |
| | | | | | <i>Procolobus gordonorum</i> | VU | M | | |
| Mahenge | TZ | 8.68 | 36.72 | 300000 | <i>Arthroleptides yakusini</i> | EN | A | | |
| | | | | | <i>Isolona heinsenii</i> | EN | P | | |
| | | | | | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | | <i>Dombeya amaniensis</i> | VU | P | | |
| | | | | | <i>Lettowianthus stellatus</i> | VU | P | | |
| | | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| Mahenge (Kwiro Forest) | TZ | 8.68 | 36.68 | | <i>Psychotria megalopus</i> | VU | P | | |
| Mahenge (Liondo) | TZ | 8.70 | 36.78 | | <i>Lagynias pallidiflora</i> | VU | P | | |
| Mahenge (Lipindi) | TZ | 8.68 | 36.72 | | <i>Premna schliebenii</i> | VU | P | | |
| Mahenge (Sali) | TZ | 8.97 | 36.68 | | <i>Octoknema orientalis</i> | VU | P | | |
| Mahenge Scarp Forest Reserve | TZ | 8.68 | 36.72 | | <i>Garcinia semseii</i> | VU | P | | |
| Makongwe Island | TZ | 5.38 | 39.62 | | <i>Intsia bijuga</i> | VU | P | | |
| Mangea Hill | KE | 3.25 | 39.72 | | <i>Buxus obtusifolia</i> | VU | P | | |
| | | | | | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Newtonia paucijuga</i> | VU | P | | |
| | | | | | <i>Pavetta linearifolia</i> | VU | P | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | | <i>Synsepalum kaessneri</i> | VU | P | | |
| | | | | | <i>Toussaintia orientalis</i> | VU | P | | |
| Marafa | KE | 3.03 | 39.97 | | <i>Warburgia stuhlmannii</i> | VU | P | | |
| Marenji Forest | KE | 4.50 | 39.20 | 1520 | <i>Anthus sokokensis</i> | EN | B | + | + |

| | | | | | | | | | |
|--|----|-------|-------|--------|------------------------------------|----|---|---|---|
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Rhynchocydon petersi</i> | EN | M | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | | <i>Sterculia schliebenii</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | | <i>Warburgia stuhlmannii</i> | VU | P | | |
| Masasi | TZ | 10.83 | 38.58 | | <i>Tricalysia schliebenii</i> | VU | P | | |
| Masasi (Nyengedi) | TZ | 10.83 | 38.58 | | <i>Berlinia orientalis</i> | VU | P | | |
| Masasi East | TZ | 10.83 | 38.58 | | <i>Shirakiopsis triloculare</i> | VU | P | | |
| Mikindani (Mnima) | TZ | 10.48 | 39.72 | | <i>Xylopia collina</i> | EN | P | | |
| Mikindani (Mtwara inland) | TZ | 10.50 | 40.00 | | <i>Berlinia orientalis</i> | VU | P | | |
| Mikindani District (Mtwara-Mikindani) | TZ | 10.50 | 40.00 | | <i>Euphorbia lividiflora</i> | VU | P | | |
| Mikumi National Park | TZ | 7.17 | 37.17 | 323000 | <i>Tricalysia pedicellata</i> | VU | P | + | + |
| Mkomazi Game Reserve | TZ | 4.17 | 38.17 | 250000 | <i>Adenopodia rotundifolia</i> | VU | P | | + |
| | | | | | <i>Lycaon pictus</i> | EN | M | | |
| | | | | | <i>Polysphaeria macrantha</i> | VU | P | | |
| | | | | | <i>Rytigynia eickii</i> | VU | P | | |
| Mnazi Bay | TZ | 10.42 | 39.17 | 10000 | | | | + | + |
| Mount Kasigau | KE | 3.83 | 38.67 | | <i>Diphasiopsis fadenii</i> | VU | P | | |
| | | | | | <i>Ouratea schusteri</i> | VU | P | | |
| | | | | | <i>Psychotria taitensis</i> | VU | P | | |
| | | | | | <i>Sorindeia calantha</i> | CR | P | | |
| Mpanga Village Forest Reserve | TZ | 4.77 | 38.65 | | <i>Dasylepis integra</i> | VU | P | | |
| Mrima Hill Forest | KE | 4.48 | 39.27 | 250 | <i>Gigasiphon macrosiphon</i> | EN | P | + | + |
| | | | | | <i>Lovoa swynnertonii</i> | EN | P | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | | <i>Rhynchocydon petersi</i> | EN | M | | |
| | | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | | <i>Uvariadendron gorgonis</i> | VU | P | | |
| | | | | | <i>Ziziphus robertsoniana</i> | EN | P | | |

| | | | | | | | | | |
|---|----|-------|-------|-------|-----------------------------------|----|---|---|---|
| | | | | | <i>Zoothera guttata</i> | EN | B | | |
| Msambweni | KE | 4.46 | 39.48 | | <i>Ficus faulkneriana</i> | CR | P | | |
| Mtanza Forest Reserve | TZ | 7.87 | 38.87 | | <i>Coffea zanguebariae</i> | VU | P | | |
| | | | | | <i>Keetia purpurascens</i> | VU | P | | |
| Mtwara | TZ | 10.50 | 40.00 | | <i>Baphia macrocalyx</i> | VU | P | | |
| Muheza District Coastal Forests (Tongwe FR, Kwani FR, Pangani Falls FR, Amboni Caves FR, Kilulu FR) | TZ | 5.17 | 38.94 | 4267 | <i>Anthus sokokensis</i> | EN | B | + | + |
| | | | | | <i>Buxus obtusifolia</i> | VU | P | | |
| | | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Dendrohyrax validus</i> | VU | M | | |
| | | | | | <i>Gulella amboniensis</i> | VU | G | | |
| | | | | | <i>Khaya anthotheca</i> | VU | P | | |
| | | | | | <i>Micrococca scariosa</i> | VU | P | | |
| | | | | | <i>Otomops martiensseni</i> | VU | M | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | | <i>Pycnocoma littoralis</i> | VU | P | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | | <i>Taphozous hildegardeae</i> | VU | M | | |
| | | | | | <i>Uvariadendron usambarensis</i> | VU | P | | |
| Mwache Forest Reserve | KE | 4.00 | 39.53 | | <i>Aristogeitonia monophylla</i> | VU | P | | |
| | | | | | <i>Bauhinia mombassae</i> | EN | P | | |
| | | | | | <i>Euphorbia wakefieldii</i> | EN | P | | |
| | | | | | <i>Sterculia schliebenii</i> | VU | P | | |
| | | | | | <i>Vitellariopsis kirkii</i> | VU | P | | |
| near Buda Forest Reserve | KE | 4.45 | 39.40 | | <i>Ficus faulkneriana</i> | CR | P | | |
| Newala (Kitama) | TZ | 10.75 | 39.50 | | <i>Berlinia orientalis</i> | VU | P | | |
| Newala (Kitangari) | TZ | 10.65 | 39.33 | | <i>Premna tanganyikensis</i> | VU | P | | |
| Newala (Mahuta) | TZ | 10.87 | 39.44 | | <i>Xylopi collina</i> | EN | P | | |
| Newala District Coastal Forests (Makonde Scarp FR, Mkunya River FR) | TZ | 10.75 | 39.50 | 38136 | <i>Baphia macrocalyx</i> | VU | P | | + |
| | | | | | <i>Canthium impressinervium</i> | VU | P | | |
| | | | | | <i>Milletia eriocarpa</i> | VU | P | | |

| | | | | | | | | | | |
|---------------------------------------|----|------|-------|-------|---|----|---|---|--|---|
| Nguru Mountains | TZ | 6.09 | 37.51 | 32908 | <i>Allanblackia stuhlmannii</i> | VU | P | + | | + |
| (Kanga FR, Nguru South FR, Mkindo FR) | | | | | <i>Allanblackia ulugurensis</i> | VU | P | | | |
| | | | | | <i>Anthreptes rubritorques</i> | VU | B | | | |
| | | | | | <i>Arthroleptis tanneri</i> | VU | A | | | |
| | | | | | <i>Baphia semseiana</i> | VU | P | | | |
| | | | | | <i>Bauhinia loeseneriana</i> | VU | P | | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | | |
| | | | | | <i>Beilschmiedia kweo</i> | VU | P | | | |
| | | | | | <i>Bubo vosseleri</i> | VU | B | | | |
| | | | | | <i>Cephalosphaera usambarensis</i> | VU | P | | | |
| | | | | | <i>Chassalia albiflora</i> | VU | P | | | |
| | | | | | <i>Coffea mongensis</i> | VU | P | | | |
| | | | | | <i>Cola scheffleri</i> | VU | P | | | |
| | | | | | <i>Craterispermum longipedunculatum</i> | VU | P | | | |
| | | | | | <i>Crocidura monax</i> | VU | M | | | |
| | | | | | <i>Garcinia semseii</i> | VU | P | | | |
| | | | | | <i>Isolona heinsenii</i> | EN | P | | | |
| | | | | | <i>Kraussia speciosa</i> | VU | P | | | |
| | | | | | <i>Lasianthus pedunculatus</i> | VU | P | | | |
| | | | | | <i>Leptopelis uluguruensis</i> | VU | A | | | |
| | | | | | <i>Lovoa swynnertonii</i> | EN | P | | | |
| | | | | | <i>Mesogyne insignis</i> | VU | P | | | |
| | | | | | <i>Millettia bussei</i> | VU | P | | | |
| | | | | | <i>Millettia sacleuxii</i> | VU | P | | | |
| | | | | | <i>Millettia semsei</i> | VU | P | | | |
| | | | | | <i>Millettia sericantha</i> | VU | P | | | |
| | | | | | <i>Myonycteris relict</i> | VU | M | | | |
| | | | | | <i>Newtonia paucijuga</i> | VU | P | | | |
| | | | | | <i>Octoknema orientalis</i> | VU | P | | | |
| | | | | | <i>Pavetta axillipara</i> | VU | P | | | |
| | | | | | <i>Pavetta holstii</i> | VU | P | | | |
| | | | | | <i>Pavetta manyanguensis</i> | VU | P | | | |
| | | | | | <i>Pavetta sparsipila</i> | VU | P | | | |

| | | | | | | | | | |
|---|----|------|-------|-------|------------------------------------|----|---|---|---|
| | | | | | <i>Scolecormorphus vittatus</i> | VU | A | | |
| | | | | | <i>Sorindeia calantha</i> | CR | P | | |
| | | | | | <i>Sylvisorex howelli</i> | VU | M | | |
| | | | | | <i>Tetrorchidium ulugurensis</i> | VU | P | | |
| | | | | | <i>Tricalysia acidophylla</i> | VU | P | | |
| | | | | | <i>Tricalysia pedicellata</i> | VU | P | | |
| | | | | | <i>Uvariadendron usambarense</i> | VU | P | | |
| | | | | | <i>Zanthoxylum deremense</i> | VU | P | | |
| | | | | | <i>Zimmermannia nguruensis</i> | VU | P | | |
| Nguu Mountains | TZ | 5.53 | 37.48 | 28456 | <i>Hoplophryne rogersi</i> | EN | A | + | + |
| (Kwediboma FR, Mkongo FR, Nguru North FR, Derema FR, Pumila FR, Mbwegele FR, Mkuri FR, Kilindi FR, Rudewa FR) | | | | | <i>Scolecormorphus vittatus</i> | VU | A | | |
| North Pare Mountains | TZ | 3.74 | 37.65 | 3000 | <i>Cinnyricinclus femoralis</i> | VU | B | + | + |
| (Minja FR, Mramba FR, Kamwala I & II proposed FR, Kindoroko FR, Kiverenge FR) | | | | | <i>Cynometra suaheliensis</i> | VU | P | | |
| | | | | | <i>Cynometra webberi</i> | VU | P | | |
| | | | | | <i>Dialium holtzii</i> | VU | P | | |
| | | | | | <i>Erythrina sacleuxii</i> | VU | P | | |
| | | | | | <i>Julbernardia magnistipulata</i> | VU | P | | |
| | | | | | <i>Memecylon teitense</i> | VU | P | | |
| | | | | | <i>Mildbraedia carpinifolia</i> | VU | P | | |
| | | | | | <i>Prunus africana</i> | VU | P | | |
| | | | | | <i>Scolecormorphus vittatus</i> | VU | A | | |
| | | | | | <i>Uvariadendron kirkii</i> | VU | P | | |
| | | | | | <i>Vepris sansibarensis</i> | VU | P | | |
| | | | | | <i>Zanthoxylum holtzianum</i> | VU | P | | |
| Nyumburuni Forest Reserve | TZ | 7.90 | 39.03 | | <i>Sheppardia gunningi</i> | VU | B | | |
| | | | | | <i>Loxodonta africana</i> | EN | M | | |
| Nzovuni River | KE | 4.07 | 39.48 | | <i>Combretum tenuipetiolatum</i> | CR | P | | |
| Pande and Dodwe Coastal Forests | TZ | 6.79 | 39.16 | 1600 | <i>Anthus sokokensis</i> | EN | B | + | + |

| | | | | | | | | |
|---|----|------|-------|------------------------------------|----|---|---|---|
| (Pande game reserve, Dondwe FR) | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | <i>Croton jatrophioides</i> | VU | P | | |
| | | | | <i>Gardenia transvenulosa</i> | VU | P | | |
| | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | <i>Sheppardia gunningi</i> | VU | B | | |
| | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | <i>Zoothera guttata</i> | EN | B | | |
| Pangani | KE | 3.85 | 39.67 | <i>Bauhinia bombassae</i> | EN | P | | |
| | | | | <i>Cola porphyrantha</i> | EN | P | | |
| | | | | <i>Cynometra brachyrrhachis</i> | VU | P | | |
| | | | | <i>Euphorbia wakefieldii</i> | EN | P | | |
| | | | | <i>Micrococca scariosa</i> | VU | P | | |
| | | | | <i>Oxystigma msoo</i> | VU | P | | |
| | | | | <i>Shirakiopsis triloculare</i> | VU | P | | |
| | | | | <i>Sterculia schliebenii</i> | VU | P | | |
| | | | | <i>Uvariadendron gorgonis</i> | VU | P | | |
| Pangani (Bushiri) | TZ | 5.33 | 38.95 | <i>Vitellariopsis kirkii</i> | VU | P | | |
| Pangani (Hale-Makinjumbe) | TZ | 5.33 | 38.63 | <i>Mimusops riparia</i> | VU | P | | |
| Pangani (Mauri) | TZ | 5.13 | 38.38 | <i>Mimusops riparia</i> | VU | P | | |
| Pangani (Mwera) | TZ | 5.48 | 38.90 | <i>Ficus faulkneriana</i> | CR | P | | |
| | | | | <i>Diospyros greenwayi</i> | VU | P | | |
| Pangani Dam | TZ | 5.58 | 38.75 | <i>Cynometra brachyrrhachis</i> | VU | P | | |
| Pangani District Coastal Forests | TZ | 5.52 | 38.74 | 4400 <i>Africalus uluguruensis</i> | VU | A | + | + |
| (Msumbugwe FR) | | | | <i>Ficus faulkneriana</i> | CR | P | | |
| | | | | <i>Gardenia transvenulosa</i> | VU | P | | |
| | | | | <i>Loxodonta africana</i> | EN | M | | |
| | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | <i>Stuhlmannia moavi</i> | VU | P | | |
| | | | | <i>Warburgia stuhlmannii</i> | VU | P | | |
| Panza Island | TZ | 5.47 | 39.65 | <i>Intsia bijuga</i> | VU | P | | |

| | | | | | | | | | | |
|---|----|------|-------|--------|-----------------------------------|----|---|---|---|---|
| Pemba Island | TZ | 5.20 | 39.76 | 101400 | <i>Dendrohyrax validus</i> | VU | M | + | | + |
| (Ngezi FR) | | | | | <i>Lagynias pallidiflora</i> | VU | P | | | |
| | | | | | <i>Pteropus voeltzkowi</i> | CR | M | | | |
| | | | | | <i>Schoutedenella xenodactyla</i> | VU | A | | | |
| Ras Kituani | TZ | 7.12 | 39.55 | 61000 | <i>Zanthoxylum lindense</i> | VU | P | | | |
| River Wami | TZ | 6.13 | 38.82 | | <i>Lanistes alexandri</i> | EN | G | | | |
| | | | | | <i>Stuhlmannia moavi</i> | VU | P | | | |
| Rubeho Mountains | TZ | 7.00 | 36.53 | 62861 | <i>Bathmocercus winifredae</i> | VU | B | + | | + |
| (Mafwemiro FR, Ukwiva FR, Mangalisa FR) | | | | | <i>Bubo vosseleri</i> | VU | B | | | |
| | | | | | <i>Pavetta lynesii</i> | VU | P | | | |
| | | | | | <i>Ploceus nicolli</i> | EN | B | | | |
| | | | | | <i>Sheppardia lowei</i> | VU | B | | | |
| | | | | | <i>Xenoperdix udzungwensis</i> | VU | B | | | |
| Rufiji Delta | TZ | 8.00 | 39.27 | 72000 | | | | | + | + |
| Rufiji District Coastal Forests | TZ | 8.27 | 38.98 | 2025 | <i>Aristogeitonia monophylla</i> | VU | P | | | + |
| (Kiwengoma FR) | | | | | <i>Baikiaea ghesquiireana</i> | EN | P | | | |
| | | | | | <i>Baphia puguensis</i> | EN | P | | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | | |
| | | | | | <i>Gardenia transvenulosa</i> | VU | P | | | |
| | | | | | <i>Isolona heinsenii</i> | EN | P | | | |
| | | | | | <i>Vitex zanzibarensis</i> | VU | P | | | |
| | | | | | <i>Lettowianthus stellatus</i> | VU | P | | | |
| | | | | | <i>Lovoa swynnertonii</i> | EN | P | | | |
| | | | | | <i>Loxodonta africana</i> | EN | M | | | |
| | | | | | <i>Millettia bussei</i> | VU | P | | | |
| | | | | | <i>Millettia schliebenii</i> | VU | P | | | |
| | | | | | <i>Mkilua fragrans</i> | VU | P | | | |
| | | | | | <i>Myonycteris relict</i> | VU | M | | | |
| | | | | | <i>Newtonia paucijuga</i> | VU | P | | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | | |
| | | | | | <i>Rhynchocyon cirnei</i> | VU | M | | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | | |

| | | | | | | | | | |
|-----------------------------------|----|------|-------|---------|-------------------------------------|----|---|---|---|
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | | <i>Tessmannia densiflora</i> | EN | P | | |
| | | | | | <i>Toussaintia orientalis</i> | VU | P | | |
| Sabaki River Mouth | KE | 3.15 | 40.13 | 200 | | | | + | + |
| Sangerawe | TZ | 5.13 | 38.62 | | <i>Lijndenia brenanii</i> | VU | P | | |
| Selous Game Reserve | TZ | 9.00 | 38.00 | 5000000 | <i>Aristogeitonia monophylla</i> | VU | P | + | + |
| | | | | | <i>Canthium vollesenii</i> | VU | P | | |
| | | | | | <i>Coffea costatifructa</i> | VU | P | | |
| | | | | | <i>Coffea zanguebariae</i> | VU | P | | |
| | | | | | <i>Cynometra lukei</i> | EN | P | | |
| | | | | | <i>Diceros bicornis</i> | CR | M | | |
| | | | | | <i>Drypetes sclerophylla</i> | VU | P | | |
| | | | | | <i>Keetia purpurascens</i> | VU | P | | |
| | | | | | <i>Loxodonta africana</i> | EN | M | | |
| | | | | | <i>Millettia micans</i> | VU | P | | |
| | | | | | <i>Millettia semsei</i> | VU | P | | |
| | | | | | <i>Paranecepsia alchorneifolia</i> | VU | P | | |
| | | | | | <i>Psyrax faulknerae</i> | VU | P | | |
| | | | | | <i>Rytigynia binata</i> | VU | P | | |
| | | | | | <i>Stuhlmannia moavi</i> | VU | P | | |
| | | | | | <i>Vismia pauciflora</i> | EN | P | | |
| | | | | | <i>Vitellariopsis cuneata</i> | VU | P | | |
| | | | | | <i>Vitex zanzibarensis</i> | VU | P | | |
| Semdoe | TZ | 4.95 | 38.70 | | <i>Arthroleptides martiensseni</i> | EN | A | | |
| | | | | | <i>Nectophrynoides tornieri</i> | VU | A | | |
| Shikurufumi Forest Reserve | TZ | 7.00 | 37.67 | | <i>Rytigynia eickii</i> | VU | P | | |
| Shimba Hills | KE | 4.25 | 39.42 | 21740 | <i>Canthium kilifiense</i> | VU | P | + | + |
| | | | | | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | | <i>Afrixalus sylvaticus</i> | VU | A | | |
| | | | | | <i>Allophylus chirindensis</i> | VU | P | | |
| | | | | | <i>Angylocalyx braunii</i> | VU | P | | |
| | | | | | <i>Anthus sokokensis</i> | EN | B | | |

| | | | | | | | | |
|--|--|--|--|---|----|---|--|--|
| | | | | <i>Aristogeitonia monophylla</i> | VU | P | | |
| | | | | <i>Bauhinia mombassae</i> | EN | P | | |
| | | | | <i>Beamys hindei</i> | VU | M | | |
| | | | | <i>Buxus obtusifolia</i> | VU | P | | |
| | | | | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | <i>Cephalosphaera usambarensis</i> | VU | P | | |
| | | | | <i>Chytranthus obliquinervis</i> | VU | P | | |
| | | | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | <i>Cola porphyrantha</i> | EN | P | | |
| | | | | <i>Cynometra suaheliensis</i> | VU | P | | |
| | | | | <i>Cynometra webberi</i> | VU | P | | |
| | | | | <i>Dalbergia vacciniifolia</i> | VU | P | | |
| | | | | <i>Dialium holtzii</i> | VU | P | | |
| | | | | <i>Diospyros amaniensis</i> | VU | P | | |
| | | | | <i>Diospyros greenwayi</i> | VU | P | | |
| | | | | <i>Diospyros shimbaensis</i> | EN | P | | |
| | | | | <i>Erythrina sacleuxii</i> | VU | P | | |
| | | | | <i>Euphorbia wakefieldii</i> | EN | P | | |
| | | | | <i>Ficus faulkneriana</i> | CR | P | | |
| | | | | <i>Hyperolius rubrovermiculatus</i> | EN | A | | |
| | | | | <i>Julbernardia magnistipulata</i> | VU | P | | |
| | | | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | <i>Lagynias pallidiflora</i> | VU | P | | |
| | | | | <i>Lettowianthus stellatus</i> | VU | P | | |
| | | | | <i>Lovoa swynnertonii</i> | EN | P | | |
| | | | | <i>Loxodonta africana</i> | EN | M | | |
| | | | | <i>Mildbraedia carpinifolia</i> | VU | P | | |
| | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | <i>Multidentia sclerocarpa</i> | VU | P | | |
| | | | | <i>Myonycteris relict</i> | VU | M | | |
| | | | | <i>Newtonia paucijuga</i> | VU | P | | |

| | | | | | | | | | |
|--|----|------|-------|-------|------------------------------------|----|---|---|---|
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | |
| | | | | | <i>Pavetta tarenoides</i> | VU | P | | |
| | | | | | <i>Prunus africana</i> | VU | P | | |
| | | | | | <i>Psydrax faulknerae</i> | VU | P | | |
| | | | | | <i>Rhynchocydon petersi</i> | EN | M | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | | <i>Sheppardia gunningi</i> | VU | B | | |
| | | | | | <i>Sterculia schliebenii</i> | VU | P | | |
| | | | | | <i>Strychnos mellodora</i> | VU | P | | |
| | | | | | <i>Synsepalum kaessneri</i> | VU | P | | |
| | | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| | | | | | <i>Tarenna drummondii</i> | VU | P | | |
| | | | | | <i>Uvariadendron kirkii</i> | VU | P | | |
| | | | | | <i>Vangueriopsis longiflora</i> | VU | P | | |
| | | | | | <i>Vepris sansibarensis</i> | VU | P | | |
| | | | | | <i>Vitellariopsis kirkii</i> | VU | P | | |
| | | | | | <i>Zanthoxylum holtzianum</i> | VU | P | | |
| | | | | | <i>Zoothera guttata</i> | EN | B | | |
| Shimoni Forests | KE | 4.65 | 39.38 | | <i>Coffea pseudozanguebariae</i> | VU | P | | |
| | | | | | <i>Taphozous hildegardeae</i> | VU | M | | |
| Sinza River-near University of Dar | TZ | 6.82 | 39.27 | | <i>Croton jatrophioides</i> | VU | P | | |
| South Pare Mountains | TZ | 4.29 | 37.94 | 25000 | <i>Adenopodia rotundifolia</i> | VU | P | + | + |
| (Kwizu FR, Kankoma Local Area FR, Chome FR, Chengweni Local Area FR, Gonja Local Area FR, Chambogo FR) | | | | | <i>Casearia engleri</i> | VU | P | | |
| | | | | | <i>Chassalia albiflora</i> | VU | P | | |
| | | | | | <i>Chytranthus obliquinervis</i> | VU | P | | |
| | | | | | <i>Coffea fadenii</i> | VU | P | | |
| | | | | | <i>Crocidura usambarae</i> | VU | M | | |
| | | | | | <i>Cynometra suaheliensis</i> | VU | P | | |
| | | | | | <i>Cynometra webberi</i> | VU | P | | |
| | | | | | <i>Dasylepis integra</i> | VU | P | | |
| | | | | | <i>Dialium holtzii</i> | VU | P | | |

| | | | | | | | | | |
|----------------------------|----|------|-------|-----|-------------------------------------|----|---|---|---|
| | | | | | <i>Erythrina sacleuxii</i> | VU | P | | |
| | | | | | <i>Ixora albersii</i> | VU | P | | |
| | | | | | <i>Julbernardia magnistipulata</i> | VU | P | | |
| | | | | | <i>Macaranga conglomerata</i> | VU | P | | |
| | | | | | <i>Mammea usambarensis</i> | VU | P | | |
| | | | | | <i>Memecylon teitense</i> | VU | P | | |
| | | | | | <i>Mildbraedia carpinifolia</i> | VU | P | | |
| | | | | | <i>Ocotea kenyensis</i> | VU | P | | |
| | | | | | <i>Pavetta holstii</i> | VU | P | | |
| | | | | | <i>Polysphaeria macrantha</i> | VU | P | | |
| | | | | | <i>Prunus africana</i> | VU | P | | |
| | | | | | <i>Psychotria crassipetala</i> | VU | P | | |
| | | | | | <i>Psychotria cyathicalyx</i> | VU | P | | |
| | | | | | <i>Psychotria pseudoplatyphylla</i> | VU | P | | |
| | | | | | <i>Psydrax faulknerae</i> | VU | P | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | | <i>Schefflera lukwangulensis</i> | VU | P | | |
| | | | | | <i>Scolecormorphus vittatus</i> | VU | A | | |
| | | | | | <i>Sorindeia calantha</i> | CR | P | | |
| | | | | | <i>Uvariadendron kirkii</i> | VU | P | | |
| | | | | | <i>Vepris sansibarensis</i> | VU | P | | |
| | | | | | <i>Zanthoxylum holtzianum</i> | VU | P | | |
| | | | | | <i>Zosterops winifredae</i> | VU | B | | |
| Taita Hills Forests | KE | 3.42 | 38.33 | 400 | <i>Apalis fuscigularis</i> | CR | B | + | + |
| | | | | | <i>Boulengerula taitana</i> | VU | A | | |
| | | | | | <i>Cinnyricinclus femoralis</i> | VU | B | | |
| | | | | | <i>Coffea fadenii</i> | VU | P | | |
| | | | | | <i>Dasylepis integra</i> | VU | P | | |
| | | | | | <i>Dialium holtzii</i> | VU | P | | |
| | | | | | <i>Diospyros greenwayi</i> | VU | P | | |
| | | | | | <i>Diphasiopsis fadenii</i> | VU | P | | |
| | | | | | <i>Erythrina sacleuxii</i> | VU | P | | |
| | | | | | <i>Gulella taitensis</i> | CR | G | | |
| | | | | | <i>Julbernardia</i> | VU | P | | |

| | | | | | | | | | | |
|---------------------------------|----|------|-------|--------|-------------------------------------|----|---|---|---|---|
| | | | | | <i>magnistipulata</i> | | | | | |
| | | | | | <i>Macaranga conglomerata</i> | VU | P | | | |
| | | | | | <i>Memecylon teitense</i> | VU | P | | | |
| | | | | | <i>Mildbraedia carpinifolia</i> | VU | P | | | |
| | | | | | <i>Ocotea kenyensis</i> | VU | P | | | |
| | | | | | <i>Ouratea schusteri</i> | VU | P | | | |
| | | | | | <i>Prunus africana</i> | VU | P | | | |
| | | | | | <i>Psychotria alsophila</i> | VU | P | | | |
| | | | | | <i>Psychotria crassipetala</i> | VU | P | | | |
| | | | | | <i>Psychotria petiti</i> | VU | P | | | |
| | | | | | <i>Psychotria pseudoplatyphylla</i> | VU | P | | | |
| | | | | | <i>Psydrax faulknerae</i> | VU | P | | | |
| | | | | | <i>Renauldia lycopodioides</i> | EN | P | | | |
| | | | | | <i>Rytigynia eickii</i> | VU | P | | | |
| | | | | | <i>Thapsia buraensis</i> | CR | G | | | |
| | | | | | <i>Turdus helleri</i> | CR | B | | | |
| | | | | | <i>Uvariadendron kirkii</i> | VU | P | | | |
| | | | | | <i>Vepris sansibarensis</i> | VU | P | | | |
| | | | | | <i>Zanthoxylum holtzianum</i> | VU | P | | | |
| | | | | | <i>Zimmermannia ovata</i> | VU | P | | | |
| | | | | | <i>Zingis radiolata</i> | CR | G | | | |
| | | | | | <i>Zosterops silvanus</i> | EN | B | | | |
| Tana River Delta | KE | 2.50 | 40.33 | 130000 | | | | | + | + |
| Lower Tana River Forests | KE | 2.50 | 40.50 | 60000 | <i>Chytranthus obliquinervis</i> | VU | P | + | | + |
| | | | | | <i>Cynometra lukei</i> | EN | P | | | |
| | | | | | <i>Kraussia speciosa</i> | VU | P | | | |
| | | | | | <i>Oxystigma msoo</i> | VU | P | | | |
| | | | | | <i>Paraxerus palliatus</i> | VU | M | | | |
| | | | | | <i>Pavetta linearifolia</i> | VU | P | | | |
| | | | | | <i>Populus ilicifolia</i> | VU | P | | | |
| | | | | | <i>Procolobus rufomitrat</i> | CR | M | | | |
| | | | | | <i>Taphozous hildegardeae</i> | VU | M | | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | | |
| Tanga (Duga) | TZ | 5.12 | 39.10 | | <i>Rothmannia macrosiphon</i> | VU | P | | | |

| | | | | | | | | | | |
|--|----|------|-------|--------|-----------------------------------|----|---|---|---|---|
| Tanga (Gombero Forest Reserve) | TZ | 4.97 | 39.00 | | <i>Pavetta linearifolia</i> | VU | P | | | |
| Tanga (Morongo) | TZ | 5.20 | 39.02 | | <i>Psydrax faulknerae</i> | VU | P | | | |
| Tanga (Nyamaku) | TZ | 5.25 | 39.07 | | <i>Baphia kirkii</i> | VU | P | | | |
| Tanga (Pangani) | TZ | 5.25 | 39.07 | | <i>Dalbergia vacciniifolia</i> | VU | P | | | |
| Tanga (Sigi River) | TZ | 5.25 | 39.07 | | <i>Psydrax kibuwae</i> | VU | P | | | |
| Tanga North-Kibo Salt Pans | TZ | 4.82 | 39.00 | 300 | | | | | + | + |
| Tanga South | TZ | 5.25 | 39.07 | 4400 | | | | | + | + |
| | TZ | - | - | | <i>Lanistes farleri</i> | EN | G | | | |
| | TZ | - | - | | <i>Lanistes stuhlmanni</i> | EN | G | | | |
| Tumbatu Island | TZ | 5.82 | 39.22 | | <i>Dendrohyrax validus</i> | VU | M | | | |
| Udzungwa Mountains | TZ | 8.00 | 36.00 | 115000 | <i>Crocidura elgonius</i> | VU | M | + | | + |
| (Image FR, Kisinga Rugaro FR, Ulambangi FR, New Dabaga FR, Ihangana FR, | | | | | <i>Nectophrynoides asperginis</i> | CR | A | | | |
| Idewa FR, Udzungwa Scarp FR, Lulanda FR, Kigogo FR, Mufindi Scarp East & | | | | | <i>Uvariodendron gorgonis</i> | VU | P | | | |
| West FRs, Matundu FR, Iyondo FR, West Kilombero FR, Ihangana FR, Nyanganje FR) | | | | | <i>Allanblackia ulugurensis</i> | VU | P | | | |
| | | | | | <i>Psychotria cyathicalyx</i> | VU | P | | | |
| | | | | | <i>Afrixalus uluguruensis</i> | VU | A | | | |
| | | | | | <i>Allanblackia stuhlmannii</i> | VU | P | | | |
| | | | | | <i>Allophylus chirindensis</i> | VU | P | | | |
| | | | | | <i>Anthreptes pallidigaster</i> | EN | B | | | |
| | | | | | <i>Anthreptes rubritorques</i> | VU | B | | | |
| | | | | | <i>Apalis chariessa</i> | VU | B | | | |
| | | | | | <i>Arthroleptides yakusini</i> | EN | A | | | |
| | | | | | <i>Bathmocercus winifredae</i> | VU | B | | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | | |
| | | | | | <i>Bersama rosea</i> | VU | P | | | |
| | | | | | <i>Bertiera pauloi</i> | VU | P | | | |
| | | | | | <i>Bubo vosseleri</i> | VU | B | | | |
| | | | | | <i>Bufo brauni</i> | VU | A | | | |
| | | | | | <i>Bufo udzungwensis</i> | VU | A | | | |

| | | | | | | | | |
|--|--|--|--|---|----|---|--|--|
| | | | | <i>Canthium siebenlistii</i> | VU | P | | |
| | | | | <i>Cephalophus spadix</i> | VU | M | | |
| | | | | <i>Craterispermum longipedunculatum</i> | VU | P | | |
| | | | | <i>Crocidura desperata</i> | CR | M | | |
| | | | | <i>Crocidura monax</i> | VU | M | | |
| | | | | <i>Crocidura telfordi</i> | CR | M | | |
| | | | | <i>Diceros bicornis</i> | CR | M | | |
| | | | | <i>Drypetes gerrardinoides</i> | VU | P | | |
| | | | | <i>Erythrina haerdii</i> | VU | P | | |
| | | | | <i>Garcinia semseii</i> | VU | P | | |
| | | | | <i>Hirtella megacarpa</i> | VU | P | | |
| | | | | <i>Hirundo atrocaerulea</i> | VU | B | | |
| | | | | <i>Hoplophryne uluguruensis</i> | VU | A | | |
| | | | | <i>Hyperolius kihangensis</i> | EN | A | | |
| | | | | <i>Hyperolius minutissimus</i> | VU | A | | |
| | | | | <i>Kotschy platyphylla</i> | VU | P | | |
| | | | | <i>Lagynias pallidiflora</i> | VU | P | | |
| | | | | <i>Lasianthus pedunculatus</i> | VU | P | | |
| | | | | <i>Leptopelis barbouri</i> | VU | A | | |
| | | | | <i>Leptopelis parkeri</i> | VU | A | | |
| | | | | <i>Leptopelis uluguruensis</i> | VU | A | | |
| | | | | <i>Leptopelis vermiculatus</i> | VU | A | | |
| | | | | <i>Loxodonta africana</i> | EN | M | | |
| | | | | <i>Modulatrix orostruthus</i> | VU | B | | |
| | | | | <i>Nectarinia rufipennis</i> | VU | B | | |
| | | | | <i>Nectophrynoides tornieri</i> | VU | A | | |
| | | | | <i>Nectophrynoides wendyae</i> | CR | A | | |
| | | | | <i>Octoknema orientalis</i> | VU | P | | |
| | | | | <i>Pavetta lynesii</i> | VU | P | | |
| | | | | <i>Phlyctimantis keithae</i> | VU | A | | |
| | | | | <i>Phrynobatrachus uzungwensis</i> | EN | A | | |
| | | | | <i>Ploceus nicolli</i> | EN | B | | |
| | | | | <i>Polyceratocarpus scheffleri</i> | VU | P | | |

| | | | | | | | | | |
|-------------------------------|----|------|-------|--------|-------------------------------------|----|---|--|---|
| | | | | | <i>Procolobus gordonorum</i> | VU | M | | |
| | | | | | <i>Psychotria megalopus</i> | VU | P | | |
| | | | | | <i>Renauldia lycopodioides</i> | EN | P | | |
| | | | | | <i>Rhus brenanii</i> | EN | P | | |
| | | | | | <i>Rytigynia pseudolongicaudata</i> | VU | P | | |
| | | | | | <i>Schefflera lukwangulensis</i> | VU | P | | |
| | | | | | <i>Schoutedenella xenodactyla</i> | VU | A | | |
| | | | | | <i>Sheppardia lowei</i> | VU | B | | |
| | | | | | <i>Swynnertonia swynnertoni</i> | VU | B | | |
| | | | | | <i>Ternstroemia polypetala</i> | VU | P | | |
| | | | | | <i>Tricalysia acidophylla</i> | VU | P | | |
| | | | | | <i>Trichilia lovettii</i> | VU | P | | |
| | | | | | <i>Trichocladus goetzei</i> | VU | P | | |
| | | | | | <i>Xenoperdix udzungwensis</i> | VU | B | | |
| | | | | | <i>Zanthoxylum deremense</i> | VU | P | | |
| Udzungwa National Park | TZ | 7.83 | 36.75 | 199000 | <i>Allanblackia stuhlmannii</i> | VU | P | | + |
| | | | | | <i>Allanblackia ulugurensis</i> | VU | P | | |
| | | | | | <i>Alsodeiopsis schumannii</i> | VU | P | | |
| | | | | | <i>Angylocalyx braunii</i> | VU | P | | |
| | | | | | <i>Anthreptes rubritorques</i> | VU | B | | |
| | | | | | <i>Aoranthe penduliflora</i> | VU | P | | |
| | | | | | <i>Apalis chariessa</i> | VU | B | | |
| | | | | | <i>Baphia semseiana</i> | VU | P | | |
| | | | | | <i>Bathmocercus winifredae</i> | VU | B | | |
| | | | | | <i>Beilschmiedia kweo</i> | VU | P | | |
| | | | | | <i>Bersama rosea</i> | VU | P | | |
| | | | | | <i>Bertiera pauloi</i> | VU | P | | |
| | | | | | <i>Bubo vosseleri</i> | VU | B | | |
| | | | | | <i>Canthium siebenlistii</i> | VU | P | | |
| | | | | | <i>Cephalosphaera usambarensis</i> | VU | P | | |
| | | | | | <i>Coffea mongensis</i> | VU | P | | |
| | | | | | <i>Cola scheffleri</i> | VU | P | | |
| | | | | | <i>Craterispermum</i> | VU | P | | |

| | | | | | | | | | |
|--|--|--|--|--|-------------------------------------|----|---|--|--|
| | | | | | <i>longipedunculatum</i> | | | | |
| | | | | | <i>Diospyros amaniensis</i> | VU | P | | |
| | | | | | <i>Dombeya amaniensis</i> | VU | P | | |
| | | | | | <i>Gigasiphon macrosiphon</i> | EN | P | | |
| | | | | | <i>Hirtella megacarpa</i> | VU | P | | |
| | | | | | <i>Isoberlinia scheffleri</i> | VU | P | | |
| | | | | | <i>Isolona heinsenii</i> | EN | P | | |
| | | | | | <i>Keetia koritschoneri</i> | VU | P | | |
| | | | | | <i>Kotschya platyphylla</i> | VU | P | | |
| | | | | | <i>Lagynias pallidiflora</i> | VU | P | | |
| | | | | | <i>Lasianthus pedunculatus</i> | VU | P | | |
| | | | | | <i>Lettowianthus stellatus</i> | VU | P | | |
| | | | | | <i>Lijndenia brenanii</i> | VU | P | | |
| | | | | | <i>Millettia elongatistyla</i> | VU | P | | |
| | | | | | <i>Mimusops riparia</i> | VU | P | | |
| | | | | | <i>Modulatrix orostruthus</i> | VU | B | | |
| | | | | | <i>Morinda asteroscepa</i> | VU | P | | |
| | | | | | <i>Nectarinia rufipennis</i> | VU | B | | |
| | | | | | <i>Newtonia paucijuga</i> | VU | P | | |
| | | | | | <i>Ocotea kenyensis</i> | VU | P | | |
| | | | | | <i>Octoknema orientalis</i> | VU | P | | |
| | | | | | <i>Ouratea schusteri</i> | VU | P | | |
| | | | | | <i>Pavetta holstii</i> | VU | P | | |
| | | | | | <i>Pavetta lynesii</i> | VU | P | | |
| | | | | | <i>Pavetta nitidissima</i> | VU | P | | |
| | | | | | <i>Pavetta sparsipila</i> | VU | P | | |
| | | | | | <i>Ploceus nicolli</i> | EN | B | | |
| | | | | | <i>Polyceratocarpus scheffleri</i> | VU | P | | |
| | | | | | <i>Pouteria pseudoracemosa</i> | VU | P | | |
| | | | | | <i>Psychotria megalopus</i> | VU | P | | |
| | | | | | <i>Rothmannia macrosiphon</i> | VU | P | | |
| | | | | | <i>Rytigynia caudatissima</i> | VU | P | | |
| | | | | | <i>Rytigynia hirsutiflora</i> | VU | P | | |
| | | | | | <i>Rytigynia pseudolongicaudata</i> | VU | P | | |

| | | | | | | | | | |
|--|----|------|-------|-------|-------------------------------------|----|---|---|---|
| | | | | | <i>Schefflera lukwangulensis</i> | VU | P | | |
| | | | | | <i>Sheppardia lowei</i> | VU | B | | |
| | | | | | <i>Sibangea pleioneura</i> | VU | P | | |
| | | | | | <i>Sorindeia calantha</i> | CR | P | | |
| | | | | | <i>Suregada lithoxyla</i> | VU | P | | |
| | | | | | <i>Swynnertonia swynnertonii</i> | VU | B | | |
| | | | | | <i>Tannodia swynnertonii</i> | VU | P | | |
| | | | | | <i>Tarenna luhomeroensis</i> | VU | P | | |
| | | | | | <i>Tarenna quadrangularis</i> | VU | P | | |
| | | | | | <i>Ternstroemia polypetala</i> | VU | P | | |
| | | | | | <i>Tricalysia acidophylla</i> | VU | P | | |
| | | | | | <i>Trichilia lovetii</i> | VU | P | | |
| | | | | | <i>Trichocladus goetzei</i> | VU | P | | |
| | | | | | <i>Uvariadendron usambarensis</i> | VU | P | | |
| | | | | | <i>Uvariopsis bisexualis</i> | VU | P | | |
| | | | | | <i>Vangueriopsis longiflora</i> | VU | P | | |
| | | | | | <i>Vitellariopsis cuneata</i> | VU | P | | |
| | | | | | <i>Xenoperdix udzungwensis</i> | VU | B | | |
| Ukaguru Mountains | TZ | 6.40 | 36.97 | 15494 | <i>Bathmocercus winifredae</i> | VU | B | + | + |
| (Uponera FR, Ikwamba FR, Mamiwa-Kisara South FR, Mamiwa-Kisara North FR, Mamboto FR) | | | | | <i>Churamiti maridadi</i> | CR | A | | |
| | | | | | <i>Milletia elongatistyla</i> | VU | P | | |
| | | | | | <i>Pavetta lynesii</i> | VU | P | | |
| | | | | | <i>Renauldia lycopodioides</i> | EN | P | | |
| | | | | | <i>Rytigynia pseudolongicaudata</i> | VU | P | | |
| | | | | | <i>Schefflera lukwangulensis</i> | VU | P | | |
| | | | | | <i>Scoecomorphus vittatus</i> | VU | A | | |
| | | | | | <i>Sheppardia lowei</i> | VU | B | | |
| Ukunda | KE | 4.32 | 39.53 | | <i>Ficus faulkneriana</i> | CR | P | | |
| | | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | | <i>Taphozous hildegardeae</i> | VU | M | | |
| Ukwama Forest Reserve | TZ | 7.67 | 36.50 | | <i>Kotschya platyphylla</i> | VU | P | | |
| Uluguru Mountains | TZ | 7.00 | 37.67 | 31113 | <i>Afrivalus uluguruensis</i> | VU | A | + | + |

| | | | | | | | | | |
|---|--|--|--|--|-------------------------------------|----|---|--|--|
| (Uluguru North FR, Uluguru South FR, Kimboza FR, Ruvu FR, | | | | | <i>Allanblackia stuhlmannii</i> | VU | P | | |
| Mangala FR, Milawilila FR, Ngambaula FR) | | | | | <i>Allanblackia ulugurensis</i> | VU | P | | |
| | | | | | <i>Allophylus chirindensis</i> | VU | P | | |
| | | | | | <i>Alsodeiopsis schumannii</i> | VU | P | | |
| | | | | | <i>Anthreptes rubritorques</i> | VU | B | | |
| | | | | | <i>Aoranche penduliflora</i> | VU | P | | |
| | | | | | <i>Apalis chariessa</i> | VU | B | | |
| | | | | | <i>Arthroleptides yakusini</i> | EN | A | | |
| | | | | | <i>Arthroleptis tanneri</i> | VU | A | | |
| | | | | | <i>Baphia pauloi</i> | EN | P | | |
| | | | | | <i>Bathmocercus winifredae</i> | VU | B | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | |
| | | | | | <i>Bertiera pauloi</i> | VU | P | | |
| | | | | | <i>Bubo vosseleri</i> | VU | B | | |
| | | | | | <i>Bufo brauni</i> | VU | A | | |
| | | | | | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | | <i>Coffea pocsii</i> | VU | P | | |
| | | | | | <i>Crocidura monax</i> | VU | M | | |
| | | | | | <i>Crocidura telfordi</i> | CR | M | | |
| | | | | | <i>Crocidura xantippe</i> | VU | M | | |
| | | | | | <i>Cynometra ulugurensis</i> | EN | P | | |
| | | | | | <i>Diospyros amaniensis</i> | VU | P | | |
| | | | | | <i>Diospyros greenwayi</i> | VU | P | | |
| | | | | | <i>Euphorbia wakefieldii</i> | EN | P | | |
| | | | | | <i>Garcinia bifasciculata</i> | EN | P | | |
| | | | | | <i>Garcinia semsei</i> | VU | P | | |
| | | | | | <i>Hoplophryne uluguruensis</i> | VU | A | | |
| | | | | | <i>Isoberlinia scheffleri</i> | VU | P | | |
| | | | | | <i>Keetia koritschoneri</i> | VU | P | | |
| | | | | | <i>Khaya anthotheca</i> | VU | P | | |
| | | | | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | | <i>Lasianthus grandifolius</i> | VU | P | | |

| | | | | | | | | |
|--|--|--|--|--|----|---|--|--|
| | | | | <i>Lasianthus pedunculatus</i> | VU | P | | |
| | | | | <i>Lasianthus wallacei</i> | VU | P | | |
| | | | | <i>Leptopelis parkeri</i> | VU | A | | |
| | | | | <i>Leptopelis uluguruensis</i> | VU | A | | |
| | | | | <i>Lingelsheimia silvestris</i> | EN | P | | |
| | | | | <i>Malaconotus alius</i> | EN | B | | |
| | | | | <i>Mesogyne insignis</i> | VU | P | | |
| | | | | <i>Micrococca scariosa</i> | VU | P | | |
| | | | | <i>Millettia bussei</i> | VU | P | | |
| | | | | <i>Millettia elongatistyla</i> | VU | P | | |
| | | | | <i>Millettia semsei</i> | VU | P | | |
| | | | | <i>Millettia sericantha</i> | VU | P | | |
| | | | | <i>Mimusops penduliflora</i> | EN | P | | |
| | | | | <i>Morinda asteroscepa</i> | VU | P | | |
| | | | | <i>Myosorex geata</i> | EN | M | | |
| | | | | <i>Nectophrynoides cryptus</i> | VU | A | | |
| | | | | <i>Nectophrynoides minutus</i> | EN | A | | |
| | | | | <i>Nectophrynoides tornieri</i> | VU | A | | |
| | | | | <i>Pavetta holstii</i> | VU | P | | |
| | | | | <i>Pavetta sparsipila</i> | VU | P | | |
| | | | | <i>Phrynobatrachus uzungwensis</i> | EN | A | | |
| | | | | <i>Pittosporum goetzei</i> | VU | P | | |
| | | | | <i>Ploceus nicolli</i> | EN | B | | |
| | | | | <i>Pouteria pseudoracemosa</i> | VU | P | | |
| | | | | <i>Probreviceps uluguruensis</i> | VU | A | | |
| | | | | <i>Psychotria cyathicalyx</i> | VU | P | | |
| | | | | <i>Psychotria elachistantha</i> | VU | P | | |
| | | | | <i>Psychotria megistantha</i> | VU | P | | |
| | | | | <i>Rhipidantha chlorantha</i> | VU | P | | |
| | | | | <i>Rytigynia binata</i> | VU | P | | |
| | | | | <i>Rytigynia eickii</i> | VU | P | | |
| | | | | <i>Rytigynia nodulosa</i> | VU | P | | |
| | | | | <i>Schefflera lukwangulensis</i> | VU | P | | |
| | | | | <i>Schoutedenella xenodactyla</i> | VU | A | | |

| | | | | | | | | | |
|---|----|------|-------|-------|------------------------------------|----|---|---|---|
| | | | | | <i>Scolecormorphus vittatus</i> | VU | A | | |
| | | | | | <i>Suregada lithoxyla</i> | VU | P | | |
| | | | | | <i>Sylvisorex howelli</i> | VU | M | | |
| | | | | | <i>Synsepalum kaessneri</i> | VU | P | | |
| | | | | | <i>Tarenna quadrangularis</i> | VU | P | | |
| | | | | | <i>Ternstroemia polypetala</i> | VU | P | | |
| | | | | | <i>Tricalysia acidophylla</i> | VU | P | | |
| | | | | | <i>Tricalysia pedicellata</i> | VU | P | | |
| | | | | | <i>Trichocladus goetzei</i> | VU | P | | |
| | | | | | <i>Turraea kimbozensis</i> | EN | P | | |
| | | | | | <i>Uvariadendron gorgonis</i> | VU | P | | |
| | | | | | <i>Vitex amaniensis</i> | VU | P | | |
| | | | | | <i>Zenkerella egregia</i> | VU | P | | |
| | | | | | <i>Zenkerella perplexa</i> | VU | P | | |
| Utete (Kibiti) | TZ | 7.73 | 38.90 | | <i>Multidentia castaneae</i> | VU | P | | |
| | | | | | <i>Psydrax micans</i> | VU | P | | |
| Uvidunda Mountains | TZ | 7.53 | 36.92 | 30000 | <i>Milletia bussei</i> | VU | P | + | + |
| | | | | | <i>Sheppardia lowei</i> | VU | B | | |
| Uzaramo (Dar to Morogoro) | TZ | 6.75 | 38.85 | | <i>Milletia micans</i> | VU | P | | |
| Uzaramo (Msua) | TZ | 6.77 | 38.43 | | <i>Pavetta linearifolia</i> | VU | P | | |
| Verani South West | TZ | 4.92 | 39.68 | | <i>Intsia bijuga</i> | VU | P | | |
| Vigola | TZ | 7.80 | 36.35 | | <i>Sibangea pleioneura</i> | VU | P | | |
| West Usambara Mountains | TZ | 4.67 | 38.33 | 38169 | <i>Rytigynia eickii</i> | VU | P | + | + |
| (Shagayu FR, Shume-Magamba FR, Mkusu FR, Kisima-Gonja FR, Ndelema FR, | | | | | <i>Adenopodia rotundifolia</i> | VU | P | | |
| Balangai FR, Mafi FR) | | | | | <i>Afrivalus uluguruensis</i> | VU | A | | |
| | | | | | <i>Allanblackia stuhlmannii</i> | VU | P | | |
| | | | | | <i>Alsodeiopsis schumannii</i> | VU | P | | |
| | | | | | <i>Anthreptes rubritorques</i> | VU | B | | |
| | | | | | <i>Arthroleptides martiensseni</i> | EN | A | | |
| | | | | | <i>Arthroleptis tanneri</i> | VU | A | | |
| | | | | | <i>Beamys hindei</i> | VU | M | | |
| | | | | | <i>Bubo vosseleri</i> | VU | B | | |

| | | | | | | | | |
|--|--|--|--|------------------------------------|----|---|--|--|
| | | | | <i>Bufo brauni</i> | VU | A | | |
| | | | | <i>Calodendrum eickii</i> | CR | P | | |
| | | | | <i>Canthium shabanii</i> | VU | P | | |
| | | | | <i>Canthium sieberlistii</i> | VU | P | | |
| | | | | <i>Casearia engleri</i> | VU | P | | |
| | | | | <i>Cladolejeunea aberrans</i> | EN | P | | |
| | | | | <i>Coffea mongensis</i> | VU | P | | |
| | | | | <i>Combretum tenuipetiolatum</i> | CR | P | | |
| | | | | <i>Crocidura elgonius</i> | VU | M | | |
| | | | | <i>Crocidura monax</i> | VU | M | | |
| | | | | <i>Crocidura tansaniana</i> | VU | M | | |
| | | | | <i>Crocidura usambarae</i> | VU | M | | |
| | | | | <i>Crocidura xantippe</i> | VU | M | | |
| | | | | <i>Croton dictyophlebodes</i> | VU | P | | |
| | | | | <i>Croton jatrophioides</i> | VU | P | | |
| | | | | <i>Cynometra suaheliensis</i> | VU | P | | |
| | | | | <i>Cynometra webberi</i> | VU | P | | |
| | | | | <i>Dasylepis integra</i> | VU | P | | |
| | | | | <i>Dialium holtzii</i> | VU | P | | |
| | | | | <i>Dombeya amaniensis</i> | VU | P | | |
| | | | | <i>Erythrina sacleuxii</i> | VU | P | | |
| | | | | <i>Hirtella megacarpa</i> | VU | P | | |
| | | | | <i>Hyperolius tannerorum</i> | EN | A | | |
| | | | | <i>Ixora albersii</i> | VU | P | | |
| | | | | <i>Julbernardia magnistipulata</i> | VU | P | | |
| | | | | <i>Keetia koritschoneri</i> | VU | P | | |
| | | | | <i>Leptopelis parkeri</i> | VU | A | | |
| | | | | <i>Leptopelis vermiculatus</i> | VU | A | | |
| | | | | <i>Macaranga conglomerata</i> | VU | P | | |
| | | | | <i>Mammea usambarensis</i> | VU | P | | |
| | | | | <i>Mesogyne insignis</i> | VU | P | | |
| | | | | <i>Mildbraedia carpinifolia</i> | VU | P | | |
| | | | | <i>Morinda asteroscepa</i> | VU | P | | |
| | | | | <i>Nectophrynoideis tornieri</i> | VU | A | | |

| | | | | | | | | |
|----------------------------|----|------|-------|---------------------------------------|----|---|--|--|
| | | | | <i>Neohemsleya usambarensis</i> | VU | P | | |
| | | | | <i>Ocotea kenyensis</i> | VU | P | | |
| | | | | <i>Ouratea schusteri</i> | VU | P | | |
| | | | | <i>Paraxerus vexillarius</i> | VU | M | | |
| | | | | <i>Phrynobatrachus krefftii</i> | EN | A | | |
| | | | | <i>Platypterotheca tanganyikensis</i> | CR | P | | |
| | | | | <i>Ploceus nicolli</i> | EN | B | | |
| | | | | <i>Prunus africana</i> | VU | P | | |
| | | | | <i>Psychotria alsophila</i> | VU | P | | |
| | | | | <i>Psychotria cyathicalyx</i> | VU | P | | |
| | | | | <i>Renauldia lycopodioides</i> | EN | P | | |
| | | | | <i>Rhynchocyon petersi</i> | EN | M | | |
| | | | | <i>Schefflera lukwangulensis</i> | VU | P | | |
| | | | | <i>Scolecormorphus vittatus</i> | VU | A | | |
| | | | | <i>Sheppardia montana</i> | EN | B | | |
| | | | | <i>Sylvisorex howelli</i> | VU | M | | |
| | | | | <i>Uvariadendron kirkii</i> | VU | P | | |
| | | | | <i>Uvariadendron oligocarpum</i> | VU | P | | |
| | | | | <i>Uvariopsis bisexualis</i> | VU | P | | |
| | | | | <i>Vepris sansibarensis</i> | VU | P | | |
| | | | | <i>Vitellariopsis cuneata</i> | VU | P | | |
| | | | | <i>Zanthoxylum holtzianum</i> | VU | P | | |
| Witu Forest Reserve | KE | 2.37 | 40.50 | <i>Angylocalyx braunii</i> | VU | P | | |
| | | | | <i>Camptolepis ramiflora</i> | VU | P | | |
| | | | | <i>Canthium kilifiense</i> | VU | P | | |
| | | | | <i>Canthium pseudoverticillatum</i> | VU | P | | |
| | | | | <i>Euphorbia tanaensis</i> | CR | P | | |
| | | | | <i>Kraussia speciosa</i> | VU | P | | |
| | | | | <i>Mkilua fragrans</i> | VU | P | | |
| | | | | <i>Psychotria crassipetala</i> | VU | P | | |
| | | | | <i>Synsepalum subverticillatum</i> | VU | P | | |
| Zanzibar (Kituani) | TZ | 6.20 | 39.40 | <i>Coffea</i> | VU | P | | |

| | | | | | | | | | | |
|------------------------------------|----|------|-------|-------|----------------------------|----|---|--|---|---|
| | | | | | <i>pseudozanguebariae</i> | | | | | |
| Zanzibar (Muyuni) | TZ | 6.37 | 39.47 | | <i>Micrococca scariosa</i> | VU | P | | | |
| Zanzibar Island-East Coast | TZ | 6.17 | 39.33 | 10000 | | | | | + | + |
| Zanzibar Island-South Coast | TZ | 6.17 | 39.33 | 4000 | | | | | + | + |

**Taxonomic Group: M=mammal, B=bird, A=amphibian, G=gastropod, P=plant.

An Overview of CEPF's Portfolio in the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya

The Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya hold a great concentration of endemic plant and vertebrate species per unit area, juxtaposed with a severe degree of threat. Combined, these factors mean this region is likely to suffer some of the most plant and vertebrate extinctions for a given loss of habitat. The remaining forests are irreplaceable in every sense of the word.

The region straddles two ecoregions, which have distinct composition as detailed below. A more comprehensive biological description is contained in the ecosystem profile.

Previously classified as a biodiversity hotspot itself, the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya region now lies within two new hotspots—the Eastern Afromontane Hotspot and the Coastal Forests of Eastern Africa Hotspot—identified as part of a global hotspots reappraisal released in 2005. CEPF investment continues to focus strictly on the geographic area comprising the original hotspot.

Biodiversity in The Eastern Arc Mountains

From the Taita Hills in southern Kenya extending south to the Udzungwa Mountains in Tanzania, this chain of ancient mountains are famous as the center of endemism of the African violet (*Saintpaulia* spp.).

Almost 40 percent of the approximately 2,000 vascular plants found here are endemic. They are located in almost all of the types of altitudinal forests, as well as in intervening habitats such as rocky outcrops, heathland, montane grasslands, and wetlands. Of those studied, non-vascular plants also show significant endemism. Predictably, there is a direct correlation between the area of forest blocks and species richness.

Faunal endemism is also extremely high for reptiles, amphibians and especially invertebrates. There are also several endemic birds and mammals, such as the Critically Endangered Tana River red colobus found only along the Tana River in Kenya. Recent research has also revealed new species of mammals within the Eastern Arc that are likely to be endemic or near endemic.

The vulnerability of several species is compounded as they have extremely limited distributions. The Kihansi spray toad, described in 1998, was known from an area of less than 1 square kilometer within the spray zone of a large waterfall on the Kihansi river but is now presumed to be extinct as a result of a hydropower facility that altered the river flow and destroyed the spray zone followed by an outbreak of the infectious chytrid fungus.

The flora and fauna of the Eastern Arc Mountains represent an interesting combination of species associated with West Africa, Madagascar and even Southeast Asia but, as an artifact of geographic isolation, has resulted in recently evolved species.

Biodiversity in the Coastal Forests

Part of the coastal forests ecoregion along the East African coast include the islands of Zanzibar (Unguja and Pemba) and comprises a mosaic of forest patches and intervening habitats. Closed canopy forest represents only 1 percent of the area but contains at least 400 endemic plant species out of the 3,000 plant species identified from coastal forests. The remaining 99 percent of the area is a heterogeneous mix including savanna woodlands, bushlands, thickets, and farmland that contain more than 500 endemic plant species. Many of the plant species are relicts of a historical connection to the Guineo-Congolian lowland forests of West Africa.

The highest biodiversity is found in the various kinds of closed canopy forest vegetation: dry forest, scrub forest, *Brachystegia (miombo)* forest, riverine forest, groundwater forest, swamp forest, and coastal/afromontane transition forest. In total, there are more than 4,500 plant species and 1,050 plant genera. Single site endemism and disjunct distributions are common, illustrated by the fact that a substantial proportion of the endemic plants are confined to a single forest.

Unlike in other hotspots, these forests and the prevalence of endemic species are the result of geographic isolation. Thus recreating biodiversity conservation corridors between sites is not appropriate, however the current degree of fragmentation of forests within individual sites poses a significant threat to the conservation of species. With this in mind, increasing connectivity between remnant fragments is vital.

Threats

The most prevalent threat to the remaining forests within the Eastern Arc Mountains and Coastal Forests is habitat destruction leading to fragmentation and loss of remaining habitats for many known (and unknown) globally threatened species.

There are four main threats that, combined, place significant pressure on the remaining forest fragments:

- Agriculture;
- Commercial timber extraction;
- Mining; and
- Fires.

There are several, yet intrinsically linked root causes of these threats. Burgeoning human population exerting pressure on forest resources and land; poverty leading to unsustainable use of forest resources; lack of strategic management and action plans; under-resourced government institutions; a legacy of outdated environmental policies and legislation; and lack of political will all combine to undervalue forests and the ecosystem services that they provide.

On the positive side, these problems are widely recognized and various initiatives (including institutional, policy and legislative reforms) have been launched to address

them. Government, local community and private sector are on the cusp of change in Tanzania and Kenya. CEPF's investment will serve to foster this switch in attitudes.

CEPF Niche for Investment

Tanzania and Kenya have had a history of support in the management of natural resources, both at the national and institutional level and site-specific project activities. There is also a considerable amount of biological inventory and research activities that has been accomplished over the last century. CEPF seeks to capitalize on these achievements, bearing in mind the biological priorities and threats described above as well as past and ongoing conservation activities.

It is also extremely important to bring into the public domain the current level of understanding and knowledge, as well as the lessons learned from previous conservation approaches so that these can be interpreted back to the communities central to the future conservation of these forests, and applied elsewhere.

The ecosystem profile was developed by a team of specialists and culminated in a stakeholders' workshop to identify the most effective means to implement the available funding. Twelve themes were developed during the workshop, which were collectively debated and refined into the strategic directions, listed below, that focus CEPF investment.

The Eastern Arc Mountains and Coastal Forests was developed as part of the fourth cycle of CEPF profiles and therefore included technical support from Conservation International's Center for Applied Biodiversity Science for scientific, stakeholder-driven development of conservation outcomes at the species, site and landscape levels. Defining conservation outcomes greatly assisted the focus of CEPF's investment to ensure that these funds have the greatest impact on the most pressing conservation issues.

Species outcomes

The results of the outcome definition process indicate that 333 globally threatened (Red List) species occur in this region, with 105 species being represented in Kenya and 307 in Tanzania. The globally threatened flora and fauna are represented by 236 plant species, 29 mammal species, 28 bird species, 33 amphibian species, and seven gastropod species. Of the 333 globally threatened species, 241 are Vulnerable, 68 are Endangered and 24 are Critically Endangered.

Site outcomes

The site outcomes define the CEPF niche in terms of geographical locations. A matrix was developed overlaying the 333 globally threatened species and the top 152 sites in which these species occur. This matrix was enhanced with data from the Important Bird Areas for restricted-range bird species and globally significant congregations of birds.

Due to the small size of the region and the degree of natural fragmentation that exists, without which much of the biodiversity would never have evolved in the first place no corridor outcomes have not been defined in this profile, there are issues of connectivity between forest patches within large sites. Many bird species in the Eastern Arc Mountains are known to move seasonally from the montane forest to the lowland, and altitudinal forest corridors are necessary for this to occur. This issue particularly relates to maintaining montane to lowland forest transitions in the Eastern Arc Mountains part of

the region and is important in the context of global warming. A number of forest patches are also recently isolated from each other, causing the local extinction of species, as habitat patches become too small to support them (see below). Such sites deserve particular attention.

1. Increase the ability of local populations to benefit from and contribute to biodiversity conservation.

Poverty - the fundamental cause of unsustainable practices that degrade the environment - is compounded by issues pertaining to tenure of all resources, not just land. Activities that strive to alleviate poverty need to address culture, local economy and the resource base. CEPF aims to enable civil society organizations to promote and develop feasible alternative livelihoods. Nature-based alternatives such as commercial insects, honey and non-timber forest products that demonstrate a direct link with the forest resources lead to community protection of the forests. Improving the productivity of existing agriculture land is essential if the pressure on the forests is to be reduced. Alternatives to wood and charcoal as the main household fuels need to be proposed.

2. Restore and increase connectivity among fragmented forest patches, especially in Lower Tana River Forests; Taita Hills; East Usambaras/Tanga; and Udzungwas

Throughout the region, there is a significant risk of local extinctions as a direct result of the degree of fragmentation of the once contiguous forests in a number of locations. In all of these geographic areas we need to find creative solutions to not only arrest the current level of fragmentation, but to increase the current levels of connectivity to ensure the long-term survival of these species.

Such solutions will involve a concerted effort of all relevant stakeholders'. In each of the priority locations, local scientific knowledge should guide subsequent conservation activities in order to ensure that these efforts are targeted appropriately. Those communities most engaged in activities to re-establish connectivity also need to be assisted in recruiting additional benefits and improving livelihoods as a result of their efforts.

3. Improve biological knowledge (all 160 sites eligible)

Gaps in the current level of knowledge occur on two levels. There are a number of lesser-known sites that have not been thoroughly surveyed. There are also several species that whilst we know these to occur, many aspects of their biology and life cycles remain a mystery. It is essential to know the latter to effect appropriate conservation measures. In all activities under this strategic direction, adding value to already existing institutions in Tanzania and Kenya and providing training to nationals of these countries is a priority.

4. Establish a small grants program (all 160 sites eligible) that focuses on Critically Endangered species and small-scale efforts to increase connectivity of biologically important habitat patches

For smaller sums of money, it is envisaged that a locally established small grant fund addressing species and site outcomes would yield the most pragmatic returns. This fund would be accessible to students and community groups interested in addressing research and conservation activities within the region.

5. Develop and support efforts for further fundraising for the region

Securing long-term funding to support the institutions that are responsible for the continued protection of these forests is vital. There are several options already available and the practicality of applying these in East Africa will be explored. As part of the GEF/UNDP project a trust fund for the Eastern Arc Mountains of Tanzania will be established. There may be opportunities to develop a similar fund for the Coastal Forests. Opportunities under the Kyoto Protocol may also provide a means to support long-term funding.

In addition to the identification of the strategic directions outlined above, each strategic direction has further refined investment guidance provided through investment priorities, which are more specific and concrete. The investment priorities provide more specific targets for CEPF funding in the region and are used to inform grantmaking decisions. They are included as part of the full investment priority table in the ecosystem profile and on the CEPF Web site (www.cepf.net).

The Eastern Arc and Coastal Forests region was approved for grant funding by the CEPF Donor Council in July 2003 with a total allocation of \$7 million. CEPF's investment in the Eastern Arc Mountains and Coastal Forests was one of the most highly anticipated sources of funds for biodiversity conservation, a direct result of the consultative nature of developing the ecosystem profile. As a result, CEPF was been inundated with applications, even prior to approval of the ecosystem profile by the Council. Active grantmaking started in January 2004. The time between Donor Council approval and awarding the first grant was spent ensuring implementation began with the important first step of developing a Coordination Unit to provide right representation in both Tanzania and Kenya.

To date, CEPF has awarded 23 grants valued at \$1.51 million (see Chart 1 included at the end of the overview). These grants range in size from \$7,153 to \$700,000 with the average grant size being \$70,132 (see list of grants). The full status of the portfolio to date and the timeline of grants awarded are illustrated in Charts 3 and 4.

Coordinating CEPF Grantmaking on the Ground

Building on CEPF experiences in other hotspots, CEPF established a locally based coordination unit to act as the “eyes and ears” in the region. For the Eastern Arc and Coastal Forest, four organizations that were the lynch pins in developing the ecosystem profile combined to create the coordination unit. This reinforced the continuity and momentum from the development of the ecosystem profile into grantmaking. The Coordination Unit in this region was modeled on the Succulent Karoo coordination body.

The goal of the Coordination Unit is to ensure that: “the biodiversity of the Eastern Arc and Coastal Forests is conserved in perpetuity, with no further species extinctions, through a combination of sound conservation science and the active engagement of civil society.” Within the coordination unit, each organization is responsible for one of the four key outputs to be delivered throughout the duration of the CEPF five-year investment as detailed.

| Organization | Output |
|---|--|
| International Centre for Insect Physiology and Ecology | An Eastern Arc and Coastal Forests Coordination Unit exists with appropriate mechanisms to facilitate achievement of the Investment Priorities identified in the CEPF Ecosystem Profile. |
| Tanzania Forest Conservation Group | Stakeholders within civil society and government are aware of the CEPF process, goals, and achievements and are sharing experiences. |
| World Wide Fund for Nature East Africa Regional and Tanzania programme offices | Civil society stakeholders supported to design effective conservation projects in line with the CEPF ecosystem profile and submit proposals to CEPF. |
| BirdLife in conjunction with its national partner organizations NatureKenya and Wildlife Conservation Society of Tanzania | A comprehensive and complementary suite of CEPF projects (within budget) is in place to fully address the strategic directions and investment priorities in the ecosystem profile. |

This union of four important organizations is unique in the region and is an example of the whole being greater than the sum of the individual parts. In addition, one of the greatest strengths of the coordination unit has been the links with many other organizations and individuals, which ensure that CEPF's funds are implemented appropriately: complimenting ongoing activities and making the best use of the funding available.

Community consultation meetings

Assisting civil society forms the core of CEPF's investment in implementing CEPF in the Eastern Arc and Coastal Forests. In order to ensure that civil society organizations, especially community-based organizations were alerted to the opportunity, a series of 4 community consultative meeting were held through out the region in Mombasa, Dar es Salaam, Morogoro and Tanga.

The series of meetings served to introduce CEPF to communities and describe the application procedure, as well as work with potential grantees to develop their ideas and assist in drafting letters of inquiry. These consultative meetings were then followed up by a series of training of trainers' workshops that provided further assistance to community representatives in developing ideas for submission to CEPF. There have been remarkable results from the combination of consulting with community groups and ensuring that there are people able to assist with developing Letters of Inquiry.

Review process

In order to ensure the most appropriate use of the available funds a transparent, objective, and efficient review process was developed in a consultative manner and is used to guide investment. The CEPF Coordination Unit and CEPF review each Letter of Inquiry. Most applications are also reviewed by at least two external reviewers with expertise relevant to the proposed project.

Reviewers look at:

- the relevance of the application to the Strategic Directions and fit to the investment priorities;
- the capacity of the organization applying to implement the proposed activities including the quality of partnerships;
- the project's impact on conservation outcomes (this is considered in relation to the proposed budget and to CEPF's five-year perspectives) and;
- the coherence of the proposed project.

In addition to the review process, the Coordination Unit also developed a communication strategy to ensure that CEPF's message and approach are consistent and reaching relevant sectors of society.

Working through Alliances

It has been extremely fortuitous that, at the same time as CEPF investment launched, the GEF-UNDP Conservation and Management of the Eastern Arc Mountain Forests (CMEAMF GEF-UNDP: URT/01/G32) is being implemented concurrently. From the outset, CMEAMF and CEPF have blending proposed outputs of both sets of investment to deliver enhanced conservation outcomes. The Coordination Unit has developed extremely close ties with the national coordinator and chief technical advisor who sit on CEPF's steering committee and Coordination Unit for this region. The technical support and assistance and input provided by this project have been invaluable.

There are further opportunities for alliances through the WWF Eastern Africa Coastal Forests Ecoregional Programme supported by the GEF Medium Sized Project for the Kwale District. Similar to the collaboration with the CMEAMF, there are considerable links and opportunities for co-funding between the two projects, enhanced by two members of the CEPF Coordination Unit sitting on the National and Regional Coastal Forest task Forces for this programme.

USAID through the Forestry/Range Rehabilitation and Environmental Management Strengthening Initiative is also active at Arabuko Sokoke Forest on Kenya's northern coast, supporting livelihoods and participatory forest management, in addition to funding a live forest exhibit/ecotourist attraction in Mombasa for the National Museums of Kenya. This exhibit will provide market outlets for CEPF-supported livelihood initiatives, in addition to being an awareness-raising and educational center for the region.

CEPF has developed strong links with the Japanese Bank for International Cooperation (JBIC), especially regarding the possible re-establishment of the Tana Delta Irrigation Scheme. The lower Tana forests are a priority area, especially to ensure the long-term survival of the endemic red colobus and Tana Delta mangabey. An environmental impact assessment has been funded by CEPF to investigate three main areas:

- socioeconomic survey;
- botanical, forest health and assessment of increasing connectivity; and
- a survey of primate groups in the 23 forest blocks that would be affected by the re-establishment of the project.

The recommendations from this report will ideally influence how the re-establishment of the irrigation project will be undertaken to improve local livelihoods and forest health, and ensure the survival of the primates as flagship species.

In addition to the alliances with GEF and JBIC, CEPF has also been successful in securing funding from Conservation International's Global Conservation Fund (GCF) to contribute to the compensation scheme for the cardamom farmers. The GCF contribution is vital to leverage additional funds from World Bank and Finnish Government.

CEPF is also looking at opportunities to engage with the private sector that have considerable influence throughout the region. Sisal, tea and coffee estates have a number of important forests blocks in both the Eastern Arc Mountain range and the coastal strip. There are several mining operations whose activities – if implemented appropriately - could also mitigate the potential to eliminate some of the most important fragments of remaining forests.

CEPF Approach to Grantmaking

After little more than a year into implementation, CEPF has received 230 applications for funding throughout the region and beyond. This vast number is largely a result of two things: 1) the anticipation preceding the launch of CEPF as a result of the stakeholder-driven profiling process within the region and 2) the effectiveness of the community consultations and training of trainers workshops held in mid-2004.

Site-specific workshops

Two priority areas—the Udzungwas Mountains and the Taita Hills—received particular interest from all sectors. In general, the individual proposals represented a discordant mix of research activities and social and livelihood aspects.

In a bid to clarify the situation for both these geographic areas, CEPF supported workshops that brought together the main actors involved with these areas to identify conservation priorities and outline the most effective means to move forward.

Both of these workshops helped clarify the most effective approaches for CEPF and others to invest in and improve the conservation status of these areas and integrate with ongoing activities.

Box 1: Udzungwa Mountains National Park Workshop

The Udzungwa Mountains lie at the eastern end of a chain of 14 mountain blocks supporting ancient rain forests with globally important levels of endemism for plants and animals. By virtue of the biological importance the Government of Tanzania gazetted the 1,990-square-kilometer Udzungwa Mountains National Park (UMNP) in 1992.

In order to identify priority activities that would enhance conservation in the Udzungwa Mountains a stakeholders' workshop was held 15 –17 December 2004 in Morogoro, Tanzania. The workshop was convened by World Wide Fund for Nature's Tanzania Programme Office (WWF-TPO) and supported by CEPF, the UNDP/GEF-funded project "Conservation and Management of the Eastern Arc Mountain Forests," and the Forest and Beekeeping Division and Tanzanian National Parks Authority of the Tanzanian Ministry of Natural Resources and Tourism. It was the first meeting of its kind for this region of Tanzania.

The 45 participants at the workshop comprised representatives from local communities, local government, Tanzanian national authorities, and biological researchers, as well as commercial operations including Kilombero Valley Teak Company and Ilovo Sugar Company. Non-governmental organizations including WWF-TPO, the Tanzanian Forest Conservation Group (TFCG) and the Wildlife Conservation Society (WCS) were also present.

The workshop focused on four biologically important areas around the UMNP:

- lowland Magombera Forest (important for *Iringa* red colobus) and its connections to the Selous Game Reserve;
- Uzungwa Scarp Forest Reserve, which was included in the original early 1980s proposal for UMNP;
- Ndundulu and Nyumbanitu forests within the West Kilombero Scarp Forest Reserve, which are adjacent to UMNP western boundaries and contain several endemic species that do not occur in the park; and
- large mammal movement corridors between UMNP and Mikumi National Park and the Selous Game Reserve.

Workshop participants were tasked to provide information on the current status of each area, list the relevant stakeholders, list conservation problems and solutions and finally propose projects that could be funded to tackle the conservation problems.

Successfully implementing the recommendations – through CEPF and other donors - will enhance the conservation status of the Udzungwa Mountains and surrounding area.

Whilst many of the applications received have been reworked based upon comments received during the review process, there have been a number of small grants awarded. These include grants to address emerging problems as well as pilot projects that prelude larger investments bearing in mind the lessons learned.

Small grants awarded to date include:

- Socioeconomic and primate surveys in the Lower Tana River Forests, providing essential background information for connectivity interventions supported by the Japanese Bank for International Cooperation;
- Carbon storage studies at Arabuko-Sokoke and the Lower Tana River Forests, providing baseline information for accessing carbon trading funds; and
- Workshops in the Taita Hills and Udzungwa mountains to resolve overlapping proposals and contentious issues.

Cornerstone projects

In addition to the Coordination Unit, there are a number of other projects being put in place that will underpin CEPF's investment to ensure that the implementation of the portfolio has a sustainable and far-reaching impact.

Monitoring process

BirdLife International and its respective national partners will undertake a region-wide monitoring process. This project, to a large extent, represents a regional Center for Biodiversity Conservation and will monitor the success of CEPF investment and integrate with other ongoing large-scale monitoring programs active in the region. This project includes the development of a forest change map that will provide detailed information on the rate and scale of forest change and serve to re-orientate CEPF investment to the most threatened areas and track CEPF and partner institution progress toward achieving the conservation outcomes through maintaining the outcomes database. This work will be undertaken in collaboration and with assistance from the Eastern Arc Mountain Forests Conservation and Management Project (CMEAMF - Eastern Arc Mountains) and WWF (Coastal Forests).

Red listing of plants

Despite many years of botanical research, the conservation status of many of the species, especially species with limited range, in this region is poorly known. This joint project between Missouri Botanical Gardens and IUCN – The World Conservation Union makes the best use of the respective skills in assessing and ratifying the conservation status of plant species. Far from undertaking the assessment independently, data from several botanical inventory projects will feed into this umbrella project for inclusion in the red listing process. These data in turn will contribute to the outcomes database.

Journal of East African Natural History

The ecosystem profile places a strong emphasis on improving biological knowledge within the Eastern Arc Mountains and Coastal Forests and there are a number of inventory projects for lesser known sites and species throughout the region. However, it is vital that these data are accessible to all interested parties. CEPF is in the final stages of approving a grant to the East African Natural History Society that will support four thematic issues of the Journal of East African Natural History relevant to the region. This grant also requires that all relevant articles since 1910 be published on the Internet as PDF files, vastly increasing the access to this historic journal. The information contained can then be used in interpreting research findings for use in awareness and education programs.

Future Developments

After a year rationalizing the applications and liaising closely with the potential grantees the positioning of CEPF within the donor and conservation sectors, CEPF is poised to implement a number of large projects. These projects will build upon the criteria established above and incorporate the findings of the site-specific workshops and pilot projects.

Alternative nature-based livelihoods

There are several successful examples of nature-based alternative livelihood activities

established in the region and elsewhere that promote sustainable livelihoods. ICIPE, in partnership with locally based organizations, will lead a project that will focus on promoting alternative, nature-based livelihood opportunities. It will focus on the priority sites identified within the ecosystem profile and develop synergies with connectivity projects in Tana River communities to support forest conservation and to establish and maintain connectivity in these important sites, Taita Hills, and East Usambara Forests. The project will initiate and support community-based income generating activities, such as sustainable beekeeping, wild silk and medicinal plant enterprises.

Small grants program

Strategic Direction 4 calls for the establishment of a small grants program with the following foci:

- Support targeted efforts to increase connectivity of biologically important habitat patches.
- Support efforts to increase biological knowledge of the sites and to conserve Critically Endangered species.

Experience, particularly in the GEF, shows that small grants can be cost effective. Small grants will be made available through CEPF for community-based organizations, researchers, and NGOs working to save Critically Endangered species and threatened sites in this region. The Coordination Unit is submitting a proposal to administer this Small Grants Program in consultation with CEPF, with a project-funding ceiling of \$20,000. This level of small grants program would support a range of projects not currently supported by other donors. Such sums can be extremely helpful in supporting low-cost research, and are particularly suitable for postgraduate student projects that can build local capacity. They can also be swiftly funded on the basis of a high quality Letter of Inquiry, without the need to develop a full proposal.

Micro (community) grants program

The above small grants program makes little provision for funds that will enable communities to apply for funding for small-scale livelihood, land-use planning and development of local economies. To this end, it is anticipated that part of Strategic Direction 1 will be used to establish a micro grants scheme that will be locally managed through the Coordination Unit.

These micro grants will be locally administered and accompanied with training and assistance in reporting and accounting as needed. In developing this proposal the applicants have been trying to develop the most appropriate methods of reporting, including the suggestion that community groups can report on their progress using annotated pictures.

-March 2005

* Prepared for: Improving Linkages Between CEPF and World Bank Operations, Africa Forum, Cape Town, South Africa, April 25-26, 2005.

March 2005 Charts: Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya

Chart 1. Approved Grants by Strategic Direction

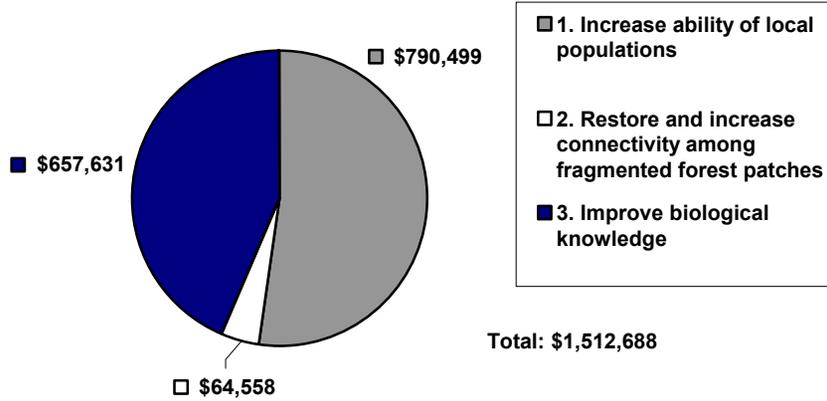


Chart 2. Portfolio Status by Strategic Direction

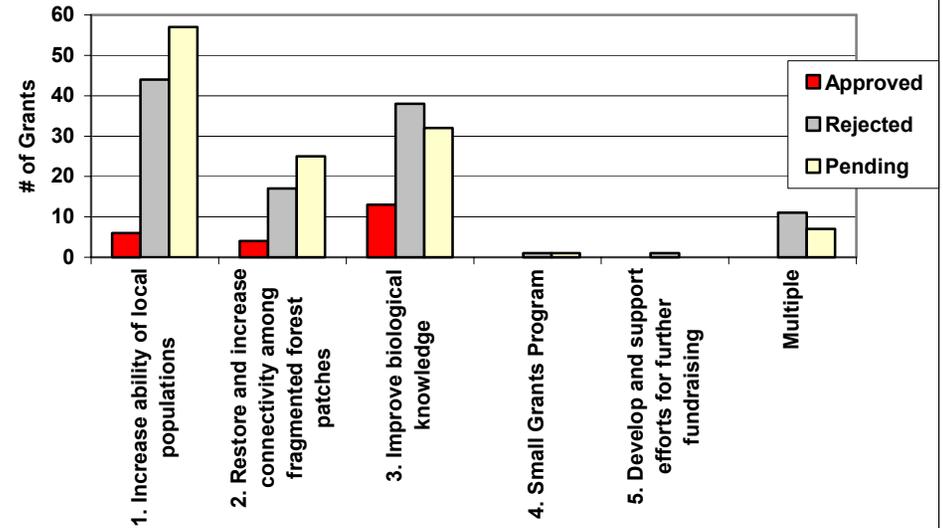
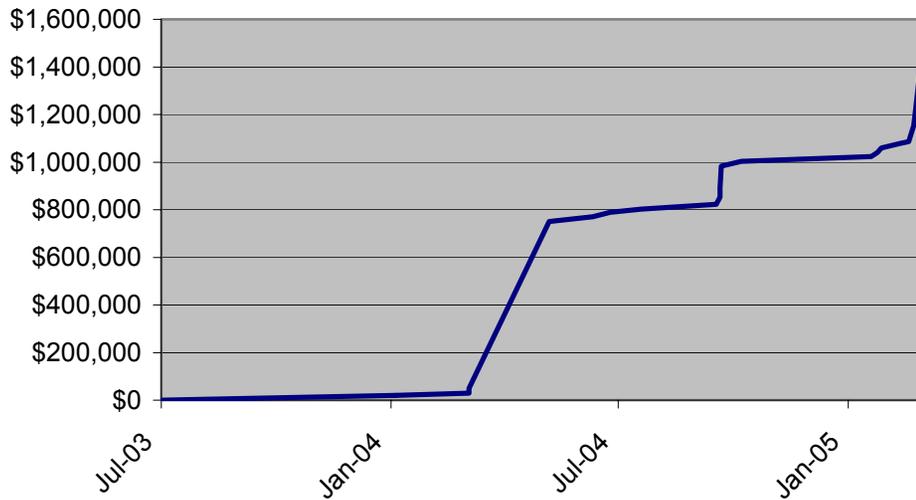


Chart 3. Combined Value of Grants Awarded



Conservation Outcomes • Eastern Arc Mountains & Coastal Forests

Conservation Outcomes Eastern Arc Mountains and Coastal Forests



Forest Cover (2001)



The CEPF Niche for Investment

The Central Eastern Arc Mountains and Coastal Forests (CEAPF) investment portfolio and new conservation outcomes for the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya are detailed in this report. The report is based on a review of locally based conservation organizations, conducted by the International Centre for Policy Studies and the International Centre for Policy Studies (ICPS) in partnership with the Kenya Wildlife Service (KWS) and the Tanzania Wildlife Research Institute (TWRU).

More than 100 local, national and international organizations participated in the process. It is an outcome of a conservation strategy, which was developed in 2001 and is being implemented through a series of projects. The report is a key document in the process of developing a conservation strategy for the Eastern Arc Mountains and Coastal Forests. A regional workshop was held in Nairobi in 2001 to discuss the strategy and to help to develop a conservation strategy for the region.

The Eastern Arc Mountains and Coastal Forests are a unique and important natural heritage. They are home to a wide range of biodiversity, including many species that are found nowhere else in the world. The region is also home to many of the world's most important cultural and historical sites. The region is a key area for conservation and development. The report is a key document in the process of developing a conservation strategy for the region.

Conservation Outcomes

Conservation outcomes are the full set of quantitative and qualitative results achieved in a project. They are the results of the investment. The report is a key document in the process of developing a conservation strategy for the region.

The report is a key document in the process of developing a conservation strategy for the region. It is a key document in the process of developing a conservation strategy for the region.

Investment Outcomes

Investment outcomes are the results of the investment. They are the results of the investment. The report is a key document in the process of developing a conservation strategy for the region.

The report is a key document in the process of developing a conservation strategy for the region. It is a key document in the process of developing a conservation strategy for the region.

Conservation Outcomes

Conservation outcomes are the full set of quantitative and qualitative results achieved in a project. They are the results of the investment. The report is a key document in the process of developing a conservation strategy for the region.

The report is a key document in the process of developing a conservation strategy for the region. It is a key document in the process of developing a conservation strategy for the region.

Investment Outcomes

Investment outcomes are the results of the investment. They are the results of the investment. The report is a key document in the process of developing a conservation strategy for the region.

The report is a key document in the process of developing a conservation strategy for the region. It is a key document in the process of developing a conservation strategy for the region.



Conservation Outcomes
Eastern Arc Mountains and Coastal Forests
 1 / 1,000,000
 16 September 2004

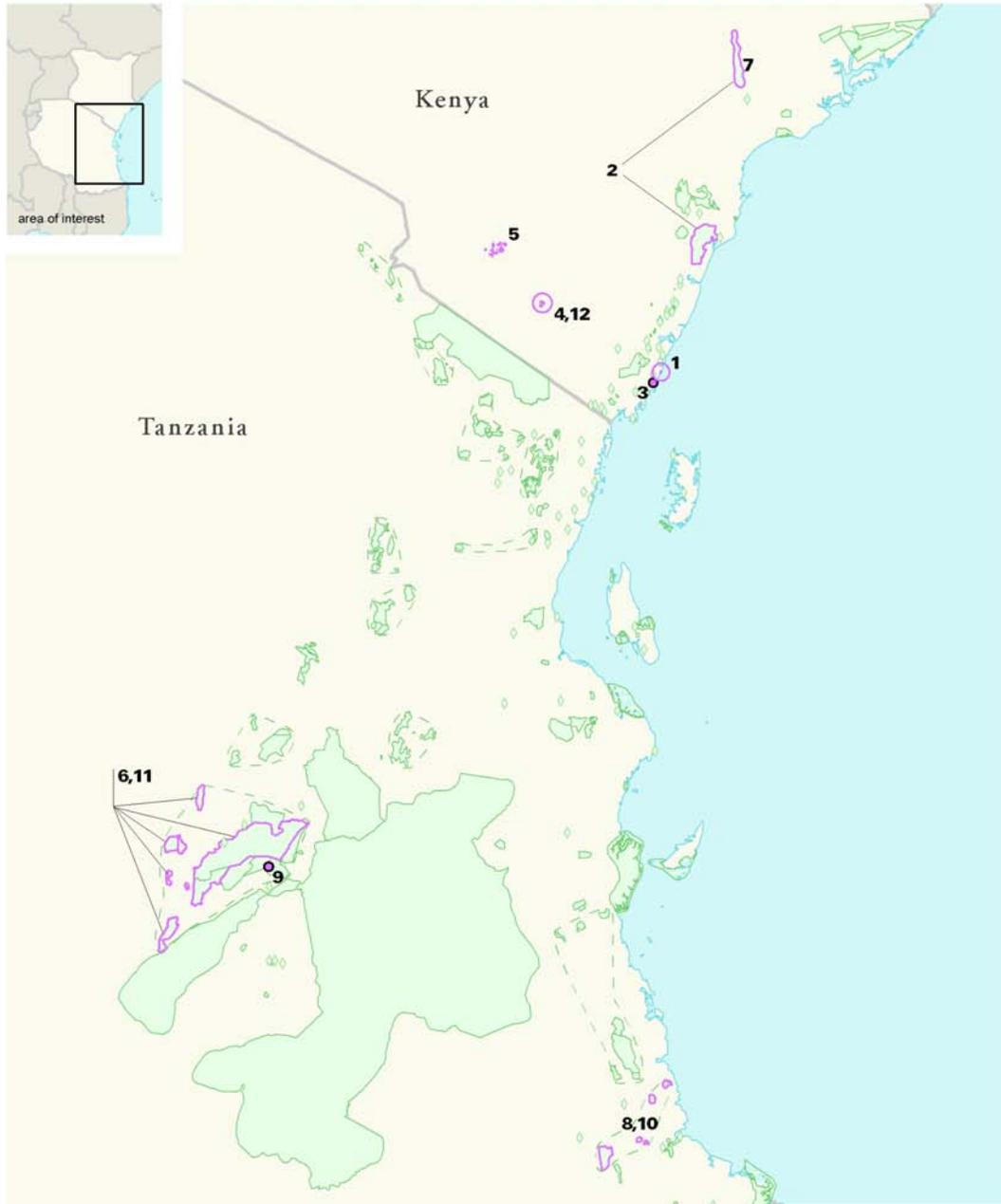
DRAFT
 Layout

Eastern Arc Mountains Portfolio Project Map Key

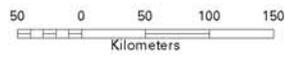
| Mapped # | Organization Name | Project Title |
|------------------------------|--|---|
| Strategic Direction 1 | | |
| * | Tanzania Forest Conservation Group | Evaluation of TFCG's participatory forest management initiatives in the Eastern Arc. |
| 1 | Wakuluzu: Friends of the Colobus Trust Ltd. | Conserving Coastal and Eastern Arc Forests Through Community Access to Retail Markets for Good Wood Wood Carvings on the South Coast of Kenya |
| 2 | International Centre of Insect Physiology and Ecology | Baseline Carbon Storage Assessment of Kenya's Coastal Forests |
| * | World Wide Fund for Nature - Tanzania Programme Office | Do Payments For Environmental Services Offer the Potential For Long Term Sustainable Financing? |
| 4 | Kasigau Conservation Trust | Capacity Building to Empower Community Conservation |
| 3 | Kaya Kinondo Conservation and Development Group and Coastal Forest Conservation Unit | Kaya Kinondo Community Ecotourism Project |
| * | International Centre of Insect Physiology and Ecology | CEPF Investment Coordination and Sustainability in the Eastern Arc / Coastal Forests Hotspot |
| Strategic Direction 2 | | |
| 5 | East African Wild Life Society | Facilitating a Process of Stakeholders Consultations on the Interventions Required to Restore and Increase the Connectivity of Forest Patches in Taita Hills |
| * | Center for Applied Biodiversity Science | Standardizing Forest Change Methodologies Between Sokoine University and CABS to Assist in Identifying Connectivity Priorities Across the Eastern Arc and Coastal Forests |
| 6 | World Wide Fund for Nature - Tanzania Programme Office | Facilitating the Process of Designing CEPF/GCF Connectivity Interventions in the Udzungwa Mountains Area |
| 7 | National Museums of Kenya | Rapid Environmental Impact Assessment of the Rehabilitation of the Tana Delta Irrigation Project with Design of Critical Primate Habitat Improvement, Increased Indigenous Forest Connectivity and Community Woodlots |
| Strategic Direction 3 | | |
| 8 | The Society for Environmental Exploration | The Forgotten Coastal Forests of Mtwara: A Reconnaissance to Prioritize Biological Knowledge for Community Conservation Initiatives |
| * | African Butterfly Research Institute | Overview of Butterfly Faunas of Eastern Arc Mountains and Coastal Forests: Biodiversity, Endemism, Conservation |
| * | Missouri Botanical Garden | Plant Conservation Assessment in the Eastern Arc Mountains and Coastal Forests Mosaic Biodiversity Hotspot of Kenya and Tanzania |
| * | Center for Applied Biodiversity Science | Instituting a standardised sustainable biodiversity monitoring system in the Eastern Arc/ Coastal Forests Hotspot |
| * | Wildlife Conservation Society | Coordination, Facilitation and Dissemination of Research Workds within the Critical Ecosystem Priority |
| * | University of York | Field Guide to the Moist Forest Trees of Tanzania |
| 9 | Dr. Carolyn L. Ehardt | Conservation Ecology of the Endangered Endemic Sanje Mangabey Cercopithecus sanjei of the Udzungwa Mountains, Tanzania |
| 10 | TRAFFIC International | Preventing Unsustainable Timber Trade from the Coastal Forests of Southeast Tanzania Following Completion of the Mkapa Bridge |
| * | Conservation International | "Scientific Advisor" for the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya Hotspot |
| * | East Africa Natural History Society | Managing CEPF's Outcomes Database for the Eastern Arc Mountains and Coastal Forests Of Tanzania and Kenya Hotspot |
| 11 | Wildlife Conservation Society | Chytrid Distribution and Pathogenicity Among Frogs of the Udzungwas |
| 12 | Conservation International-Regional Program Division | Primates on Mt. Kasigau, Kaya Rubai and Along the Tana River, Kenya: Preparing for Red List Assessments and Conservation Action |

* These projects are region wide and are not spatially represented on the project map

Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya Portfolio Critical Ecosystem Partnership Fund



-  CEPF grant
(extent, geographic extent unavailable)
-  Key Biodiversity Area
(extent, geographic extent unavailable)



date: April 2005
scale: 1 / 5,000,000
projection: Lambert Azimuthal Equal Area

**Approved Grants
Eastern Arc Mountains
(Through March 2005)**

Strategic Direction 1: Increase the ability of local populations to benefit from and contribute to biodiversity

Evaluation of Tanzania Forest Conservation Group's Participatory Forest Management Initiatives in the

Identify the best practises and lessons learnt from communities engaged in participatory forest management within Tanzania. These findings will be shared with all stakeholders through a variety of media describing impacts and benefits of participatory forest management on biodiversity conservation and local livelihoods.

Funding: \$33,910
Grant Term: 3/05-12/05
Grantee: Tanzania Forest Conservation Group

**Conserving Coastal and Eastern Arc Forests Through Community Access to Retail Markets for Good Wood
Wood Carvings on the South Coast of Kenya**

Alert both tourists and artisans in this popular tourist destination about the threats to indigenous trees favored by craftsmen in meeting the demand for woodcarvings as safari souvenirs, and promote the use of alternative and abundant timber including neem and jacaranda timber as "good woods."

Funding: \$19,999
Grant Term: 1/05-12/05
Grantee: Wakuluzu: Friends of the Colobus Trust Ltd.

Baseline Carbon Storage Assessment of Kenya's Coastal Forests

Assess the carbon storage potential of East Africa's coastal forests as a prelude to establishing compensation schemes to community-managed forests from greenhouse gas emitting industries under the Kyoto Protocol.

Funding: \$19,500
Grant Term: 10/04-3/05
Grantee: International Centre of Insect Physiology and Ecology

Do Payments For Environmental Services Offer the Potential For Long Term Sustainable Financing?

Knowing the value of watershed services provided by forests is vital in defining the link between urban populations that rely on these ecological functions, this study will assess the contribution made by the forests of the Uluguru Mountains. These forests are the source of the Ruvu River that supplies Morogoro and Dar es Salaam with water and generates hydroelectric power.

Funding: \$19,800
Grant Term: 10/04-9/06
Grantee: World Wide Fund for Nature - Tanzania Programme Office

Capacity Building to Empower Community Conservation

Create environmental conservation awareness among the village members and promote ecotourism in the region.

Funding: \$11,285
Grant Term: 10/04-9/05
Grantee: Kasigau Conservation Trust

Kaya Kinondo Community Ecotourism Project

Demonstrate the positive influence of ecotourism by connecting conservation management in the Kinondo region with tangible social and economic benefits to the local people.

Funding: \$19,915
Grant Term: 10/04-3/06
Grantee: Kaya Kinondo Conservation and Development Group and Coastal Forest Conservation Unit

CEPF Investment Coordination and Sustainability in the Eastern Arc / Coastal Forests Hotspot

Coordinate CEPF's investments in this hotspot to ensure they are complementary with on-going activities, engage a wide array of nongovernmental organizations and achieve the greatest impact. The International Centre of Insect Physiology and Ecology will lead a consortium of the WWF Eastern Africa Regional Programme Office, the Tanzania Forest Conservation Group and BirdLife Africa as the eyes and ears of CEPF in the region to promote the conservation of biological diversity at all levels of civil society.

Funding: \$700,000
Grant Term: 2/04-12/08
Grantee: International Centre of Insect Physiology and Ecology

Strategic Direction 2: Restore and increase connectivity among fragmented forest patches in the hotspot

Facilitating a Process of Stakeholders Consultations on the Interventions Required to Restore and Increase the Connectivity of Forest Patches in Taita Hills

Ensure that the findings from research undertaken within the hotspot are made available to all relevant institutions and individuals to raise awareness and conservation of these vital habitats. The grantee will perform this role and assist non-Tanzanian researchers with securing the relevant research permits.

Funding: \$17,905
Grant Term: 2/05-2/05
Grantee: East African Wild Life Society

Standardizing Forest Change Methodologies Between Sokoine University and CABS to Assist in Identifying Connectivity Priorities Across the Eastern Arc and Coastal Forests

Demonstrate the methodology developed to detect forest change and assess how similar this is to methodologies being used to detect forest change by Sokoine University and the WWF approach, and ideally develop a standardized method for this analysis so that the individual parts can be compiled as a region-wide forest cover change map. The project will also enable the grant recipient to assess the ability of other organizations to assist in compiling relevant data.

Funding: \$7,153
Grant Term: 2/05-2/05
Grantee: Conservation International

Facilitating the Process of Designing CEPF/GCF Connectivity Interventions in the Udzungwa Mountains

Determine, through a stakeholders' workshop, a cohesive set of conservation priorities in the areas surrounding Udzungwa National Park that face demands from the local communities and commercial enterprise, as well as the need to protect the ecological services of the catchment forests that provide habitat for several endemic species.

Funding: \$20,000
Grant Term: 12/04-12/05
Grantee: World Wide Fund for Nature - Tanzania Programme Office

Rapid Environmental Impact Assessment of the Rehabilitation of the Tana Delta Irrigation Project with Design of Critical Primate Habitat Improvement, Increased Indigenous Forest Connectivity and Community

Review previous research and documentation of the Lower Tana River Forest area, update both the biological and socioeconomic baseline and use this information to design an environmental component of a planned rehabilitation with the focus of enhancing conservation management while also engaging local residents in discussion and action regarding the long-term benefits of forest connectivity.

Funding: \$19,500
Grant Term: 10/04-12/04
Grantee: National Museums of Kenya

Strategic Direction 3: Improve biological knowledge in the hotspot

The Forgotten Coastal Forests of Mtwara: A Reconnaissance to Prioritize Biological Knowledge for Community Conservation Initiatives

Undertake biological inventories of major taxa in selected forests in Mtwara region, a largely neglected part of southern Tanzania's coast. These data will contribute to assessments of the conservation status of these species and will be translated into Kiswahili for the benefit of local communities and administration managing these forests.

Funding: \$69,037
Grant Term: 2/05-12/05
Grantee: The Society for Environmental Exploration

Overview of Butterfly Faunas of Eastern Arc Mountains and Coastal Forests: Biodiversity, Endemism,

Collate existing data on all butterfly species, especially endemic butterfly species, throughout the region from existing collections (the grant recipient has the largest collection of African butterflies in existence), as well as identify gaps in the current knowledge and undertake field surveys to provide a complete record.

Funding: \$19,700
Grant Term: 2/05-1/06
Grantee: African Butterfly Research Institute

Plant Conservation Assessment in the Eastern Arc Mountains and Coastal Forests Mosaic Biodiversity Hotspot of Kenya and Tanzania

Survey important sites and species with limited distributions to update the conservation status of forest plants. Species new to science will be published and type specimens deposited in collections as well as being available online through the website below. This information will contribute to the Red Listing of plant species.

<http://mobot.mobot.org/W3T/Search/vast.html>

Funding: \$318,001
Grant Term: 2/05-1/08
Grantee: Missouri Botanical Garden

Instituting a Standardized Sustainable Biodiversity Monitoring System in the Eastern Arc / Coastal Forests of Tanzania and Kenya

Monitor conservation outcomes as a result of all investments undertaken at species, site and landscape scales. In addition, provide a mechanism for all data accrued from projects to be available to address the most urgent priorities that can be compared against an analysis of forest change throughout the region.

Funding: \$64,132
Grant Term: 1/05-12/08
Grantee: Conservation International

Coordination, Facilitation and Dissemination of Research Works within the Critical Ecosystem Priority

Facilitate researchers in obtaining research permits and in conducting research to ensure that the information generated will be disseminated to the relevant government departments and community-based organizations.

Funding: \$20,000
Grant Term: 1/05-12/05
Grantee: Wildlife Conservation Society-Tanzania

Field Guide to the Moist Forest Trees of Tanzania

Publish the completed text of a Field Guide to Moist Forest Trees of Tanzania.

Funding: \$19,697
Grant Term: 9/04-2/05
Grantee: University of York

Conservation Ecology of the Endangered Endemic Sanje Mangabey *Cercocebus sanjei* of the Udzungwa Mountains, Tanzania

Complete a study that will define, for the first time, the ecological requirements, behaviour and demographics of the Sanje Mangabey *Cercocebus sanjei* in the Udzungwa Mountains National Park. These data are vital in determining the conservation needs of this highly endangered endemic primate.

Funding: \$13,000
Grant Term: 8/04-10/05
Grantee: Dr. Carolyn L. Ehardt

Preventing Unsustainable Timber Trade from the Coastal Forests of Southeast Tanzania Following Completion of the Mkapa Bridge

Build on existing baseline research about threats to coastal forests from illegal timber extraction in this hotspot, which has increased due to completing the Mkapa Bridge over the Rufiji River in southeast Tanzania and improved infrastructure. TRAFFIC will undertake a rapid assessment of the threats to these forests and define conservation action needed.

Funding: \$19,999
Grant Term: 7/04-6/05
Grantee: TRAFFIC International

“Scientific Advisor” for the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya Hotspot

Providing up-to-date advice on the research priorities within the hotspot the scientific advisor will also ensure that data are collected in a standard and comparable manner, thus ensuring that a cohesive set of research projects are implemented throughout the hotspot.

Funding: \$90,400
Grant Term: 7/04-6/05
Grantee: Conservation International

Managing CEPF’s Outcomes Database for the Eastern Arc Mountains and Coastal Forests Of Tanzania and

Maintain and expand the conservation outcomes database for this hotspot pending the development of a comprehensive monitoring system for the duration of the CEPF investment period. Ultimately, this will improve the Red Listing of species and benefit conservation action in the region.

Funding: \$9,998
Grant Term: 3/04-2/05
Grantee: East Africa Natural History Society

Chytrid Distribution and Pathogenicity Among Frogs of the Udzungwas

Conduct a study to improve understanding of the level of infection and the threat posed by the Chytrid fungus amongst endemic amphibian species in the Udzungwa Mountains.

Funding: \$19,999
Grant Term: 3/04-3/05
Grantee: Wildlife Conservation Society

*The original grant term has been increased by three months.

Primates on Mt. Kasigau, Kaya Rubai and Along the Tana River, Kenya: Preparing for Red List Assessments and Conservation Action

Conduct research on primate species in important sites in Kenya to fill knowledge gaps on population and distribution data and enable adequate assessment of extinction risks and conservation action.

Funding: \$19,900
Grant Term: 1/04-6/04
Grantee: Conservation International

Conservation Highlights

E-News

- Stakeholders Identify Priorities for Udzungwa Mountains National Park – February 2005
- Tanzania Seizes 157 Containers of Timber in Port – September 2004
- New Investment Gives Hope for Threatened Species in Tanzania and Kenya – July 2004
- CEPF Set for Expansion – August 2003

Other Highlights

- News Article: Sh550 plan to protect endangered species
- News Article: New Fund will Help Communities to Conserve Plant, Animal Species
- Journal Article: New conservation investment into the Eastern Arc Mountains and Eastern African Coastal Forests biodiversity “Hotspot”
- News Article: Fund gets Sh553m. to conserve ecosystem
- News Article: La Tanzanie et Kenya reçoivent des fonds pour la préservation des ressources naturelles
- News Article: Tiomin Given Final Approval for Kwale Titanium Mine

Stakeholders Identify Priorities for Udzungwa Mountains National Park

Diverse stakeholders recently agreed the most important actions to help conserve Udzungwa Mountains National Park in the Eastern Arc Mountains of Tanzania region.

Representatives from local communities, local and national government, commercial operations and civil society groups participated in the discussions together with biological researchers to single out important conservation issues and identify the most strategic initiatives for Critical Ecosystem Partnership Fund (CEPF) and other donor funding.



© WWF Tanzania Program Office, photo by Kathryn Doody
More than 45 people participated in the Morogoro, Tanzania workshop to identify priorities, at one point taking a break to appear in this group photograph.

They highlighted schemes for enhanced legal protection of forests, community-needs assessments, and income-generation activities, as well as mapping and monitoring of wildlife corridors.

The altitudinal range of continuous forest in Udzungwa Mountains National Park, scaling from 300 to 2,700 meters, results in a wide variety of habitats, from lowland forest to moist cloud forest up to the peak of Mwaniahana Mountain.

The park is home to rich forest bird habitats, a number of plant species found nowhere else, the largest population of the endemic Sanje mangabey (*Cercocebus sanjei*), and colonies of the Udzungwa red colobus monkey (*Procolobus gordonorum*), which is also endemic. Large mammals, elephants and buffalo also inhabit the area, moving between the Udzungwa Mountains, the Selous Game Reserve, and Mikumi National Park.

Convened by the WWF Tanzania Program Office and supported by CEPF, the meeting in Morogoro, Tanzania was the first of its kind in this region. It also received backing from a joint UN Development Program and Global Environment Facility initiative, and the Tanzanian National Parks Authority.

Its success in forging consensus and further engaging stakeholders in implementation of the CEPF investment strategy for the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya also led to a similar workshop this month in the Taita Hills region of Kenya.

For more information about Udzungwa Mountains National Park, visit www.udzungwa.org.



ABOUT CEPF

OUR STRATEGY

CEPF NEWS

Press Releases

E-News Top Stories

In Focus Features

WHERE WE WORK

RECENT GRANTS

APPLY FOR GRANTS

Print this page

Tanzania Seizes 157 Containers of Timber in Port

September 2004

The Tanzanian government has imposed a ban on the export of timber and seized 157 containers of logs, many of which were harvested illegally from the coastal forests of Rufiji, Kilwa and Lindi districts in the southeast of the country.

The shipping containers holding hundreds of roundwood timber logs are being held in Dar es Salaam port. The ban on logging for export became effective July 1, following a gazette notice by Minister of Natural Resources and Tourism Zakia Hamdani Meghji.

[TRAFFIC](#), [WWF](#) and local groups including the [Tanzania Forest Conservation Group](#) and Wildlife Conservation Society of Tanzania are hailing the government's commitment to halting illegal logging in the [Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya biodiversity hotspot](#).

"Just as the people of southeast Tanzania, among the poorest in the country, were rapidly becoming disenchanted by highly organized and largely illegal timber harvesting, this high level of government support comes at a welcome time and is highly commendable," said Simon Milledge, senior program officer for TRAFFIC East/Southern Africa based in Tanzania.

Neil Burgess of WWF-US, who is the chief technical advisor in Tanzania for the GEF-financed Conservation and Management of the Eastern Arc Mountains Forest Project implemented by the World Bank, agreed. "It's great to see Tanzania taking the conservation of these forests so seriously, and addressing this issue with the full force of the law," he said.

The coastal forests of Rufiji, Kilwa and Lindi districts of southeast Tanzania are not only priority sites in terms of biological importance but are amongst the least studied in the hotspot.

They are rapidly becoming the most vulnerable coastal forests due to uncontrolled extraction of timber and other forest resources following the completion of Mkapa Bridge over Rufiji River, the largest bridge of its kind in east and



© TRAFFIC, photo by Simon Milledge
Dozens of logs set for export in November just north of Dar es Salaam, Southeast Tanzania.

DID YOU KNOW

CEPF and four other organizations recently announced a \$75 million investment strategy to conserve the rich natural resources of the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya biodiversity hotspot.

Visit the [news archive](#) for this story.

southern Africa.

At the opening of the bridge in August 2003, President Benjamin Mkapa warned against uncontrolled charcoal production and timber harvesting with disregard to laws and principles of sustainable utilization.

A recently awarded Critical Ecosystem Partnership Fund (CEPF) grant to TRAFFIC aims to address these issues through field research to compare current timber trade levels with historical transect data and baseline data collected by TRAFFIC with support from the [Rufford Maurice Laing Foundation](#) and WWF before completion of the bridge.

Previously, seasonal flooding of the Rufiji River delta during monsoons resulted in serious isolation south of the river. However, improved transport infrastructure is opening up the entire southeast portion of Tanzania to much-needed development, which inadvertently exposes the coastal forests to the growing demands of urban and foreign timber markets.

"We envisage that the additional information on the status of key forests and levels of harvesting—building on baseline information we collected before completion of the Mkapa bridge—will add more solid facts to justify the kind of management actions that are starting to emerge now," Milledge said.

The results will assist the government in ensuring that negative environmental and associated livelihood impacts are minimized during the forthcoming period of development following creation of a permanent link between southeast Tanzania and Dar es Salaam.

The containers were locked out by the ban deadline before they could be loaded onto ships. Other hundreds of logs may be stockpiled in forests or on the way to the port from logging sites inland.

Four private companies had threatened legal action, including demands of \$1.6 million in compensation for storage loss. However, the Ministry of Natural Resources and Tourism recently confirmed that all 157 containers inspected contained tree species not authorized for export.

"In terms of raising awareness and law enforcement action, the last month has been really positive but harvesting and exports continue in some areas and concerted efforts should continue," Milledge said. "In particular, the export of logs and sawn wood from small ports along the southeast coastline need more attention.

"It is also hoped that any legal proceedings consider the economic impact of declines in some species that could take 20 to 30 years to recover, huge revenue losses by misclassification and under-payment of royalties, and most importantly, degradation of landscapes that support so many livelihoods."

[Subscribe to the Newsletter](#) or [View more E-News top stories](#)

 [E-mail this page](#)

New Investment Gives Hope for Threatened Species in Tanzania and Kenya

CEPF and four East African organizations recently announced a \$7 million investment strategy to conserve the rich natural resources of the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya.

The announcement activities included consultative meetings in Mombasa, Tanga, Dar es Salaam and Morogoro with more than 140 representatives from community-based groups, nongovernmental organizations and the private sector to discuss how they can help implement and benefit from the strategy.

The \$7 million will be awarded as grants to civil society groups to help safeguard the biodiversity hotspot, which is home to at least 1,500 species of plants, Kirk's red colobus (also known as Zanzibar red colobus) and other wildlife unique to the area.

In Tanzania, water flowing from the Eastern Arc forests is the source of 90 percent of the country's hydroelectric power. The forests are also the source of water for major cities, including Dar es Salaam, Tanga and Morogoro.

However, while the Eastern Arc forests once covered more than 23,000 square kilometers in the two countries, more recent estimates place the remaining forest cover as low as 2,000 square kilometers.

"The investment brings urgently needed resources to help us ensure that these precious resources are properly managed in step with sustainable development," said Nike Doggart of the [Tanzania Forest Conservation Group](#).

The group will coordinate CEPF investments in the region together with [BirdLife International](#), the [International Centre of Insect Physiology and Ecology](#) and the [WWF-Eastern Africa Programme Office](#). The local BirdLife Partners are [NatureKenya](#) and the Wildlife Conservation Society of Tanzania.

The investment strategy, known as an ecosystem profile, includes a special focus on the linkages between people and conservation, with support to enable local populations to directly participate in conservation efforts.

Many of the meeting participants, who included representatives from more than 70 community-based groups, will also receive training in how to develop sound proposals and apply for funding.

The first of these special training sessions will take place July 15 in Mombasa and others will be held in Tanga, Dar es Salaam and Morogoro.

[Learn more about this hotspot and the CEPF ecosystem profile.](#)



© Patricio Robles Gil/Sierra Madre
The Eastern Arc Mountains hotspot is home to 333 globally threatened species, including Kirk's red colobus (above).

**CRITICAL ECOSYSTEM
PARTNERSHIP FUND**

CEPF NEWS



RESOURCE CENTER

▶ Partner Gateway ▶ Publications ▶ Related Programs ▶ E-News Subscriptions

ABOUT CEPF

OUR STRATEGY

CEPF NEWS

Press Releases

E-News Top Stories

In Focus Features

WHERE WE WORK

RECENT GRANTS

APPLY FOR GRANTS

 [Print this page](#)

CEPF Set for Expansion

August 2003

The [CEPF Donor Council](#) approved new ecosystem profiles and investment strategies on July 31 for the partnership to expand to two new biodiversity hotspots: Caucasus and the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya.

Final endorsement of the strategies is expected from the official Global Environment Facility focal points within each of the countries within these two hotspots in the next few weeks. CEPF grants can be disbursed once this required endorsement is formalized. The expansion will bring the number of hotspots to 13 where CEPF grants are available to civil society, such as nongovernmental organizations, community groups and academic institutions.

The Caucasus hotspot spans 500,000 square kilometers of mountains in Eurasia between the Black Sea and the Caspian Sea. The area includes parts of Georgia, Armenia and Azerbaijan, and small portions of Russia, Iran and Turkey. The deserts, savannas, swamp forests and arid woodlands that comprise the Caucasus hotspot contain more than twice the animal diversity found in adjacent regions of Europe and Asia, yet its biodiversity is being lost at an alarming rate.

The CEPF strategy for this hotspot is based on the results of stakeholder workshops and background reports coordinated by WWF Caucasus. More than 130 experts representing scientific, governmental and nongovernmental groups from the six countries participated in these preparations.

The strategy is underpinned by conservation outcomes—targets against which the success of investments can be measured. These targets are defined at three levels: species (extinctions avoided), sites (areas protected) and landscapes (corridors created). As a result, CEPF investment in the Caucasus is focused on conserving the hotspot's 51 globally threatened species, the majority of which are found in specific sites in five target conservation corridors: Greater Caucasus, Caspian, West Lesser Caucasus, East Lesser Caucasus and Hyrcan.

The Eastern Arc Mountains and Coastal Forests hotspot stretches along most of the eastern coast of Tanzania and into extreme southeastern Kenya. The region is notably fragmented with endemic species being found in small sites.



© Nina Marshall
Borjomi-Kharagauli
West Lesser Caucasus

DID YOU KNOW

You can learn in special sections new hotspots: [Caucasus](#) and [Eastern Arc Mountains](#)

Related story: [Developing a Framework for CEPF Investment in the Caucasus](#)

Agriculture and encroachment along with timber extraction are the greatest threats.

Within the Eastern Arc Mountains and Coastal Forests hotspot, CEPF aims to improve knowledge and appreciation of biodiversity among the local populations and stimulate support for conservation. In conjunction with this, a commitment to scientific best practices will improve biological knowledge in the hotspot and show practical applications of conservation science.

CEPF investment will focus on conserving the hotspot's 333 globally threatened species, which are primarily found in 160 sites. In addition, key parts of the strategy focus on select sites for maximum impact.

[Subscribe to the Newsletter](#) or [View more E-News top stories](#)

 [E-mail this page](#)

© 2005 Conservation International [Privacy Policy](#) [Terms of Use](#)

Photo credits for banner images: (Frog) © CI, Haroldo Castro; (Chameleon) © CI, Russell A. Mittermeier

CONSERVATION

Sh550 plan to protect endangered species

By NATION Reporter

A Sh550 million plan has been launched to conserve endangered plants and animals in East Africa. The Critical Ecosystem Partnership Fund, which was ratified yesterday, is a joint venture of four institutions and the Government of Japan.

Conservation International, the Global Environment Facility, The John D and Catherine T MacArthur Foundation and the World Bank signed a memorandum of understanding binding them to conserve the worlds' biodiversity hotspots.

Coastal forests

Speaking at the signing ceremony, the fund's grant manager for Africa, Mr John Watkin, said the first areas to benefit from the fund would be the coastal forests of Kenya and Tanzania and the

Eastern Arc mountains of the two countries. He said:

"The first biodiversity hotspot runs along the Tanzanian and Kenyan coasts and includes the islands of Zanzibar and Pemba. It is one of the 25 richest but most threatened reservoirs of plant and animal life on earth."

Unique species

Mr Watkin said the Eastern Arc region has 1,500 plant species and 50 species of reptiles, which are unique to the region. It is also home to 20 of the 21 species of the African violet, the Zanzibar Red Colobus monkey and the declining Ader's duiker.

"Because of this density of species, it is thought to be the hotspot most likely to suffer the greatest plant and vertebrate extinction. Results of surveys indicate that 333 globally threatened species are found in this area," he said.

The East African

<http://www.nationmedia.com/eastafrican/20072004/Opinion/Opinion2.html>

Opinion

Monday, July 5, 2004

New Fund Will Help Communities to Conserve Plant, Animal Species

Recently, a number of organisations jointly established the Critical Ecosystem Partnership Fund (CEPF), which is expected to address the rising threat to wildlife species in the Eastern Arc Mountains and the Coastal Forests of Tanzania and Kenya. Special Correspondent JOHN MBARIA talked to the Fund's communications director BOBBIE JO KELSO

What does CEPF do?

The Critical Ecosystem Partnership Fund provides funding and technical assistance to non-governmental organisations, community groups and other civil society partners to help safeguard the earth's biologically richest, yet most threatened, areas. It is a joint initiative of Conservation International of the US, the Global Environment Facility, the government of Japan, the John D. and Catherine T. MacArthur Foundation and the World Bank.

How Important is the East African biodiversity hotspot?

The Eastern Arc Mountains and the Coastal Forests of Tanzania and Kenya have at least 1,500 species of plants and 50 species of reptiles which are not found anywhere else on earth. Other wildlife unique to this area include 21 species of African violet, the Zanzibar red colobus monkey, the Rondo galago and the Aders' duiker.

The hotspot stretches 900 km along the East African coast – from the Kenya-Somalia border in the north, to the Tanzania-Mozambique border in the south. In Tanzania, the hotspot stretches inland to include the Pare, Usambara, Nguru, Rubeho, Uluguru and Udzungwa Mountains, as well as forests throughout the coastal zone such as Ruvu South, Pande and the lowland Usambaras. It also includes the islands of Zanzibar. Water flowing from the Eastern Arc forests generate 90 per cent of Tanzania's hydro-electric power. The forests are also the source of water for major cities, including Dar es Salaam, Tanga and Morogoro.

In Kenya, the Taita Hills, the Arabuko-Sokoke Forest, the Tana River forests and the Shimba Hills as well as the many "kayas" or sacred forests are part of the hotspot.

There is a growing appreciation that poverty is the biggest contributor to biodiversity degradation in Africa. By putting the civil society at the heart of your project, aren't you creating another elitist project that will alienate the poor, who draw sustenance from the hotspot?

No, the project will not alienate the poor people living on biological resources. These people are part and parcel of the civil society who we will seek to involve and not to alienate. The way that CEPF makes its investments is designed to involve and support people in conservation efforts and in ways that build their capacity to sustain the specific projects.

Recently, we held a community consultative meeting with 50 community-based organisations in Mombasa and plan to hold others in Morogoro, Dar es Salaam and Tanga soon. By holding the meetings, we hope to reach out to community members in order to better explain our strategy and to start developing ideas on how they can get support for projects that will help conserve natural resources.

What kind of commercial opportunities do you plan to exploit once the project takes off?

One of our partners is the International Centre for Insect Physiology and Ecology (ICIPE), which is able to offer expertise on commercial insects (apiculture, sericulture and butterfly farming), natural product development (as with *Mondia* tonic and Naturub in Kakamega) and in eco-agricultural technologies that increase productivity and enhance biodiversity such as biological control of pests.

How will the project's finances be spent?

The \$7 million investment for the hotspot is approved by the CEPF donor council, which includes representatives from each of the five CEPF donor institutions. The total investment of \$7 million will be distributed across the ecosystem profile's five specific strategic directions that also include related investment priorities.

The exact way in which the funds will be spent will depend on the applications that we receive from the civil society, including the community-based organisations. The total budget to be invested in the projects will depend on what initiatives civil society organisations request funding for.

How will the Fund focus on the important linkages between people and conservation?

The purpose of CEPF is to engage civil society, such as non-governmental organisations and community-based organisations in conservation efforts. Recognising the inextricable link between biodiversity conservation and economic prosperity, CEPF focuses on developing countries within biodiversity hotspots and supports initiatives that contribute to poverty alleviation. People are at the heart of the CEPF approach.

The entire approach is centred on the people. However, one of the strategic directions is specifically designed to increase the ability of local populations to benefit from and contribute to biodiversity conservation. Under this direction, the investment priorities include, for example, promoting nature-based, sustainable businesses that benefit local populations in the hotspot such as beekeeping, tourism and butterfly farming.

These activities have a track record of sustainability beyond the end of donor funding. For example, a community-based butterfly farming project at Arabuko-Sokoke Forest started in 1993 is still going strong in 2004, having been financially self-sustaining since 1998. An initial investment of \$50,000 in this project from the GEF Small Grants Programme has since generated over \$600,000 in export revenues and leveraged over \$700,000 in co-financing.

New conservation investment into the Eastern Arc Mountains and Eastern African Coastal Forests biodiversity “Hotspot”

Neil Burgess, WWF-USA Conservation Science Program, 1250 24th Street NW, Washington DC, USA

The term biodiversity ‘Hotspot’ was first applied in 1988 when an English Professor (Norman Myers) wrote a paper that identified regions in the world where at least 0.5% of all the worlds plants are concentrated, including the Tanzanian Eastern Arc Mountains. The ‘Hotspots’ idea captured the interest of many conservationists - if they could identify those areas where endemic species were concentrated and then undertake effective work in the same areas - then much of the biodiversity of the world could be saved at realistic expense and within relatively small amounts of the worlds land.

The ‘Hotspots’ concept was further refined between 1996 and 1998 when the USA-based conservation NGO ‘Conservation International’ completed a comprehensive global re-analysis of global plant Biodiversity Hotspots. In order to qualify each proposed area had to have at least 1,500 plants wholly endemic to it (approximately 0.5% of the worlds total known species of plants), and at least 75% of the original habitat needed to have been destroyed. Through this process, twenty-five plant hotspots were identified around the world. Together these contain 133,399 endemic plant species (44% of the known world total) and 9,681 endemic animals (35% of the total known). These Hotspots cover an area of 2.1 million km², or about 1.4 % of the land area of the globe.

Five of the 25 hotspots are found on mainland Africa and one covers Madagascar and nearby islands. In Tanzania there is a single plant Hotspot, which is partly shared with Kenya – the Eastern Arc and eastern African Coastal Forests Hotspot (Figure 1). Over the past year efforts have been made to identify priorities for conservation investment into this Hotspot and \$7 million has now been made available for conservation in the area by the Critical Ecosystem Partnership Fund (CEPF), which is a collaboration between Conservation International, the World Bank, the MacArthur Foundation, the Global Environment Facility and the Japanese Government (see cepf.net). During the recent CEPF assessment, updated information was compiled on a number of different measures of biodiversity value in the Hotspot, especially habitat area, and the distribution of endemic and globally threatened species.

Habitats. The hotspot is estimated to have originally supported around 23,000 km² of forest, of which around 15,000 km² was left in 1900, and a maximum of 5,340 km² remained by the mid 1990s. These forested habitats were embedded within much larger areas of high altitude grasslands and low altitude savanna woodlands and bushlands. Forest area has declined primarily due to clearance for agricultural use, but also due to logging, clearance to make charcoal and due to

the spread of wildfires. Most remaining forest patches are found in areas protected by the Government, principally as Forest Reserves. There is no accurate data on the current status of the habitats of the Hotspot, but information from all sources indicates a continued and sometimes serious decline, especially of forest and montane grassland habitats.

Endemic species. Current data show that the hotspot is home to at least 1,400 endemic plant species, 16 endemic mammals, 22 endemic birds, 50 endemic reptiles and 33 endemic amphibians (Table 1). The extremely dense packing of endemics in the small area of remaining habitat of this Hotspot makes many of the plants and animals in this hotspot threatened with global extinction. The level of extinction risk is used as a core part of the CEPF process to identify conservation priorities in the Hotspot.

Globally threatened species. All species listed as globally threatened by IUCN that are found in the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya have been identified and their distributions mapped. The globally threatened fauna (based on IUCN classifications) in the hotspot are represented by 29 mammal species, 28 bird species, 33 amphibian species, and 7 gastropods. The globally threatened flora contains 237 plant species, which is regarded as a great underestimate. In total, 334 globally threatened species are found, with 110 species in Kenya and 310 in Tanzania (see cepf.net). The degree of threat to reptiles, freshwater fish, and almost all groups of invertebrates has not been assessed and hence these species could not be used in this exercise.

Sites. The CEPF process used the number of globally threatened species to identify critical sites for conservation investment. A number of sites in this Hotspot have very high numbers of threatened species. These include: East Usambara Mountains, Uluguru Mountains, Udzungwa Mountains, West Usambara Mountains, Shimba Hills, Lindi District Coastal Forests, Nguru Mountains, Taita Hills, South Pare Mountains, and Kisarawe District Coastal Forests. These are the key areas for conservation efforts seeking to prevent extinction within the hotspot.

Landscapes and corridors. The Eastern Arc mountain blocks are naturally isolated due to their topography and cooler and moister climates. They are surrounded by a ‘sea’ of hot and dry savanna that prevents the movement of species between different blocks. In the lowland coastal forests, it might appear that forest cover could have been almost continuous in the distant past (and therefore cover a vast area). However the distribution patterns of species in these forests indicate parts of this forest have also been isolated for a long time. These ancient patterns of forest isolation have

Table 1. Species richness and endemism in the Eastern Arc and Coastal Forests Hotspot (From Mittermeier et al. 1999).

Rich = Species Richness (number of species). **End** = Endemism (number of species confined to the hotspot).

| Hotspot | Vascular Plants | | Birds | | Mammals | | Reptiles | | Amphibians | |
|---------------------------------|-----------------|------|-------|-----|---------|-----|----------|-----|------------|-----|
| | Rich | End | Rich | End | Rich | End | Rich | End | Rich | End |
| Eastern Arc and Coastal Forests | 4000 | 1400 | 585 | 22 | 183 | 16 | 188 | 50 | 63 | 33 |

been dramatically changed over the past few hundred (or perhaps 1000) years as humans have cleared large areas of habitat for farmland and plantations. Many individual Eastern Arc Mountains (e.g. the East Usambaras) now contain a number of disconnected habitat patches that were joined together only a few decades ago. Fragmentation of the forest habitat at this local scale has serious consequences for biodiversity conservation. In particular it is well known that as habitat patch sizes fall, then the number of species within them declines. Below a certain size, then a species will become extinct within a patch. To prevent this occurring, connecting the forest patches through habitat corridors is an essential conservation strategy.

CEPF Role in assisting the conservation of forests in the Eastern Arc and Coastal Forests Hotspot

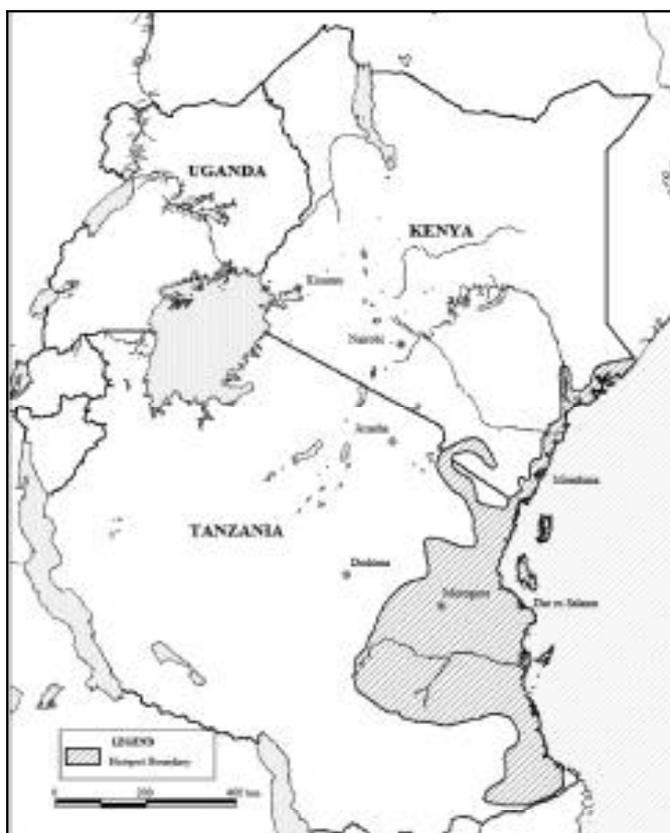
The investment profile developed for CEPF-funding used data on the distribution of species, habitats, threats, and existing projects to set priorities for conservation investment within this hotspot. The CEPF investment of \$7 million over the next 5 years will be available to civil society institutions (NGOs, CBO, private sector, parastatals, Universities) to undertake conservation investments within three broad areas that were agreed by various stakeholders from the region.

1. Increase the ability of local populations in the Hotspot to benefit from, and contribute to, biodiversity conservation
2. Restore and increase connectivity among fragmented forest patches in the Hotspot
3. Improve biological knowledge in the Hotspot

CEPF has requested interested civil society agencies to complete Letters of Inquiry and submit them for consideration. The format for these can be found on cepf.net. The projects that CEPF supports also need to link to other existing projects and hence add value to existing conservation efforts in the region. For the Eastern Arc Mountains of Tanzania, a UNDP/GEF project through the Forest Department of the Ministry of Natural Resources and Tourism will develop a holistic conservation strategy for the Eastern Arc

mountain blocks. It is hoped that CEPF investment will assist in the development of this strategy, which will be the main government vehicle for prioritising conservation investment into this region. For the coastal forests, national coastal forest task forces are established in Kenya and Tanzania, involving groups of NGOs and government departments. Again it is hoped that the CEPF investment will help to support these task forces as they seek to mainstream the conservation of coastal forest habitats into government, and NGO work programmes.

It is an exciting time to be involved in the conservation of Eastern Arc and coastal forests in Tanzanian (and Kenya) and it is hoped that the investment of CEPF, when combined with the efforts of government, NGOs and their various conservation donors will be able to stem the tide of forest loss in the region and provide the forests and their biodiversity with a brighter future.



Boundaries of the Eastern Arc and Coastal Forests Hotspot in Tanzania and the positions of relevant protected areas within this region (from cepf.net - Eastern Arc and Coastal Forests Hotspot profile).



| |
|------------------------------|
| News |
| Editorials |
| Sports |
| Business |
| School Times |
| Magazine |
| Insight |
| Letters |
| Cartoons |
| Archives |



Fund gets Sh553m. to conserve ecosystem

By Anne Kago

THE Critical Ecosystem Partnership Fund (CEPF) and four East organisations yesterday announced a Sh553 million investment strategy.

This was done during the launch of the new CEPF coordination occasioned by signing of memorandum of understanding by the Birdlife International, the Tanzania forest conservation group and ICIPE.

This strategy is aimed at conserving the rich natural resources Eastern Arc Mountains and the coastal forests of Tanzania and

CEPF Investment will enable the civil society to take action to safeguard the region, recognised as the world's important bio hotspots and to bring urgently needed resources to help in ensure that these biodiversity hotspots are properly managed in step with sustainable development.

This strategy includes a special focus on the important linkage between people and conservation, with support for projects to enable local population to both directly participate in and benefit from conservation efforts.

The forest bill that had been shot down in Parliament had inspired these initiatives.

According to The Bird life Africa partnership head of secretariat Hazell Thompson there was a need to establish a fund that involves local community who don't have the access to present proposals to initiate these strategies for their communities.

It is therefore in this light that the CEPF was formed, It is a joint initiative of the conservation international, the Global Environment Facility, the Japanese government, the John D. and Catherine MacArthur foundation and the world bank.

"Placing Locally based leaders at the heart of our strategy is key

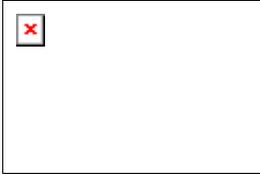
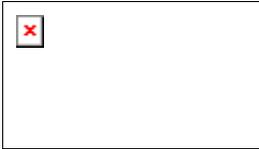
approach in this hotspot” said Mr John Watkin, CEPF grant manager for East Africa. “Our New new partnership will focus on people and science helping ensure CEPF investments involve communities and a variety of organizations for success.”

The CEPF investments will be guided by an `ecosystem profile` compiled in 2003 by ICIPE with input from more than seventy scientists, government staff and non governmental organizations from the two countries.

[Other Business](#)

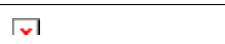
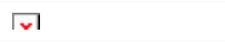


Copyright © 2003 Kenya Times Media Trust



La Tanzanie et le Kenya reçoivent des fonds pour la préservation des ressources

2004-06-15 09:16:13



NAIROBI, 14 juin (XINHUANET) -- Une stratégie d'investissement d'une valeur de 7 mil de dollars a été lancée lundi par le Fonds de partenariat pour les écosystèmes d'importance vitale (Critical Ecosystem Partnership Fund) et par quatre organisations d'Afrique orientale dans le but de préserver les riches ressources naturelles de Tanzanie et du Kenya.

Ces investissements concernent la préservation d'espèces menacées dans les montagnes de l'Arc oriental et les forêts côtières de ces deux pays africains, où vivent au moins 15 espèces de plantes et 50 espèces de reptiles que l'on ne trouve nulle part ailleurs.

"Ces investissements apportent des ressources dont nous avons un besoin urgent pour permettre une gestion adaptée de ces ressources précieuses en accord avec le développement durable", a indiqué Nike Doggart, du Groupe de préservation des forêts Tanzanie.

Cette stratégie comprend une attention particulière pour les liens importants entre populations et préservation, avec un soutien à des projets qui permettent aux populations locales de participer directement aux efforts de préservation et d'en bénéficier directement.

Aperçu sur la Chine

PCC

APN

Président de la RPC

Conseil des Affaires d'Etat

Cour populaire suprême

Parquet populaire suprême

CCPPC

Partis et Groupements démocratiques



| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

Copyright 2004: pour l'Agence de Presse Xinhua



[Print Edition](#) [Weblog](#) [Underreported](#) [Français](#) [Local](#)

February 09, 2005

Tiomin Given Final Approval for Kwale Titanium Mine

NAIROBI, KENYA -- After years of negotiations, the Kenyan government has given a Canadian mining company, Tiomin Resources Inc., the final approval to start a multimillion dollar titanium mining project in Kwale. On Feb. 2, the Kenyan government signed a fiscal agreement with Jean-Charles Potvin, President and CEO of Tiomin, which includes a 50 per cent reduction of the corporate tax rate for 10 years from the start of commercial production of the mine. The agreement also stipulates a 2.5 per cent gross revenue royalty to the Kenyan government.

The biggest foreign investment deal since the current government came to power, the mining project will exploit the titanium-rich sands in Kwale for at least 14 years. The Kwale project is the first of four large mineral sand deposits along the coast of Kenya that Tiomin started exploring in 1995 . The Kwale project is expected to produce large quantities of ilmenite, rutile, and zircon, which are used in the paint, ceramic and electronic industries.

The Kenyan coast is a unique tropical expanse of beaches, ancient Arabic architecture, diverse coral reefs and mangrove forests that stretches 402 kilometres. The Kenyan coastal forest is considered by Conservation International to be one of the world's 25 hotspots – areas of extraordinary biodiversity that are seriously threatened. Many endangered species, including the only bands of Colobus monkeys on the East African coast and also Kenya's last remaining herds of sable antelope, depend on the coast's fragile ecosystem, which is already under stress from the tourism industry.

The mining project will not only impact the coastal ecosystem but also the residents of the area who must be relocated. There has been opposition to the project from local communities who are concerned over the destruction of their land and compensation issues. However, construction of the project will likely begin later this year, and commercial production is expected to start by early 2007.

This agreement with the Kenyan government comes at a time when Tiomin has also received a license to begin mining gold and other minerals in Peru.

Gemma Richardson

» [Dongo Kundu](#), a film about the impact of the Tiomin project

» [Tiomin Resources](#), official site

» read other articles in [canadian news](#)

» [Email this article](#) to a friend

» Go to the [current issue of the Dominion](#)

» Read new articles from around the web at the [Dominion weblog](#)

Reprint rights: Non-profit publications (including the student press) can reprint articles free of charge, if the author's name and "The Dominion" appear in the byline, and the address "http://dominionpaper.ca" appears on the same page as the article. To reprint an article in a for-profit publication, contact dru@dominionpaper.ca for more information.

email this article

| | |
|-------------------------------------|----------------------|
| Email this entry to: | Message (optional): |
| <input type="text"/> | <input type="text"/> |
| Your email address: | |
| <input type="text"/> | |
| <input type="button" value="Send"/> | |

<http://dominionpaper.ca>

Subscribe: email

Receive an email notice when a new issue is posted.

Your email address:

| |
|--|
| <input type="text"/> |
| <input type="button" value="Subscribe"/> |

Subscribe: print

Receive a hard copy of the paper in your mailbox every month.

[Find out more!](#)

Sections

Sections

» [Dominion Newspaper](#)

» [Subscriptions](#)

» [Dominion Daily Weblog](#)

» [Underreported Newswire](#)

» [Local Coverage](#)

» [En Français](#)

About:

» [Contact](#)

- » [FAQ](#)
- » [Writer's Guidelines](#)
- » [Open Positions](#)

Other Sites

- » [IndependentMedia.ca](#)
- » [Paul Martin Time](#)

Archives

- [Canadian News](#)
- [International News](#)
- [Features](#)
- [Reading](#)
- [Accounts](#)
- [Comics](#)
- [Environment](#)
- [Arts](#)
- [Review](#)
- [First Nations](#)
- [Media Analysis](#)
- [Labour](#)
- [Health](#)
- [Français](#)
- [Ottawa](#)

Syndication

RSS feeds are available for the newspaper and the weblog.

Paper: [RSS 1.0](#), [RSS 2.0](#)

Weblog: [RSS 1.0](#), [2.0](#)

Masthead

Coordinating Editor:

Dru Oja Jay

Arts Editors:

Max Liboiron, Jane Henderson

International News Editor:

Geoff Hamilton

Canadian News Editor:

Mark Parker

Environment Editor:

Hillary Lindsay

Health Editor:

Andrea Smith

Media Analysis Editor:

Anthony Fenton

Review Editor:

Linda Besner

First Nations Editor:

Kim Petersen

Correspondents:

Shella Gardezi

Copy Editors:

Kate Andronov, Lisa Marie Blahey, Alex Hollenberg, Amanda Janes, Mark Parker, Antoni Wysocki

Web hosting generously provided by Kendall Clark of Monkeyfist.com

| Organization | Project Title | Funding Amount | Co Financing | Project/Regional Leveraging | Total Leveraged |
|--|--|-----------------------|---------------------|------------------------------------|------------------------|
| CEPF: African Butterfly Research Institute Co-Financing: African Butterfly Research Institute | Overview of Butterfly Faunas of Eastern Arc Mountains and Coastal Forests: Biodiversity, Endemism, Conservation | 19,700 | \$17,000.00 | | \$17,000.00 |
| CEPF; Missouri Botanical Garden Co-Financing: Missouri Botanical Garden (\$138,571), IUCN (\$18,000), Fairchild Tropical Botanical Garden (\$49,000)* | Plant Conservation Assessment in the Eastern Arc Mountains and Coastal Forests Mosaic Biodiversity Hotspot of Kenya and Tanzania | 318,001 | \$205,571.00 | | \$205,571.00 |
| CEPF: TRAFFIC International Co-Financing: WWF Tanzania Program Office | Preventing Unsustainable Timber Trade from the Coastal Forests of Southeast Tanzania Following Completion of the Mkapa Bridge | 19,999 | \$5,000.00 | | \$5,000.00 |
| | | TOTAL | \$227,571.00 | \$0.00 | \$227,571.00 |

* This project is being implemented in partnership with and IUCN grant for \$92,000.

** Significant additional funds are expected to be leveraged from JBIC through the East Africa Wildlife Society project in the Taita Hills.