



# The Arc Journal

## Tanzania Forest Conservation Group

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### Forests and timber trade in southeast Tanzania: What will be the legacy of Mkapa Bridge?

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The completion of the Mkapa Bridge across the Rufiji River in Tanzania has been heralded as not just a major engineering success for the African subcontinent but also a great step for national development. However, The President, his Excellency Benjamin Mkapa, highlighted environmental concerns and the need for caution at

by many as a catalyst for accelerated development in Tanzania south of the Rufiji River. Previously inaccessible during seasonal flooding of the Rufiji delta, southeast Tanzania has one of the highest levels of poverty in Tanzania, so this long awaited development comes at a critical time. From a conservation perspective, relative isolation has helped to preserve some of the last remaining viable stands of miombo woodland and coastal forest in the country, including parts of the Selous Game Reserve and forests containing globally recognised biodiversity.

Close relationships between livelihoods, economies and woodlands have been well documented both globally and within Tanzania. Indeed, the woodlands and coastal forests of southern Tanzania contribute directly towards the livelihoods of rural people in particular, including the source of construction materials, fuel, food protein, medicines, revenue and cultural values. Local and central government also benefit from these natural resources, for example the sale of timber, sport hunting and photographic tourism. They also play important, but frequently under-valued, roles in maintaining ecological cycles and micro-climates, nutrient cycling, soil fertility, erosion control, water catchment, stabilising stream flows, and carbon sequestration.

Woodlands and coastal forest therefore present enormous potential in alleviating poverty and

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the official opening in Ikwiriri town, 2nd August 2003: 'I would also like to caution you early that completion of the Rufiji bridge may accelerate environmental degradation, especially smuggling of our natural resources. Because of the reliable means of transport, poachers may be tempted to enter our protected areas with the aim of poaching trophies, uncontrolled charcoal production and timber harvesting with disregard to laws and principles of sustainable utilization' (unofficial translation).

Concerned about the increasing evidence of woodland clearance and degradation in Rufiji District and the vulnerability of people living in the southeast of Tanzania, TRAFFIC East/Southern Africa has been monitoring the timber trade and associated socio-economic factors since 2001. This article aims to highlight some of the major concerns, some recent positive developments and further recommendations.

In August 2003, the Mkapa Bridge was officially opened, the longest bridge of its kind in east and southern Africa and seen



Round wood from Southern Tanzania being transported to Dar es Salaam. Photo by Simon Milledge.

## Gold mining threatens the forests of the Eastern Arc

By Nike Doggart, Adrian Kahemela and Phillipa Mbaga, Tanzania Forest Conservation Group

Since October 2003, artisanal miners have been entering forest reserves in the Eastern Arc in pursuit of gold. The mining has disrupted life in nearby communities bringing many problems to local people. The mining activities have also caused considerable damage to water sources, natural vegetation and biodiversity.

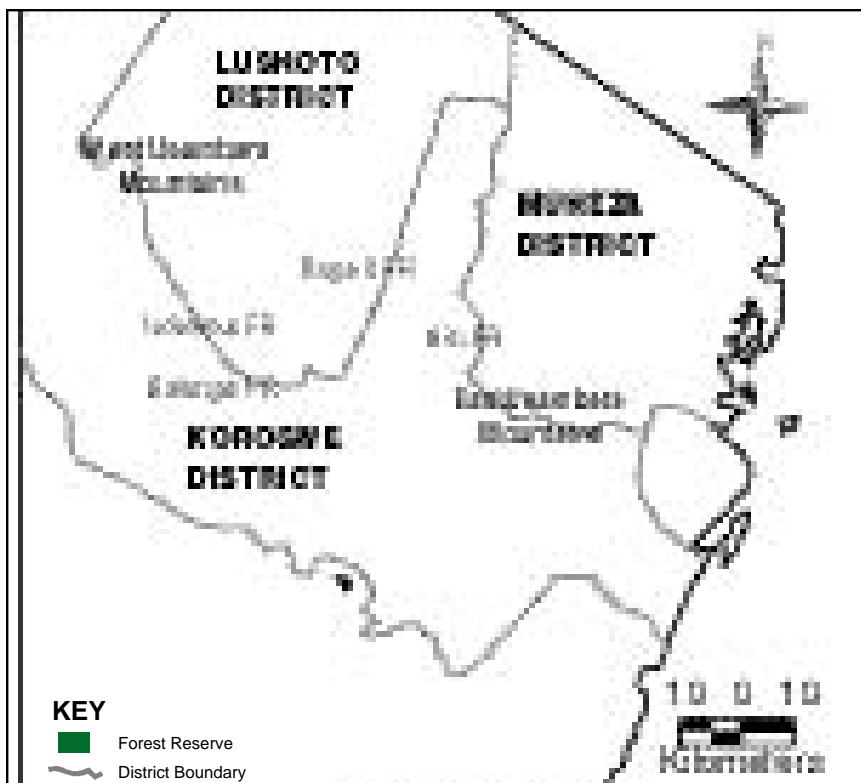
### Background to mining in the Usambara Mountains

In June 2003 gold was (re)discovered in Semdoe Forest Reserve in the East Usambara Mountains. The amount found was small and the District Commissioner took decisive action to remove the miners from the area. In October more gold was found near Sakale Village near to the Monga Tea Estate approximately 10 km from the Amani Nature Reserve. The discovery was publicised in the newspapers and on the radio and as a result 12,000 – 20,000 people flocked to the area. Prospectors traveled to Amani from as far away as Arusha, Mwanza and Musoma, many from the tanzanite and gold mines of Mererani and Geita. Reports have also been received of buyers and miners entering Tanzania from neighbouring countries. These miners were joined by farmers from the Usambaras who left their farms and homes to join the thousands of people

camping out under temporary plastic shelters around the muddy gold pits.

As the amounts of gold on the public land near Monga declined, so prospectors started to dig in the Amani Nature Reserve and Nilo Forest Reserve. The Conservator of the Amani Nature Reserve, Mr Corodius Sawe explained that the miners were digging large pits around streams and along valley floors. The miners were entering the Nature Reserve at night, digging until the early hours of the morning before returning to nearby settlements by dawn. Despite the best efforts of the staff of the Nature Reserve they were unable to protect the delicate riverine habitats, many of which have now been severely disrupted.

As the quantities of gold declined around Sakale, some of the miners began to move to the West Usambaras and the Nguu Mountains. Between December and January it was reported that up to 40,000 miners were working in and around Balangai Forest Reserve. The miners were also in Ndelemai, Baga and Mfundira Forests in Lushoto and Korogwe Districts. In the East Usambaras mining continued and at the time of going to press, the number of miners in the vicinity of the Amani Nature Reserve was estimated to be 10,000 and the mining in the Nature Reserve was continuing.



Map showing the location of forests affected by gold mining in Tanga.

### The Government's response

The response from the government has been varied. After an early visit by the Assistant Minister for Minerals, it was announced that the miners could stay but that conditions would have to be improved for them. In contrast the Regional Commissioner Captain Jaka Mwambi rapidly recognised the negative social, economic and environmental impacts that the mining was bringing to his Region. After warning the miners that they were no longer welcome, he organised a series of operations to remove them from the West Usambaras. With the assistance of the District Commissioner for Korogwe, Colonel Salum Nyakonji and the District Commissioner for Lushoto, Elias Goroi, the Regional Commissioner had persuaded most of the miners to leave the forest reserves by the

end of January 2004. (Although some are still staying in guest houses in Soni and Lushoto waiting for the government's vigilance to fall).



Gold is extracted from pits dug in the valley floors.  
Photo by Heini Vihemaki

### The impact on water supplies and biodiversity

The forests of the East and West Usambaras are nationally and globally important for their water catchment properties and high biodiversity values. These forests contain at least 14 strict endemic vertebrates and 24 Eastern Arc endemic vertebrates. The West Usambaras, particularly Balangai is the source of the Pangani River which feeds the Pangani Hydropower plant. Both the biodiversity values and the catchment values have been damaged by the recent influx of miners. The miners have destroyed the valley floor vegetation in many places. This poses particular threat to endemic amphibians many of whom are associated with the riverine vegetation. Water quality has also declined as a result of the high sediment load now in the rivers. This is problematic for people and wildlife alike.

### The impact on the livelihoods of local people

The mining has also brought many negative social and economic problems to Tanga. Crime has risen including murder, rape and theft. Rapid immigration and the breakdown of normal social structures may accelerate the spread of HIV. Farmers have neglected their fields. The tea estates and the Pangani Hydropower plant have been affected by the

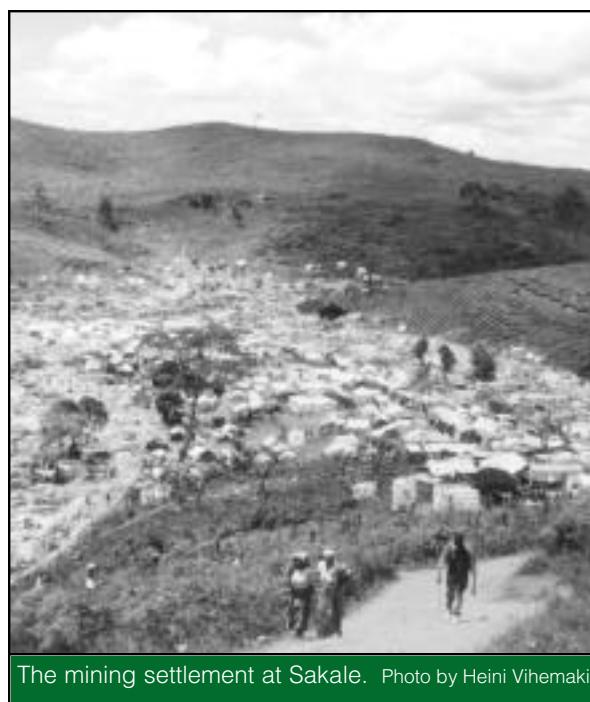
deterioration in water quality. The tea estates have also suffered from an exodus of workers. Children have been employed to bail water from the pits. There have been at least two outbreaks of cholera associated with the poor standards of hygiene around the mining camps. Water quality for many communities downstream of the mines has declined. Some miners are reportedly using mercury which has serious health risks for anyone using contaminated water. Prices of many products have doubled locally. Roads have deteriorated under the heavy traffic and road accidents have increased.

### What Tanzanian law says

The law on mining in protected areas is clear. Prospective miners need to seek permission from the authority responsible for the management of the protected area before they can begin to mine. They also need a license from the Ministry for Minerals. These procedures are not being followed in Tanga

### Conclusion

While some individuals have undoubtedly benefited financially from the gold, the cost to society and the environment has been high. Too high. There is clearly a need for more coordinated action between the Ministry of Minerals, the Ministry of Natural Resources and Tourism and Local Government. The decisive action of the Regional and District governments in Korogwe and Lushoto eventually succeeded in halting the problem (at least temporarily). In Muheza, FBD staff in the Nature Reserve and elsewhere urgently need assistance in combatting the problem. Lessons from Tanga need to be shared with other regions and districts, particularly those of the Eastern Arc, to ensure that swifter action can be taken to avert the disastrous impacts experienced in Tanga.



The mining settlement at Sakale. Photo by Heini Vihemaki

## Forests and timber trade in southeast Tanzania: What will be the legacy of Mkapa Bridge?

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enhancing social development. On the other hand, growing disparities in poverty levels, population growth, unsustainable practices and increasing pressure on limited resources are increasingly threatening this vision, resulting in negative impacts on both woodland integrity and the quality of livelihoods. This is captured in the National Forest Policy (1998) with specific reference to trade, recognizing that “trade in wood and non-wood forest products offer considerable potential for increased economic development through income and employment generation as well as export earnings” whilst “unregulated trade can instigate uncontrolled exploitation and has the potential of accelerating forest destruction and degradation through loss of biodiversity”.

Ironically, improved development may often result in greater negative livelihood and environmental impacts. Sustainable development, particularly in areas where people rely heavily on environmental resources, therefore relies on striking a careful balance. This could not be nearer the truth than in southeast Tanzania, which contains the highest proportion of unreserved woodlands in the country whose management depends on the same communities who derive so many benefits from environmental services and timber products.

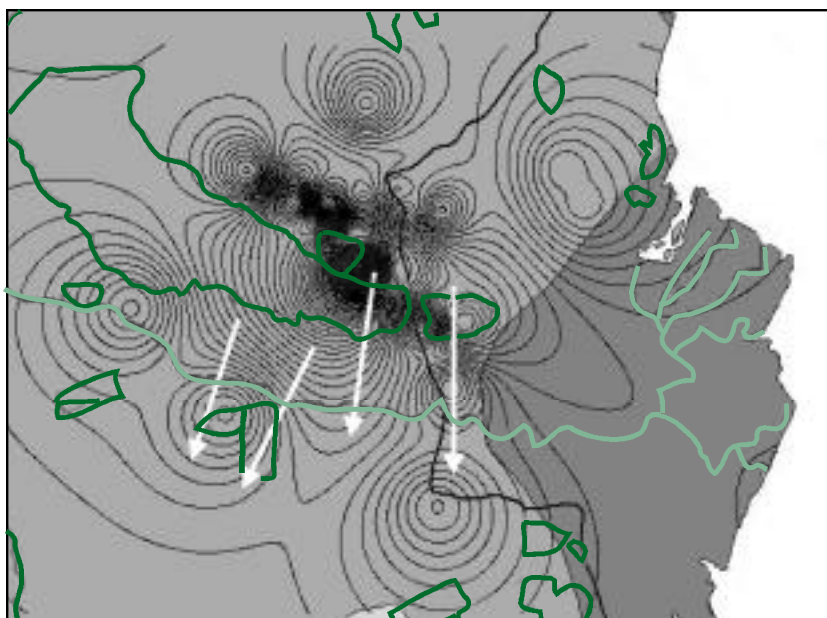
In collaboration with several government ministries, local government authorities, foreign government missions, non-government organisations and the private sector, TRAFFIC East/Southern Africa has been documenting the timber trade from southeast Tanzania since 2001. Most importantly, TRAFFIC has documented data concerning timber trade and related socio-economic factors prior to the completion of the bridge, thereby providing a baseline from which to compare future changes. Detailed information on volumes, products, species, sizes, harvest areas, trade routes, markets, revenues and sociological factors are presented in a report ‘Bridging the Gap: Linking Timber Trade with Infrastructure Development and Poverty Eradication Efforts in Southern Tanzania’. This article focuses on two disturbing trends evident from the monitoring results even prior to opening of the bridge, namely evidence of unsustainable timber trade and large-scale, illegal activities. These trends were

particularly evident north of the Rufiji River where access to woodlands is greatest. Indeed, Rufiji District accounted for 85% of the total harvested wood before completion of the bridge.

### Evidence of unsustainable trade

*Increasing proportions of lower value species in trade:* Over-harvesting of the higher value hardwood species (Class I and II) from Rufiji District has pushed traders to exploit a larger number of alternative species, mostly Class V (e.g. *Hymenaea verrucosa*, *Trichillia emetica*). Indeed, these species accounted for almost all Class V licenses issued from the entire study area. On the other hand, the proportion of the most valuable hardwoods harvested increases markedly moving southwards away from the Rufiji River. For example, over 80% of licenses issued from districts in Lindi Region during 2001 were comprised of Class I and II species (e.g. *Pterocarpus angolensis*, *Swartzia madagascarensis* and *Azelia quanzensis*).

*Changes in harvest areas:* In general, historical trade data shows how harvest areas have moved southwards as areas become over-exploited. Shifts in harvest areas are most pronounced for two highly targeted species, *Pterocarpus angolensis* and *Dalbergia melanoxylon*, to the extent that very few commercially viable stands remain in Rufiji District. Comparison of



Map of Rufiji River showing southward shift (white arrows) in timber harvesting (black contour lines) just prior to opening of Mkapa Bridge, August 2003

Key: Light grey = coastal forest; Dark grey = mangrove; Dark Green = Forest Reserves; Light Green = Rufiji River.

harvest areas between 2001 and 2003 - just before the bridge was opened - already showed a marked shift in harvest pressure south of the Rufiji River as traders anticipated an improvement in transport (see Figure 1).

*Harvesting of under-size trees:* Fewer large trees remain in wild stands, especially those species heavily targeted over the past decade. Stocks have declined so severely in some areas that undersize trees are felled indiscriminately. This is supported by stump surveys that show felled trees up to half the diameter of harvestable trees, undersize logs processed by saw mills and shorter planks on sale. Traders claim these smaller logs as 'off-cuts', thereby avoiding all forms of regulation and royalty payment.

*Increase in trade levels:* Observations and discussions with stakeholders indicate a rapid increase in trade volumes since the opening of the bridge with up to several dozen trucks passing daily over the bridge. However, this aspect is currently being researched and will be verified over the course of the next few months.

## Evidence of illegal trade

Large-scale, uncontrolled and often illegal trade throughout the study area results in large discrepancies between official statistics and actual trade levels. For example, five times as much timber passed north through Kibiti checkpoint than was officially recorded during 2001. Concealment and evasion were amongst the most common techniques to avoid payment of royalties. The most common methods were the utilisation of off-road truck routes to avoid official natural resource checkpoints, travelling at night, locking trucks to avoid inspection, and hiding timber products under other products (e.g. salt). In many circumstances, official harvest documentation has been obtained, but traders chose to under-declare or mis-declare the goods. Timber traders may quote lower classes of tree species in their licenses in order to pay low royalty rates, or incorrectly declare the origin of timber. Large volumes of timber are felled without any license.

Several important driving forces affect illegal activities in the study area, most importantly profit margins and enforcement levels. Evidence from the study area shows that illegal trade is resulting in significant loss of revenue - vital income for local government authorities and communities - as well as woodland degradation. One of the most difficult aspects of timber trade management in southeast Tanzania is the transport of mostly planks by bicycle and truck to dhows waiting at small, informal ports destined for Zanzibar. This is the subject of current research by TRAFFIC.

## Recent positive interventions and further recommendations

The majority of people in the study area depend heavily on free forest goods, products and services to support their livelihoods in the absence of viable alternatives. Wise utilization of natural resources in the study area

has the potential to be the foundation for poverty alleviation efforts in southern Tanzania in addition to supporting local and central governments. However, forestry is not currently regarded as a priority sector despite the fact that it influences the progress of other priority sectors for development. Currently, forestry resources in southeast Tanzania, a priority area for poverty alleviation, are being rapidly degraded with unknown consequences despite their value. It is vital that a greater political understanding of the importance of the forestry sector to development is achieved to leverage justified support through national budgeting and planning processes.

Since the results of this work first started to emerge, it is encouraging to note the increase in awareness and interest from other stakeholders. In particular, there have been a number of positive interventions by both local and central government during 2003 to improve levels of forest management. For example, a total harvest ban was placed on Ngumburuni Forest Reserve. This was closely followed by a temporary ban on harvesting of *Combretum imbebe* (Kis. Mhama), a species that rapidly increased in trade, pending further research into its market value and trade dynamics. Indeed, Rufiji District has put considerable effort into implementing a forest management plan. At Kibiti checkpoint, the first major checkpoint north of the Mkapa Bridge, the Ministry of Natural Resources and Tourism, Forestry Division, has increased capacity by placing two forest officers with a 4WD vehicle to assist with revenue collection, checkpoint compliance and enforcement patrols. Whilst outright bans on harvesting are not the ideal solution, complimentary efforts to strengthen management need to be extended southwards into Lindi and Mtwara Regions.

Insufficient management capacity and forest management practices were identified as major deficiencies allowing unsustainable and illegal practices to continue. Recommendations to improve management for the long-term benefit of sustainable development in the study area include extensive capacity building at checkpoints, empowerment of local communities in forest management, improved forest management plans and law enforcement assistance. Efforts to identify and replicate successes in joint forest management in a socially responsible manner are urgently needed. Importantly, it is recommended that ongoing monitoring and research complement future initiatives in order to assess changes in trade dynamics, the impacts on livelihoods and the success of any interventions.

Some say that the past is the key to our future. Others argue that the present is the key to our future. In the case of the woodlands of southern Tanzania, one would predict that both statements are true. It is only through the collaborative efforts of all sectors that hard lessons from the past and present will be turned into effective woodland management to realise sustainable social, economic and ecological benefits.

# Transaction costs of Participatory Forest Management: empirical evidence from Tanzania.

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## Introduction

In Tanzania, Participatory Forest Management (PFM) has become the most important approach within the forestry sector following its inclusion in the National Forest Policy in 1998 and the Forest Act 2002. The move towards PFM has been driven by two factors. Firstly, recognition that neither central government nor local government have the capacity to manage the nation's forest resources in a sustainable way without the support of communities living close to the forest. Secondly, there has been a political will to decentralize government functions to the lowest level of government. By the end of the year 2000, it was estimated that Tanzania had 319,730 ha of forests under CBFM and 28,255 ha under Joint Forest Management (JFM) mainly in catchment forest reserves. This figure is now considerably higher.

With the expansion of PFM, a question of equity in sharing the benefits from, and costs of, community forest management has been more demanding than ever before. In order to explore this issue further a study was carried out to assess the transaction costs and benefits of PFM. The study had three objectives:

- to identify costs and benefits of community forest management to the rich, middle and poor groups of users.
- to quantify costs and benefits for these sub-groups based on prevailing economic conditions.
- to assess the comparative flow of benefits and costs for each income group.

The overall aim of the study is to contribute to the understanding of transaction costs in PFM in Tanzania. This article serves to summarize findings from the study.

Levels of transaction costs in PFM in four selected communities adjacent to the Ambangulu mountain forests of North-East Tanzania were assessed through questionnaire responses from 120 households. A wealth ranking exercise was used to identify three economic groups according to locally perceived criteria. Costs and benefits of PFM to the rich, medium and poor groups of forest users were estimated. Costs of PFM were participation in forest monitoring and time spent in meetings. Benefits included all forest products consumed at household level.

The study area is important in terms of its biodiversity and local communities display a high degree of dependence on the natural resources.

## Wealth ranking

Three economic groups, rich, middle and poor were identified by a range of criteria rather than a single criterion such as income (Table 1). Criteria that were considered important were area of productive land, business ownership, type of house, type of crops grown, livestock ownership and dependence on selling forest products and casual labour.

Table 1. Wealth criteria used to classify the three income groups in the study area.

Income group	Wealth criteria
Rich	Productive lands (2.8-4 hectares), business (kiosk, brew local liquor, restaurant) modern house roofed with corrugated iron, cash crops, and livestock.
Middle	Productive land (1.6-2.4 hectares), Half of the above criteria
Poor	Productive land (0.4-1.2 hectares), mud house with thatched grass, has one or two goats/sheep, sells forest products, and depends on selling casual labour for income.

## Household and Source of income

The study revealed that, there were six main sources of household income in the study area: agriculture, livestock, business, labour, forest utilization and sale of forest products (Fig 1). Forest utilization values are the forest products that are collected freely from the forest and consumed at household level. Their monetary value was based on local market values and determined according to household consumption per year. Forest utilization included forest products such as fuel wood, thatch grass, building poles and fodder. Forest sale are the products collected freely from the forests for the purpose of selling them so as to obtain income. Forest utilization was found to be the main source of income with average annual income of about US\$ 150, US\$ 118 and US\$ 73 for rich, middle and poor income groups respectively (Fig 1). Relative to other groups, income from daily labour work was most important for the poor group with an annual average of US\$ 72. Poor groups also obtained income by collecting and selling forest products such as fuel wood and grass fodder to the people owning local

restaurants and livestock. This result is similar to what one would expect in most areas of Tanzania and African countries where free access to forest products by households provides an additional source of income in rural areas.

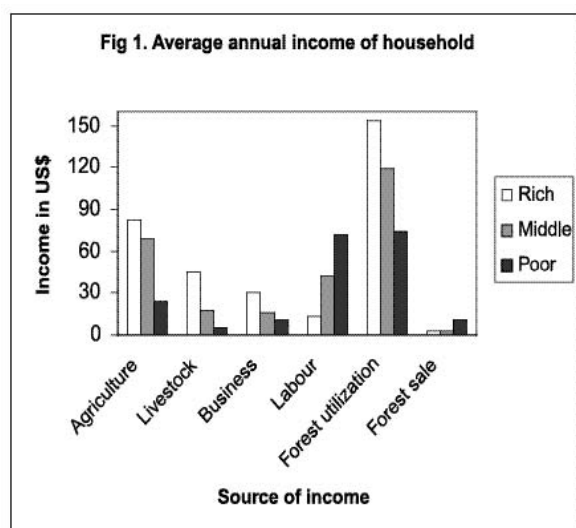


Figure 1. Sources and average amount of annual household income for each of the three wealth groups of rich, middle and poor.

### Transaction Costs related to forest management

Table 2 shows the breakdown of transaction costs of forest management on the various forest management activities. There are two types of costs, firstly costs related to attending various meetings (transaction costs) and secondly, participation in voluntary forest management activities. It was found that the total annual averages for the transaction costs of forest management were higher for the poorer households than that of rich and middle groups (Table 2). This indicates that poor households participate more in forest management activities compared to their counterparts. Attending meetings such as environmental awareness, discuss of forest management plans, by law formulation account for high transaction costs in all of the three groups.

It is clear that time taken in attending various meetings related to PFM activities and forest protection through monitoring make up the bulk of the costs. Spending long periods in meetings is a typical process of PFM. For example experience from East Usambara forest in Tanzania found that settling conflicts related to forest boundary not only took a long time to be completed but also involved high cost.

**Table 2.** Quantification of forest management activities and Transaction costs of forest management for three income classes in US\$ (1 US\$ = Tsh 1000) per year. !Voluntary forest management activities, \*These meetings include environmental awareness, conflict resolution, forest by law formulation, forest management plans etc and \*\* Include activities such as planting trees

Activities	Income groups			Total
	Poor (US\$)	Middle (US\$)	Rich (US\$)	
Protection (watching, monitoring etc.)!	15.4	6.3	16.1	37.8
Forest boundary clearing!	1.4	5.6	0.7	7.7
Tree planting!	2.1	2.1	2.1	6.3
Attending meetings*	30.8	34.3	30.1	95.2
PFM related development activities**	6.3	4.9	5.6	16.8
Fire line clearing!	3.5	0.7	0	4.2
<b>Total Annual Average Costs</b>	<b>59.5</b>	<b>53.9</b>	<b>54.6</b>	<b>168</b>

### Benefits of forest management

Table 3 highlights the product type and monetary values of the benefits for each income class. None of the income groups benefit from timber harvesting, this is because timber cutting is no longer permitted in the Ambangulu forest. However, all groups obtain benefits from fuel wood. This means that the three groups compete for the same set of products from the forest.

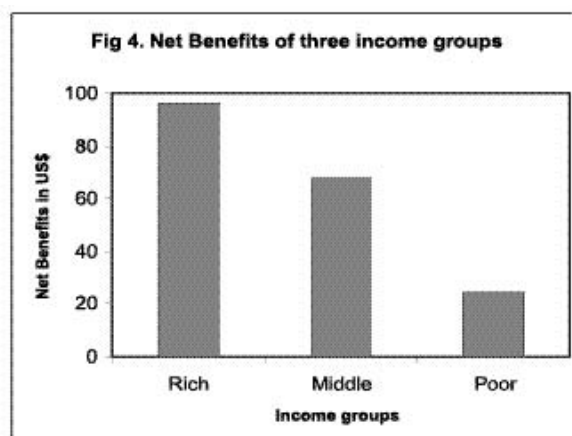
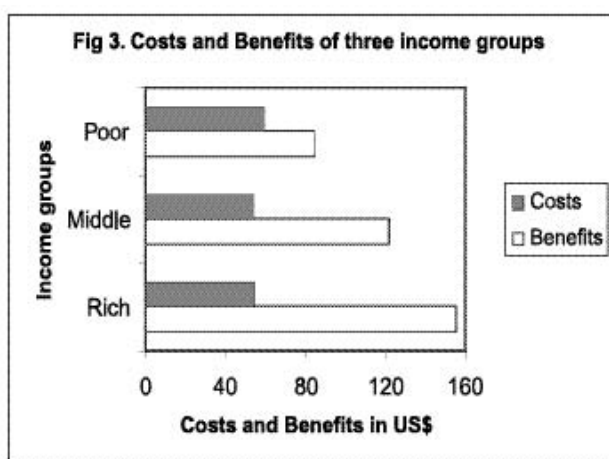
The rich group obtains more benefit from fodder grass than other groups as they feed their livestock and they own more livestock than their counterparts. Benefit from thatch grass was generally low for almost all groups, suggesting that most groups do not use thatch grass from the forest. Palm and banana plant leaves from their farms were instead used as roofing materials.

Table 3. Quantification of Benefits from forest utilization in US\$ (1 US\$ = TSH 1000).

Items	Income groups		
	Rich	Middle	Poor
Timber	0.0	0.0	0.0
Fuel wood	64.3	65.8	63.3
Fodder grass	86.4	50.5	7.5
Thatch grass	1.6	0.6	1.7
Bush meat	0.8	0.0	0.0
Medicinal herbs	0.0	0.0	0.0
Building poles (beams,withies)	0.0	2.4	1.2
Forest product sale*	2.6	2.6	10.4
<b>Total Annual Average benefits</b>	<b>155.7</b>	<b>121.8</b>	<b>84.0</b>

\*Direct benefits from the sale of forest products. Other listed items are consumed without monetary exchange.

### Costs and benefit of forest management



The relative balance between costs and benefits varies between income groups. The average costs for poor, middle and rich groups are US\$ 59.5, 53.9 and 54.6 respectively (Fig. 3). The average benefits are US\$ 84, 121.8 and 155.7 for poor, middle and rich respectively (Fig. 3). This means that, poor groups incur higher costs than other groups and benefits were low for the poorer groups where as the middle and rich income groups had high benefits. A similar trend was observed for the net benefits. The rich obtain higher net benefit compared to middle and poorer groups (Fig. 4). The observed higher net benefits of the rich and middle-income groups are due to these households having more livestock and consequently consuming more forest products. Higher income households also have diverse sources of income and for that case they use additional fuel wood for preparing local liquor and cooking in the restaurants. The Poor households see forests as an important resource to maintain their livelihood.

### Policy Implication

The study observed that from the current practices of forest management, the lower income class bears the highest cost of forest management when all opportunity costs are accounted for in the assessment of costs and benefits. Any expectation that PFM would prove a cheap way of obtaining benefits has not been realized. Under the current forest laws in Tanzania, communities have none of the financial incentives from the forest products revenue collected. The existing example of revenue sharing is between the Wildlife Division and local communities and is hinged on revenue accrued from tourist hunting. The other example is a recent Joint Forest Management agreement between the Forest and Beekeeping Division (FBD) and the six communities adjacent to New Dabaga/Ulongambi national forest reserve in Iringa where it has been agreed that 100% of benefits from the forest should be retained in the communities. Experience from PFM in



the East Usambara forests observed that it is unrealistic to assume that villagers would take the burden of all forest management activities without any tangible benefits. Since these forests are important for biodiversity conservation, government should continue paying for the intensive labour activities such as forest boundary maintenance by casually employing community members especially from the poor groups to do the clearing. This would be considered as one of the tangible benefits from PFM.

## Conclusion

Transaction costs for PFM were found to be higher for poorer households compared to medium and richer households. Higher income groups obtained the most net benefits followed by medium and poorer households. Community involvement in forest management may lower transaction costs incurred by government, but these costs are borne by poorer members in the community. Hence therefore transaction costs are critical factors in the success or failure of PFM and need to be incorporated into policies, legislation and regulation.



Medicinal plants are one of the benefits that people enjoy from West Usambara forests. Photo by Simon Moshia, TFCG

## Minziro Forest reveals new galago and bat records for Tanzania

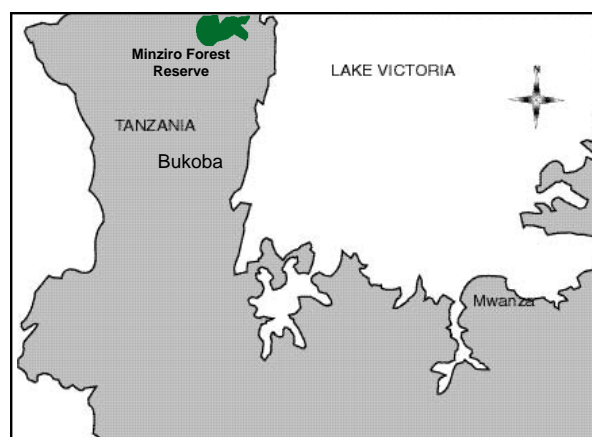
Andrew Perkin and Prof. Simon Bearder, Nocturnal Primate Research Group, Oxford Brookes University, UK

Until recently Minziro forest was one of the most remote and unexplored forests in Tanzania. The forest is essentially an outlier of the vast Congo-Guinea forests that stretch across to central and west Africa and is the largest (28,841ha) forest block remaining in NW Tanzania. The forest is unusual biologically as it contains a mixture of Congo-Guinea biome animal and plant species. This article reports on a bushbaby survey recently conducted by research affiliates of the Tanzania Forest Conservation Group in collaboration with the GEF/UNDP Cross Borders Biodiversity project. This was the first nocturnal primate survey in Minziro which gave us an opportunity to find out whether Tanzania has some of the galago species normally associated with the Central and West African forests. While surveying the galagos we also made notes on other mammals.

Ten galago species had previously been recorded in Tanzania. In general these species are associated with the forests and woodlands of Southern and Eastern Africa. Minziro, with its assemblage of Congolese plants and animals, promised to contain some interesting discoveries.

Minziro forest is located in Kagera Region, NW Tanzania north of the Kagera River and close to the Uganda border. Minziro Forest extends over the border into Uganda where it is called the Sango Bay Forest. The forest is seasonally flooded particularly in the wetter eastern side. In the middle of the forest there is

an area of higher ground where the village of Minziro is situated. In the dry season herds of Ankole cattle graze in the adjacent grasslands. These pastures are burned annually to promote new growth.



Map showing the location of Minziro Forest on the border with Uganda

### The Galagos of Minziro

Three species of galagos were observed or heard in Minziro Forest Reserve; the Large-eared greater galago *Otolemur monteiri argentatus*, Demidoff's galago *Galagoides demidoff*, and Thomas's galago *Galagoides thomasi*.

The presence of Thomas's galago *G. thomasi* in Minziro is a new galago record for Tanzania. The Demidoff's galago record is also of interest as there are few documented records. These galagos at 50-80grams are amongst the smallest primates in the world.

We identified the greater galago form as the northern silver galago *Otolemur monteiri argentatus*. The majority of the *Otolemur* seen were black in colour due to melanism and the rest were silver grey in colour. The high proportion of melanistic animals is unusual but is consistent with populations of greater galagos around the southern margins of Lake Victoria. The calls of these Large-eared greater galagos were very similar to the southern greater galago *Otolemur crassicaudatus* which occurs from southern Tanzania to South Africa.



A dark phase/melanistic form of the northern silver galago *Otolemur monteiri argentatus*. Photo by Nadine Svoboda



A light or normal phase form of the northern silver galago. Photo by Nadine Svoboda

Our limited data shows that the galagos were not evenly distributed throughout the forest reserve. The Large eared greater galago occurred mainly on the forest edge and in riverine forests where yellow barked acacia trees predominate. This is because one of their main food sources is acacia tree gum. Demidoff's galagos were only seen in the forest surrounding our campsite in areas around tree falls or pitsaw sites. The paucity of sightings of this species possibly indicates low animal densities. In other areas of west and central Africa, Demidoff's galago are very commonly seen and occur at high densities e.g. over 100/km<sup>2</sup> in Gabon. Thomas's galagos were seen more often than Demidoff's galagos and were observed in forest edge

vegetation and in the forest canopy. It may be that since they were often at the forest edge they were more visible than Demidoff's galago which occupied the thicker interior of the forest.



Demidoff's dwarf galago. Photo by Liz Pimley. and Thomas's dwarf galago. Photo by Lesley Ambrose.

Five species of diurnal primate were observed: Sykes or blue monkeys (*Cercopithecus mitis*), Grey-cheeked Mangabey (*Lophocebus albigena*), Red tailed guenons (*Cercopithecus ascanis*), Black and white colobus (*Colobus angolensis adolfi friederici*) and Olive baboons (*Papio anubis*).

Other mammals observed include the Hammerhead fruit bat *Hypsignathus monstrosus* whose presence in Tanzania is poorly documented.

## Conservation

From our brief visit we observed that there were two main conservation issues surrounding Minziro forest reserve. There was a great deal of cutting of Podocarpus trees of which many appeared to be very small in size (< 35cm dbh) indicating that this species might be nearing commercial extinction in the area. The seasonal grazing of Ankole cattle in the grasslands surrounding the forest initially seems to be a sustainable activity but the levels of burning that occur to generate pasture, may be reducing the forest area. Fire damage seen on the forest edge kills many of the shrub and small trees and over time this may force a retreat of the forest boundary.

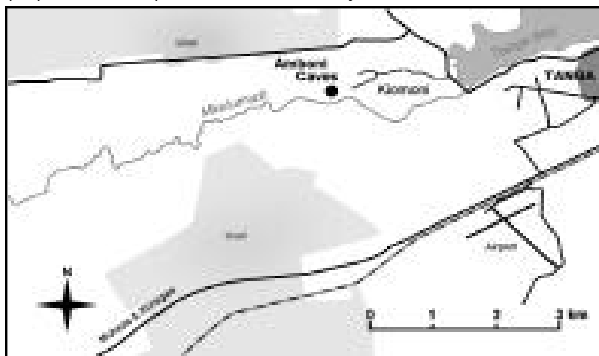
## Concluding remarks

Previous to this survey it was known that Tanzania had 10 galago species. With the addition of Thomas's galago there are at least 11 species of galagos in Tanzania, which is more than any other country. Minziro forest also contains Tanzania's only significant population of the black and white colobus subspecies *C. a. adolfi friederici*, the grey-checked mangabey *Lophocebus albigena* and the hammerhead fruit bat *Hypsignathus monstrosus*. As is reflected in other taxonomic groups, the Demidoff's and Thomas's galagos are typical Congolese species of which Minziro forests is the last sizeable remnant in Tanzania. Minziro forest is therefore of high biodiversity value for primates and other mammals, both nationally and globally. The issues of pit sawing and fire damage are serious management issues affecting Minziro Forest Reserve.

## Urgent Need for Restoration of the African Violet habitat in the Amboni Caves, Tanga, Tanzania

By Johanna Kolehmainen, Department of Ecology and Systematics, University of Helsinki and Raymond Killenga, Tanga Catchment Forest Office

African Violets (*Saintpaulia*) are one of the best selling ornamental plants in the world. The Amboni Caves near Tanga town are perhaps the best known and most interesting of the few lowland African Violet localities still existing in Tanzania. The Amboni Caves are one of the main visitor attractions in Tanga but African violets have been neglected as a tourist attraction as most visitors to the caves are not aware that there are African violets growing there. Due to forest clearance around the caves the habitat has been severely degraded and the population of African violets is now in a miserable state. Contrary to some recent speculation on the extinction of *Saintpaulia* at Amboni Caves, we report that a small population still grows in the immediate vicinity of the caves and that restoration of the population is possible and well justified.



A Map showing the location of Amboni Caves and Mkulumuzi River

The population of African violet (*Saintpaulia ionantha*) grows on limestone rock faces in the immediate vicinity of the Amboni Caves along the Mkulumuzi River ca. 5 km to the west of Tanga. Plant collectors, professional botanists and other nature explorers have visited the site since the late 1880's when African violets were first found in the coastal forests near Tanga. In addition to their biological value, the Amboni Caves have important cultural functions. The caves have religious significance for local people.

The African violet population of the Amboni Caves was surveyed in late September 2003 as part of the activities of the pilot *Saintpaulia* Conservation Project which is a joint initiative of the University of

Helsinki Botanical Garden, the Finnish *Saintpaulia* Society, the Tanga Regional Catchment Forest Office and Amani Nature Reserve. African violet individuals were found to occur along a 300 metre stretch along the limestone rock face of the Caves Conservation Area. Altogether 402 adult plants were recorded in the vicinity of the caves, of which 115 were bearing flowers or fruits. Moreover, 170 seedlings were found near fertile adult plants. Small patches and scattered individuals were also found along the Mkulumuzi River about 2,5 km to the west of the Amboni Caves. The plants further up the river were found to have characteristics of *S. diplotricha*.

The Amboni Caves and the Mkulumuzi River habitat is badly altered as forest is almost totally cleared except for a few trees growing on the base of the limestone outcrops. In the absence of sufficient shade, scattered African violet individuals are persisting under the shade of small shrubs, climbers and large herbs hanging from the upper part of the rock. Because of lack of tree canopy, the habitat is very dry, thus many of the African violets were stressed due to water shortage and excess light. There are very few suitable sites for the regeneration of the African violet so the few seedlings were confined to small terraces of the rock face where, due to accumulation of humus, conditions are more stable for seedling establishment. Rooting of leaf propagules, a common means of vegetative regeneration in the humid mountain forests, was not observed at the Amboni Caves.

Most of the lowland forests, including forest around the Amboni Caves, has been cleared during the last 100



A view of the Mkulumuzi river valley. Photo by Johanna Kolehmainen

years and unsustainable use of the forest continues as most of the remaining forest has no protected status. Collection of firewood, tree felling for charcoal production and forest clearance for agriculture are the main threats, along with pole cutting and occasional pitsawing. Limestone quarrying which takes place to the north and east of the Amboni Caves Conservation Area is also a threat to the African violet populations, which are dependent on the limestone outcrops for substrate. The Amboni caves are protected under the Antiquities Department of the Ministry of Education and Culture, but the vegetation around the caves is not included within the protected area. In fact, the Antiquities Department has recently cleared more trees from the immediate vicinity of the caves entrance to make the caves more enticing for tourists.

Unless a habitat restoration programme is started it is possible that African violets will go extinct in the Amboni Caves and the whole Mkulumuzi River gorge within a few years. Systematic monitoring of plant numbers has not been conducted but the number of African violet individuals at the Amboni Caves is known to have declined dramatically in the past five years. A habitat restoration programme would ideally involve the following activities:

- Planting of indigenous trees to restore forest around the Amboni caves and in the whole Mkulumuzi River valley
- Artificial creation of favorable micro habitats for African violet seedling establishment
- Survey and demarcation of new conservation area boundary
- Increasing awareness of the importance of the conservation of the Mkulumuzi riverine forests

The conservation effort will not be sustainable without incorporation of the local communities, thus we recommend the following community activities:

- Reducing pressure on the remaining riverine forest patches by establishing tree nurseries and woodlots
- Facilitating alternative income generating strategies such as sustainable agriculture, beekeeping and tourism

The Amboni Caves and the Mkulumuzi River valley have all possibilities to become a commercially important tourist

attraction with educational, recreational and scientific function as it harbors beautiful riverine landscape with many poorly studied rare species of plants, birds, mammals and reptiles. A tourism development project should include:

- Improvement of visitor services and marketing, and linking with tour operators
- Establishment of nature trails with camping and picnic sites in the river valley
- Visitor guiding and selling of crafts by local communities
- Information displays about the geology and the spiritual uses of the caves and the surrounding nature
- An in situ management project to restore the African violet population could be a special attraction to educate visitors about African violet and plant conservation in general

Such conservation and community development project would ideally be conducted in close collaboration with the Antiquities Department and with Tanzania Forest Conservation Group. Other relevant stakeholders are the Tanga Catchment Forest Office, and Tanga and Muheza District Councils and the Amboni Ltd. which is a major land owner in the area.

The few existing African violet localities in the coastal forests of Tanzania should be surveyed and the habitats conserved in the immediate future as they are highly threatened because of the unsustainable exploitation of the remaining forest patches. The coastal African violet species are indispensable components of the genus since they are genetically distinct from the African violets of the Eastern Arc mountains.



*Saintpaulia ionantha* at Amboni Caves. Photo by Johanna Kolehmäinen

## 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 km<sup>2</sup>, 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](http://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 km<sup>2</sup> of forest, of which around 15,000 km<sup>2</sup> was left in 1900, and a maximum of 5,340 km<sup>2</sup> 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](http://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

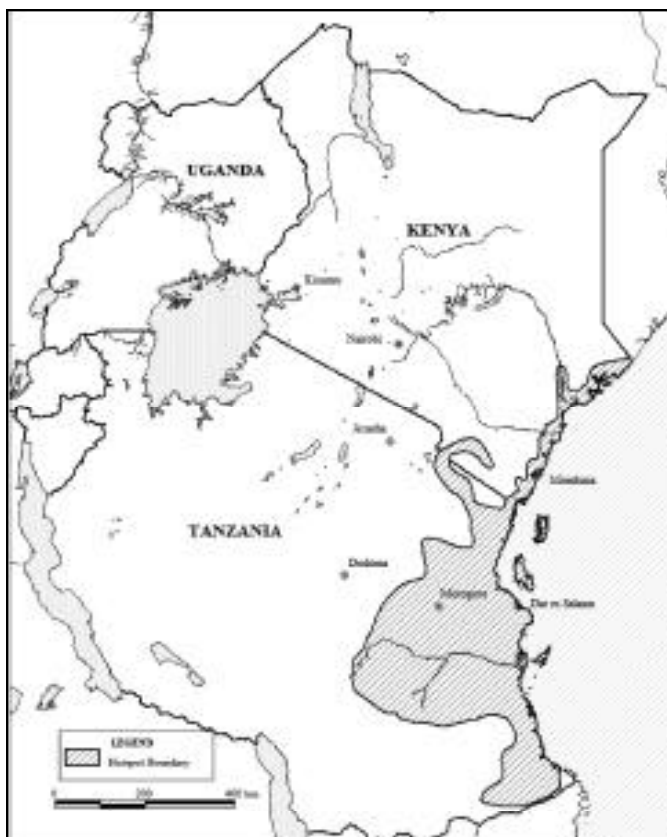
The investment profile developed for CEPF-funding used data on the distribution of species, habitats, threats, and existing projects to set priorities for conservation investment within this hotspot. The CEPF investment of \$7 million over the next 5 years will be available to civil society institutions (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](http://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](http://cepf.net) - Eastern Arc and Coastal Forests Hotspot profile).*

## TFCG NEWS

### Butterfly project receives support from UNDP

By Amiri Said, Assistant Field Officer, TFCG - Amani Butterfly Project,



Butterfly farmers in Amani with food plants for the butterflies. Photo by Theron Morgan-Brown

The Tanzania Forest Conservation Group, through the Amani Butterfly Project, has been training men and women living near to the Amani Nature Reserve in the East Usambaras to farm butterflies for sale. These butterflies are sold to butterfly houses and collectors around the world. Revenue from the sale of the butterflies can make a significant contribution to the household incomes of farmers living near to the biologically important forests of the East Usambaras. In this way the project aims to encourage people in these communities to promote the conservation of the East Usambara forests as they depend on the forests as a source of food plants for the butterflies. In September 2003, the UNDP Small grants programme agreed to support the Amani Butterfly Project with start-up funds. The project has also received support from the Muheza District Council and the Diplomatic Spouses Group.

In November 2002 TFCG began to discuss with the Wildlife Division an appropriate permitting process as it is the first official butterfly farming project in Tanzania. In November 2003 the Director of Wildlife issued a



The butterfly cage at the Amani Butterfly Visitor's Centre. Photo by Theron Morgan-Brown.

permit for the project to farm and export butterflies. The project has had interest from many buyers and despite a year of waiting for the permit, the farmers are now reviving their activities in order to start exporting.

For each pupa sold the Wildlife Division will receive TSh 104 although there are complaints from the communities that this figure is too high given that the animals are farmed and not 'wild'.

The Amani Butterfly Project has also opened a visitors centre including a large enclosure filled with butterflies and flowers. The Centre welcomes all visitors. It is located in Shebomeza approximately 8 km after the Amani Nature Reserve headquarters in Amani Village in the Muheza District. All are welcome. You can also find out more about the butterfly project at [www.amanibutterflyproject.org](http://www.amanibutterflyproject.org)

### Find out more about TFCG at our new web site

The Tanzania Forest Conservation Group has launched its official website at [www.tfcg.org](http://www.tfcg.org). On the web site you can get information on our projects and find out about the Eastern Arc and Coastal Forests. You can also access the Arc Journal and our coastal forest poster. Karibu!

### No Burning in Bungu: Bungu Division in Tanga gets serious about fighting forest fires

By Simon Mosha, Field Officer – West Usambaras, Tanzania Forest Conservation Group

Forest fires are one of the main threats to Tanzania's high biodiversity forests. During 2003, the risk of fire was exacerbated by low rainfall and TFCG received reports of serious fire outbreaks in the Udzungwas, Ulugurus and Usambaras.

Fire in the evergreen forest of the Eastern Arc can be avoided. For fire to be avoided however stakeholders need to be serious about tackling the issue. In Bungu Division in Korogwe District government, communities and other groups have been getting serious about tackling fire.

On 12th November 2003, 220 people met in Bungu to decide on what action they could take to prevent fires in their Division. Bungu includes the important Ambangulu Forest home to rare species such as the Usambara Eagle owl and the torrent frog both endemic to the Eastern Arc. The meeting was organised by the Tanzania Forest Conservation Group. Participants recognised that forests were essential for the fight against poverty in Bungu and that it was their responsibility to be proactive in protecting them. The meeting was attended by the District Commissioner,

Captain Nyangoli, the District Executive Director and other senior district officials. Representatives from each of the 33 villages in Bungu as well as Division Officers, Ward Officers and religious leaders also attended.

Participants agreed on a 'zero tolerance' policy for uncontrolled burning. Korogwe already has strict by-laws on uncontrolled burning and the senior District government staff agreed that these must be rigorously applied to protect the majority of people from the carelessness of a few.

They also agreed that it was important that everyone in the Division is aware of the importance of avoiding uncontrolled fires. Each village agreed to hold a village assembly meeting on the 'No Burning in Bungu' strategy. Posters warning people of the dangers of burning would also be displayed.

Fires were not seen in Bungu Division after the meeting on the 12th although in other areas of Korogwe burning continues. Participants in the meeting agreed that if the 'No burning in Bungu' strategy is successful they will repeat the process in other Divisions so that Korogwe can become a District free of forest fires and an example to the rest of Tanzania.

### **Environment and poverty alleviation: making the linkages in the West Usambaras**

*By Simon Moshia, Project Officer – West Usambaras, Tanzania Forest Conservation Group*

Since 1998 the Tanzania Forest Conservation Group has been promoting forest conservation in the West Usambaras. The project has assisted stakeholders near to the important Ambangulu Forest to develop a management system and lobbied successfully for a ban on logging in Dindira ward. Forest destruction has reduced. But so have the incomes to some households formerly dependent on harvesting forest products.

With financial support from IUCN-Netherlands, TFCG has been facilitating the development of community credit and savings societies in eight communities. The aim of this activity is to help those communities who have agreed to conserve the forests of the West Usambaras to engage in other income generating activities. The loans come with some environmental conditions particularly that the enterprises supported by the loans should not cause damage to the environment and that participating groups should show that they are getting their wood from sustainable wood supplies such as a household woodlot.

To support this activity TFCG has linked up with a specialist microfinance NGO, CEMIDE who have provided in-depth training to members of the savings and credit groups. The groups expect to start issuing loans by May 2004. Some of the activities for which the groups are seeking support include vegetable gardens, dairy goats, chickens and improved tea production.

Through participatory monitoring TFCG will closely

monitor to what extent the loans are bringing gains to the environment and towards alleviating poverty. We hope to share our experiences of this initiative with you in future editions of the Arc Journal.

### **Tea Cooperative in the West Usambara takes important steps to conserve their forest**

*By Simon Moshia, Project Officer – West Usambaras, Tanzania Forest Conservation Group*

Since 2002 the Tanzania Forest Conservation Group has been working closely with the Sagara cooperative in Lushoto District. The Sagara Cooperative owns an important area of forest in the West Usambaras. The Sagara Forest is adjacent to Mazumbai Forest which is managed by Sokoine University of Agriculture and has been the focus of much research. It is also adjacent to Baga Catchment Forest Reserve.

The forests of the West Usambaras are home to at least 11 vertebrate species endemic to the Eastern Arc. This includes the rare Banded Green sunbird. In the West Usambaras this species is only found in the Mazumbai forest. The forest at Mazumbai is also home to the Usambara endemic frog *Arthroleptis tanneri*. Since 2002, the Tanzania Forest Conservation Group has been working with communities in the West Usambaras to improve the conservation of the Sagara Forest which adjoins Mazumbai.



Members of the Sagara cooperative meet to discuss the future of their forest. Photo by Simon Moshia

In 2002, the Sagara Cooperative requested assistance from TFCG to conserve their forest. TFCG has responded by assisting them to develop a management strategy for the forest. The Cooperative plan to gazette their forest as a 'Community Forest', a new category of forest reserve recognised in the Forest Act 2002. Over the last six months with assistance from TFCG, the members of the cooperative have surveyed and mapped their forest; planted the boundaries and drafted a management plan. They now plan to conduct a simple resource assessment before applying to the District for registration of their forest reserve.



## TFCG supports communities in the East Usambaras to benefit from forest biodiversity

The Tanzania Forest Conservation Group has been looking for ways in which communities can gain direct benefits from forest conservation. Butterfly farming, as described above, is one example of this. Another is the harvesting of the fruits of the *Allanblackia stuhlmannii* tree. The fruits of this tree can be used to produce an oil which is similar to that produced by oil palm and can be used in the production of margarine. TFCG has recently entered a partnership with Unilever to investigate how this oil can be harvested to benefit communities and conservation in the East Usambara Mountains.



An *Allanblackia stuhlmannii* tree. Photo by Harrie Hendrickx

## What's happening in the South Nguru Mountains?

In the last edition of the Arc Journal, we reported that TFCG was planning to support conservation activities in the South Nguru Mountains in Mvomero District. Since then DANIDA have confirmed that they will support the programme. The programme is a partnership between two East African NGOs the Tanzania Forest Conservation Group and NatureUganda and three Danish NGOs (CARE, WWF and DOF/BirdLife) with technical support from the Institute of International Studies in Copenhagen. TFCG is responsible for the implementation of activities in the South Nguru Mountains and Nature Uganda will be supporting similar interventions in the Kasyoha-Kitomi landscape of Uganda. The funds that have been confirmed are for a planning and design phase of 30 months starting from 1st January 2004. The overall objective of the project is:

'Within two target landscapes in Uganda and Tanzania the livelihood security of poor, natural resource dependent households is improved, biodiversity and environmental services of national and international importance are conserved and the capacity of civil society and government institutions to design and implement effective ICD programmes is enhanced.'

The programme adopts a 'landscape planning' approach and one of the initial tasks of the programme is to describe and define the two landscapes. Over the next six months TFCG will be investigating the socio-economic, ecological, cultural and institutional characteristics of the South Ngurus. This information will provide a sound foundation on which we can build a strategy for improving the livelihoods of the communities living in the area as well as implementing more effective conservation.

## TFCG's Community Forest Conservation Network brings together stakeholders from 19 regions of Tanzania

By Adrian Kahemela, Network Officer, TFCG.

TFCG is committed to ensuring that there is strong communication between communities and other stakeholders who are involved in Participatory Forest Management. Between 8 – 10 October 2003 TFCG organized the third Annual General meeting of the Community Forest Conservation Network. The workshop was held in Iringa and involved 141 participants of whom 67% of the participants were from forest adjacent communities who are currently involved in participatory forest management. The rest of the participants were representatives of NGOs, District Councils and Government Departments.



The Chairperson of TFCG, Patrick Qorro addresses participants in the Network Workshop.

The official opening of the workshop was made by Hon. Baltazari Minja, the Kilolo District Commissioner and the official closing of the workshop was made by the Acting Regional Commissioner for Iringa, Hon. Paskali Muhongole.

The theme of the workshop was "Changing roles in participatory forest management in Tanzania". The two objectives of the workshop were:

- To improve communication and relationships between stakeholders involved in PFM.
- To share simple and effective methods of conducting participatory evaluation of forest resources for management planning.

Following presentations of experiences from around the country and further discussions, the participants agreed seven key recommendations to FBD:

1. The FBD should provide training for District Councils to enable them to implement and support participatory forest management more effectively.
2. The Ministry of Natural Resources and Tourism and other ministries should improve co ordination and communication between stakeholders so that people involved in PFM can receive timely feedback. In particular there is a need for improved communication between FBD and Natural Resources staff employed by District Councils.
3. The Forest and Beekeeping Division should prepare guidelines that could help improve the communication and co ordination system in implementing the Forest policy to ensure that communities are well informed.
4. Due to the ongoing forest fires taking place all over the country this year and the years back, the government should enforce the fire by laws
5. All committees involved with activities related to participatory Natural resources Management should be identified as Environmental Committees.
6. The District Councils should strengthen the co ordination of government and non-governmental institutions within their jurisdiction so as to maintain their implementation strategies and monitor their roles and responsibilities in the Districts.
7. The government should increase the efforts of revenue collection in order to be able to provide a reasonable bonus to areas that participate fully in the conservation of natural resources.



Participants from 19 regions met for the 2003 Annual Network Workshop in Iringa.

The workshop was supported by the Misitu Yetu Project, the PFM Component of the National Forest Programme and the Tanzania Forest Conservation Group. Proceedings of the workshop are available from the TFCG web site [www.tfcg.org](http://www.tfcg.org)

## **TFCG assists FBD to prepare NFP communication strategy**

The Tanzania Forerst Conservation Group has recently assisted the National Forest Programme (NFP) to develop a communication strategy. The strategy aims to guide the NFP towards more effective communication with stakeholders. TFCG consulted a wide range of stakeholders including communities, District governments, donors, NGOs and central government to find out what communication is needed and how such communication can be conducted in an effective way. The strategy includes an action plan on communication on participatory forest management. The strategy is currently being finalized within FBD.

## **TFCG encourages communities to teach each other about the benefits of Participatory Forest Management**

With financial support from the JJ Charitable Trust, the Tanzania Forest Conservation Group has been organising a series of study tours, environment days and stakeholder workshops to raise awareness about forest conservation and participatory forest management amongst stakeholders in the Eastern Arc and Coastal Forests.

The study tours provide an opportunity for communities and District staff to learn from other communities and districts about participatory forest management and related issues of natural resource management. This approach of encouraging community – community learning has proved an effective way in which communities can share experiences and understand the realities of the costs and benefits of implementing participatory forest management. The stakeholder workshops and environment days have encouraged improved communication and understanding between local stakeholders in forest management.



Community members from Coast Region travelled to Arusha to learn about improved livelihoods and forest management.

## **TFCG moves office**

In 2003 TFCG moved from COSTECH to new offices on Old Bagamoyo Road in Mikocheni B, Dar es Salaam. If you are coming from the Ali Hassan Mwinyi road take the Old Bagamoyo Road towards Kawe. We are on the left hand side about 800 m after the BP junction with Garden Road.

## Round Wood Export from Southern Tanzanian Coastal Forests

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

Perhaps the most urgent conservation challenge facing the coastal forests of southern Tanzania is that of round wood logging and export. This logging is affecting public land forests and also forest reserves, including those where forest management plans have been agreed that prevent logging.

A visit to the forests of Rufiji District in late November 2003 showed the extent of the problem. Over a period of two days nine large lorries, often with a trailer, each carrying many tens of large logs were observed in Ikwiriri, Nyamwage, Ngulakula and on the road between Kibiti and Dar es Salaam. Moreover, in the villages both north and south of the Mkapa bridge piles of large logs were ready for collection by the lorries. In some villages there were over 100 round wood logs ready for transport. We also visited Namakutwa/Namuete, Kiwengoma, Ngumburuni and

logged, despite the agreed management plan that did not allow logging. Transect data from Namakutwa indicated a logging intensity of 29 trees per hectare of forest, some 14.2% of the trees counted along the transects. Large numbers of logs were observed in Mbwara Village adjacent to Namakutwa Forest Reserve and a tractor was observed in the village moving logs. One characteristic of the logging was that only the large basal part of the trunk had been removed and the rest of the tree, including large branches with much useful timber, was left. The conclusion was that only the highest value portions of the most valuable tree species were being illegally harvested from this forest reserve.

Available information indicated that many of the logs were transported to Dar es Salaam under the cover of darkness. Further south round wood log movements to



a) Logs on truck at Nyamwage village; Photo by: Nike Doggart



b) Round wood logs ready for collection at Mbwara village close to Namakutwa Forest Reserve; Photo by: Nike Doggart



c) Logged tree within Namakutwa national Forest Reserve; Photo by: Nike Doggart



d) Logged Mpingo tree within woodland elements in Ngumburuni national forest reserve; Photo by: Nike Doggart

Ruhoi forest reserves, including those where WWF operated a forest conservation project until June 2001, and where there was no logging when those projects terminated. The WWF project worked with District Authorities and the villages of the Matumbi and Kichi Hills to gazette new Village and Local Area Authority Reserves and also to develop management plans for Namakuwa/Namuete and Kiwengoma national forest reserves. The November 2003 visits showed that Namakutwa/Namuete forest reserve was being heavily

ports of Kilwa and Lindi were also reported. Links with traders in the Far East were suggested and a connection to Zanzibar was indicated by the presence of Zanzibar registered lorries carrying logs north towards Dar es Salaam.

The scale of the logging was well publicised in the media. The Forestry and Beekeeping Division responded by tightening a ban on round wood logging and export (based on the ban of J.A. 109/168/01/134 of

September 2003). However, the ban proved difficult to enforce as some of the logging was legitimate and from public land forests. The ban was therefore overturned and round wood logging and export was once again permitted in February 2004.

It might be argued that the logging is a source of revenue for impoverished Districts and poor people in



e) Logging truck between Kibiti and Dar es Salaam; Photo by: Nike Doggart

these parts of southern Tanzania. However the scale of these benefits is not known, and the export of high value timber as round wood logs does not allow processing to be developed within Tanzania, the only sure way to capture the full value of the timber. It is also likely that those owning the transport and involved in selling the logs outside of Tanzania have accumulated much of the benefit from selling this wood resource, which is probably only a fraction of the true value of the

wood once it is processed into finished products.

As it is now some months since this visit to the area, and because round wood export is allowed once more, further monitoring of this issue is needed. In particular there is a need to understand better the rates of logging (legal and illegal) in the forest reserves and general lands of Rufiji, Kilwa and Lindi Districts, and the degree to which these logs are being exported from Tanzania as relatively low-value round wood. A further issue worthy of investigation is the link between the new round wood export industry in Tanzania and the recent ban on logging in China. The demands from within China for timber are now being met from outside the country, and this may include some of the wood from the coastal forests and woodlands of eastern Tanzania.

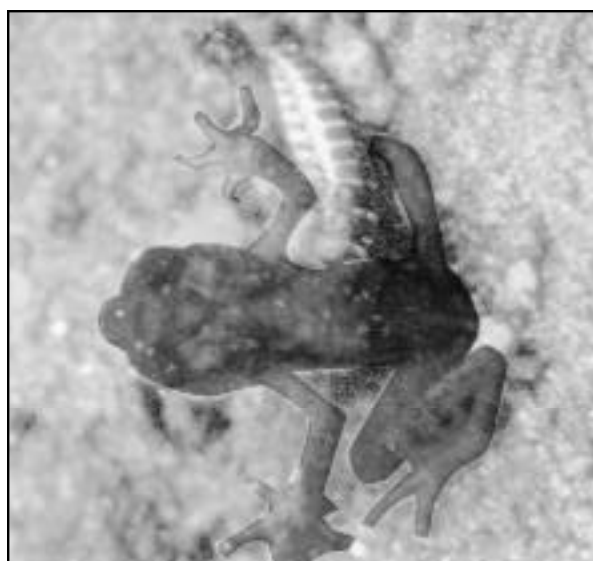


f) Named log in Mbwara village log pile. Photo by: Nike Doggart

## The Kihansi spray toad comes under threat again

Over the last few months, the last wild populations of the Kihansi spray toad appear to have been decimated by a fungal infection. The Kihansi spray toad (*Nectophrynoides asperginis*) is one of the most endangered vertebrates in the world. Its range is restricted to 2 ha spray zone around the Kihansi and Mhalala waterfalls in the southern Udzungwa Mountains. Since April 2000, 90% of the water that formerly maintained the toad's habitat has been diverted into a tunnel to power the Lower Kihansi Hydropower Project plant. Efforts to mimic the toads natural habitat using artificial sprays were initially successful and the population increased from approximately 2000 to 17,000. However in January 2004 herpetologists from the Wildlife Conservation Society in New York visited Kihansi and found only five animals. The cause for the population decline appears to be a chytrid fungus '*Batrachochytrium dendrobatidis*', which has had severe negative impacts on amphibian populations elsewhere in the world. The Critical Ecosystem Partnership Fund is sponsoring research to investigate the status of the populations. It is possible that the stress caused by the changes in the toad's habitat from the hydro-power plant have caused the animal's to be more susceptible to such an

infection. Fortunately, captive populations of the Kihansi spray toad have increased at the Wildlife Conservation Society (the former Bronx Zoo). Nonetheless Sam Lee from WCS commented that "This is our last-ditch effort. This is our Alamo. It's a little too late, basically, or maybe a lot too late."



On a recent visit to Kihansi only five spray Toads were found. Photo by: Simon Milledge

## Outcomes of the 5th World Parks Congress, Durban

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

Every 10 years the global conservation community gathers at an international Parks Congress, to assess the status of the global network of protected areas. The fifth such meeting was held in September 2003 in Durban, South Africa, the first time on the African continent. Over 2,500 delegates from around the world worked for 10 days on a range of themes related to the location, establishment, management, financing, and benefits of protected areas. The congress emphasized the importance of these issues to broader societal goals such as equity, good governance, and poverty alleviation.

Key issues emerging from the congress, relevant to forest conservation in Tanzania were.

Building a comprehensive global network of protected areas. The congress showed that governments, communities and private interests have established over 100,000 protected areas, covering 18.8 million square kilometres (<http://www.unep-wcmc.org/>). This is slightly over 10% of the earth's land surface – the major target established by the 4th Parks Congress in 1992. Tanzania has already achieved this percentage of protected land, but some of the Tanzanian reserves are not recognised formally as protected areas. A major example is the Tanzanian network of Forest Reserves. These reserves have not been given an IUCN Protected Area code and hence in strict terms they are not regarded as protected areas. However, this impression is misleading. The Tanzanian catchment Forest Reserves contain most of the forest on the Eastern Arc – no exploitation is allowed – and hence they fit the criteria for IUCN Protected Area code IV. Many other Forest Reserves in Tanzania would fit within IUCN Protected Area code VI. The Tanzanian Forest and Beekeeping Division could request the World Commission on Protected Areas to recognise its Forest Reserves in this way to ensure that these important reserves are regarded as 'protected areas'.

Analyses presented at the Congress showed that the current protected area network fails to contain many of the world's species (see <http://www.biodiversityscience.org>), and it was concluded that the targeted creation of new protected areas is a conservation priority for the next decade. Assigning IUCN Protected Area code IV to the Tanzanian Catchment Forest Reserves, and IUCN code VI to relevant Forest Reserves containing coastal forest, would close many of the reserve gaps identified for Tanzania. An important role in improving the network of protected areas was also identified for community-

based or privately-owned reserves.

Management and Finance. The Congress showed that the funding available for protected area management is grossly inadequate. An estimated \$20 billion US is required annually to manage a globally comprehensive terrestrial protected area network, with a further \$10 billion for marine protected areas. Currently there is an estimated shortfall of funding of around \$20 billion per annum. Developing novel systems of financing through case-specific combinations of private business partnerships, payments for ecosystem services, trust funds, and ecotourism operations are needed to improve both the level and stability of funding.

Mainstreaming of protected areas into national development planning. The Congress reviewed efforts to broaden protected area management and integrate it with the needs of local communities. The strong presence of indigenous peoples, mobile peoples and local communities provided new perspectives, and it was recognised that the full value of parks included cultural and sacred elements making protected areas relevant to a wider community. Calls were made to recognise the critical role of protected areas for both biodiversity conservation and sustainable development, and for protected areas to play a more central role in national planning. Poverty was seen as a major cause of environmental degradation yet many of the costs of conservation within protected areas remain with the adjacent communities. The congress examined innovative market mechanisms where economic benefits of protected areas could be returned to the rural poor, for example through water payments, biodiversity markets and carbon sequestration as well as more normal tourism and revenue-sharing approaches. Working to support attempts to alleviate poverty was regarded as one of the major challenges facing African protected areas over the coming decade.

Further information on the outputs of the 5th World Parks Congress can be found on <http://www.iucn.org/themes/wcpa/wpc2003/index.htm>.

If the goals laid out in Durban are met, the next World Parks Congress in a decade from now will be able to show that global biodiversity is well represented within a network of protected areas that, as an accepted component of global land use, and contributes meaningfully to the economic and societal well-being of the world's people.

## News of the Arc

### Funding for the Eastern Arc and Coastal Forests comes on line from the Critical Ecosystem Partnership Fund

The Critical Ecosystem Partnership Fund has announced its support for two projects in the Eastern Arc and Coastal Forests. Support for other projects will be announced over the next few months.

The Critical Ecosystem Partnership Fund (CEPF) is a joint initiative of Conservation International, the Global Environment Facility, the Government of Japan, the John D. and Catherine T. MacArthur Foundation and the World Bank. CEPF invests in biodiversity hotspots, the world's biologically richest and most threatened areas. The partnership focuses on hotspots in developing countries and targets priority areas within these hotspots for maximum impact. CEPF has committed US\$ 7 million to the Eastern Arc and Coastal Forests of Tanzania and Kenya.

CEPF held a stakeholder workshop in Tanzania in 2003. At this workshop, stakeholders decided on five 'strategic directions' which form the basis for CEPF's investment in the area. The fund is open to applications from civil society. For more information visit [cepf.net](http://cepf.net)

### Hope for Magombera Forest

Over the last two years the Arc Journal has been following the situation in Magombera Forest. This forest is close to the Great Ruaha River at the base of the Udzungwa Mountains. The forest came under threat during August 2002 when there were plans to relocate farmers from the Kilombero Sugar Company into the forest. The forest is important for its populations of *Iringa* red colobus monkeys and for its two strictly endemic plant species.

TFCG recently received a copy of a letter from the Minister for Natural Resources and Tourism, ZAKIA MEGHJI to the President of Conservation International, Russell Mittermeier stating that Magombera forest would be protected as a Nature Reserve. We congratulate the Minister for her commitment to the conservation of this important forest and encourage the relevant authorities to formalise the Reserve's legal status.

The status of the nearby Kalunga Forest remains less hopeful. There are reports that this forest is now almost completely cleared and has passed into private ownership. Nonetheless, on a recent visit to Tanzania, the primatologist Thomas Struhsaker commented that, 'There were many Udzungwa red colobus living there. The monkeys were abundant and more easily viewed than any place I have been in the Udzungwas'. However



given the destruction of their habitat, the future of these animals remains unpromising. The *Iringa* red colobus is listed as threatened by the IUCN.

### Eastern Arc Mountain Forest Conservation and Management Project (EAMFCMP) Operationalizes

The UNDP/GEF EAMFCMP project to build a conservation strategy for the Eastern Arc Mountains is starting its work. The Eastern Arc Trust Fund and the Uluguru Project have already started. The educational and advocacy, socio-economic element and the overall strategy development components are also starting and the entire project will be operational by the second quarter of 2004. The Tanzania Forest Conservation Group is responsible for the implementation of the information, education and communication component of the Strategy. Further news on the progress of this important project will be reported in future editions of the Arc Journal.

### Churamiti maridadi – a new species of tree toad found in the Ukaguru Mountains

During an expedition to the Ukaguru Mountains to look at small mammals, Dr Bill Stanley of the Field Museum

of Natural History in Chicago discovered a very distinctive tree toad. Two animals from the new species were found. One animal was deep metallic yellow on the back with red to pinkish on the upper surface of the limbs. The other is olive green on the back with pale blue-green limb colouration. The scientific name stems from Swahili "Chura miti" meaning tree toad and maridadi meaning beautiful. The description of the new species is published in the *African Journal of Herpetology* 51 (2) 121-127.

### A new primate from the Taita Hills, Kenya.

Results from several recent field visits to the Taita Hills in South-east Kenya have revealed a new but unidentified galago species. The galago which was seen and its vocalisations recorded is thought to belong to the dwarf galago genus *Galagoidea*. Until further research is conducted it is not possible to confirm the species however it appears to be distinct from other species of dwarf galago. These animals were only

observed in the two largest remaining forest patches in the Taitas: Mbololo Forest (168 ha) and Ngangao Forest (92 ha). Given the tiny habitat remaining this galago population is likely to be highly threatened. The results of this research have recently been published in the *Journal of East African Natural History* 91: 1 – 13 (2002).



*Galagoidea orinus*. The new Taita galago is also from the genus *galagoidea* Photo by: Nike Doggart

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## National Coastal Forest Task Forces become active in Tanzania, Kenya and Mozambique

Tanzania, Kenya and Mozambique have established national Coastal Forest Task Forces. The vision of these task forces is that:

'Coastal Forests of eastern and southeastern Africa are conserved, managed and sustainably utilized for the benefit of present and future generations.'

In Tanzania, stakeholders drawn from government, civil society and the donor community elected members to join the National Task Force. The Task Force is chaired by the Forestry and Beekeeping Division. Other members include PO RALG, Vice President's Office, UNDP, the Tanzania Forest Conservation Group, the Wildlife Conservation Society of Tanzania and CARE-Tanzania. The task forces in the three countries have been facilitated by WWF-EARPO. On 5th March, representatives of the three National Task Forces met in Dar es Salaam to form a Regional Coastal Forest Task Force. The three countries have prepared a proposal to the EC in order to raise funds to promote good governance of coastal forests primarily through capacity building on conservation and sustainable management of resources. Kenya and Tanzania have also prepared proposals for GEF medium sized grants. In Tanzania, these funds would support activities in Rondo, Matumbi Hills and Zanzibar.

## The Tanzania Forest Conservation Group

TFCG is a Tanzanian non-governmental organisation first established in 1985. Our mission is 'to promote the conservation of the high biodiversity forests in Tanzania'.

### TFCG's Programmes

#### Participatory Forest Management

The future of Tanzania's forests depends on cooperation between stakeholders. TFCG has field projects in the East Usambaras, West Usambaras, Udzungwas, South Ngurus and Coastal Forests (3). At these selected sites TFCG is promoting participatory forest management and building the capacity of forest dependent communities and other stakeholders to engage in effective forest management. TFCG also supports a community conservation Network linking communities from around Tanzania who are involved in PFM.

#### Communication and awareness raising

TFCG is promoting improved communication about the Eastern Arc and Coastal Forests through projects such as the Information, Education and Communication Component of the GEF/UNDP

Eastern Arc Strategy. TFCG also provides environmental education to primary schools in 30 villages in the Eastern Arc and Coastal Forests.

#### Livelihoods

TFCG is committed to improving the livelihoods of forest adjacent communities. Some of our current activities to achieve this include butterfly farming with communities in the East Usambaras; credit and savings schemes in the West Usambaras, Udzungwas and Coastal Forests; training in income generating activities including beekeeping, fish farming and horticulture and investigating livelihood opportunities of *Allanblackia* collection. TFCG also supports tree planting at all of its field sites.

#### Advocacy

TFCG aims to promote a more effective policy environment for forest conservation as well as responding to specific issues where forests with critical biodiversity are under threat.

#### Research

TFCG supports research into the biodiversity and conservation of the Eastern Arc and Coastal Forests. Ongoing research projects that we support include surveys of plants, birds and galagos

### TFCG is grateful to the following for their support

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M.A. Dobie  
UNDP Small Grants Programme  
UNDP/GEF  
Unilever

If you would like to help in the conservation of Tanzania's high biodiversity forests, please visit our web site to find out more about how you can support us at [www.tfcg.org](http://www.tfcg.org)

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## The Arc Journal: Newsletter of the Tanzania Forest Conservation Group

The Arc Journal welcomes articles on forest conservation and biodiversity in Tanzania. If you would like to contribute, please send your article to the Editor on diskette or by e-mail and accompanied by drawings or good quality photographs.

Our next edition is due out in October 2004.

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Did you know that we also produce a Swahili newsletter called Komba?