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Green Gold: Ongoing efforts towards preventing illegal harvesting and exports of Tanzania's most valuable hardwoods

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One of the greatest challenges currently facing the environment sector is the rising harvest pressure for Tanzania's indigenous timber resources, especially those sourced from miombo woodlands and coastal forests in southern Tanzania. However, the Government has recently taken a strong stance on this issue and investment has increased in resources against illegal, unregulated and wasteful timber harvest and exports. In the past year, the Ministry of Natural Resources and Tourism have embarked on a series of initiatives following growing concerns over the levels of round wood exports and uncontrolled harvesting especially in southern Tanzania. Whilst the seizure of some 180 containers containing round and sawn wood at Dar es Salaam port were widely publicised, other equally commendable short-term measures have taken place albeit largely unrecognised. This article serves to provide a brief update on various interventions throughout this period. It also highlights some of the key challenges to ensure that future timber trade management is more proactive and strategic in the long-term.

Influence of urban markets, global demand and infrastructure development

Since the turn of the millennium, Tanzania has witnessed a rapid increase in demand for new hardwood species for both local and export markets. Due to the depletion of traditionally used species, lesser known timber species are now being harvested. For example, in Rufiji District, where conventionally popular hardwoods used for sawn timber such as *Milicia excelsa* (Kis. Mvule) and *Pterocarpus angolensis* (Eng. African Teak; Kis. Mninga) have been largely depleted through overexploitation throughout the 1980s and 1990s, species previously spared from harvesting are now in high demand. These include *Azelia quanzensis* (Eng. Pod mahogany, Kis. Mkongo), *Hymenaea verrucosa* (Eng. Gum copal tree, Kis. Mnangu), *Trichilia emetica* (Eng. Cape mahogany, Kis. Mlopolopo) and *Julbernardia globiflora* (Kis. Mtondoro).



Over 760 *Dalbergia melanoxylon* logs collected at Migeregere village, Kilwa District

Similarly, the recent and rapid increase in export demand for hardwood logs has led to increased harvesting in new species in Rufiji District following the depletion of *Swartzia madagascariensis* (Eng. Paurosa; Kis. Msekeseke). Such new species targeted for logs include *Millettia stuhlmannii* (Kis. Mpangapanga),

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Is enough being invested in Tanzania's Eastern Arc Mountains?

By Neil Burgess and Felician Kilahama, Conservation and Management of the Eastern Arc Mountains Forests, P.O. Box 289, Morogoro.

The Eastern Arc Mountains are a well recognised centre of species endemism and at least 800 plants and 100 vertebrate animals are only found in these mountains. Much has been written on the biological importance of these mountains and the threats they face in previous issues of the Arc Journal, but no assessment has been made of capacity of the various management authorities to protect these resources. A recent analysis published in the Journal Biological Conservation (Moore *et al.* 2004) calculates suggested management costs for effective management of different habitat types across Africa. These calculations suggest that African mountain forest habitats in the tropical region of the continent require around \$364 USD/km² (around 370,000 TSH/km²) per annum for effective management. In this paper we compare current funding levels in the Eastern Arc against this 'ideal', and also determine the current situation in terms of staffing, and equipment available to support the management of these reserves. Our focus has been on the capacity available at the District level, in recognition that this is increasingly the unit of administration at which management decisions are made and effective management capacity needs to be built.

What needs to be managed?

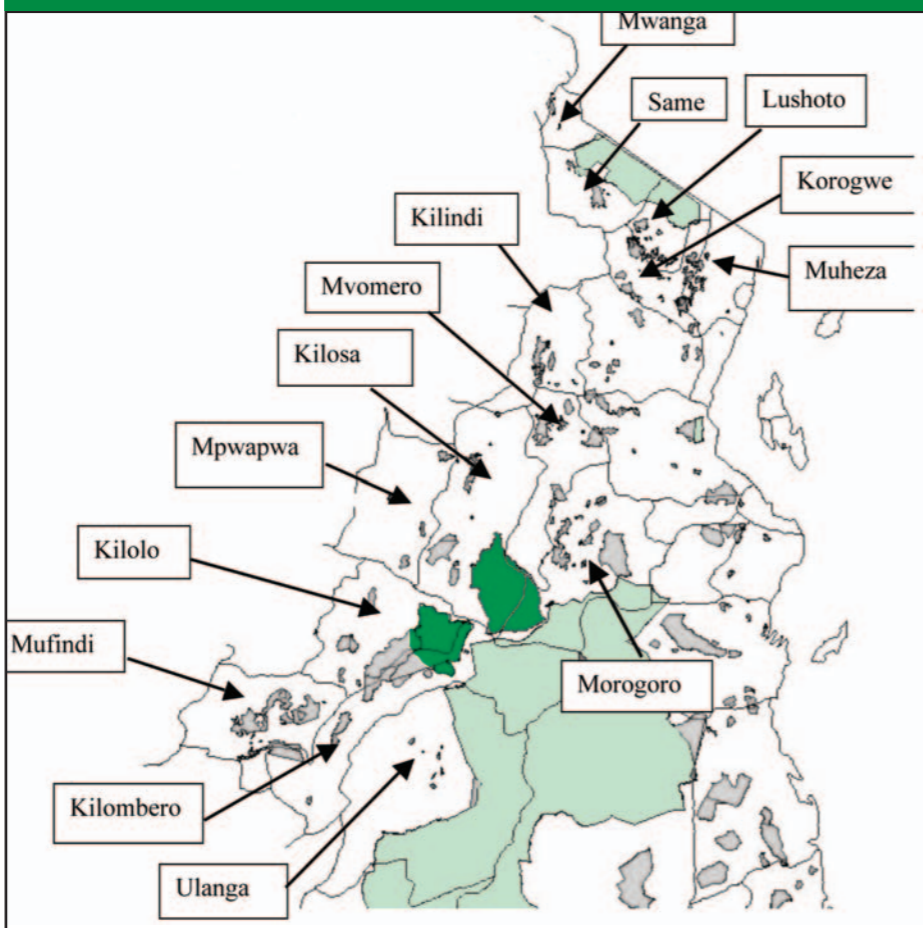
During visits to all 14 Districts containing Eastern Arc Mountain forests in the period January – November 2004, we interviewed most of the management agencies conserving these habitats and obtained information on the number of Forest Reserves in the Eastern Arc mountains. These data were then cross checked against the records of the Forest and Beekeeping Division in Dar es Salaam. Although there are differences in the data from various sources, our compiled information lists 105 national, 32 local authority and 6 gazetted village forest reserves that contain Eastern Arc habitats (Table 1). The existing reserves cover a total of 7400 km² of land. At least 40 other village forest reserves are also in the process of being declared. There is also Eastern Arc forest in the Amani Nature Reserve, in the National Parks of Udzungwa Mountains and Mikumi, and in private estates managed for tea, teak and oil palm production.

We have tried to obtain information on the area of each forest, but this proved difficult and for most Districts we have the area of different Forest Reserves and not forest cover. Across the Arc, forest may cover as much as 5,418 km², with the majority found in Morogoro Region (2,720 km²) (Figure 2a). The three Districts with the largest areas are Kilombero (1,193 km²) and Kilosa (805 km²) in Morogoro Region, and Kilolo (802 km²) in Iringa Region (Figure 2b). There are also many small forest patches that fall under the authority of clans, villages, families or individuals. In the North Pare Mountains there are 126 clan forests of total area 21.1 km² (mean 0.167 km²) and these are well-conserved.

What capacity is available for management?

During visits to each of the 14 Eastern Arc Districts, we interviewed most of the agencies managing these habitats and obtained information on their staffing strength, equipment and operational budgets. Similar information was also gathered for the NGO and donor-supported forest conservation projects across the Eastern Arc.

Figure 1. Map of the 14 Districts of the Eastern Arc Mountains of Tanzania, with the location of Forest Reserves (gray), Game Reserves (light green) and National Parks (dark green)



Staff Numbers

Across the entire Eastern Arc there are 79 foresters under the District Councils, 69 catchment forest officers at District level (not including regional catchment officers and their staff), 11 other central government forestry staff at District level, and 17 professional staff in Udzungwa and Mikumi National Parks managed by TANAPA. They are assisted by 199 forest attendants and office workers with on the job training, and 101 supporting staff within TANAPA. The highest number of foresters is found in Morogoro/Mvomero (50), and the smallest number in Mpwapwa (5) (Figure 3a). Staffing rates are much higher in the two national parks managed by TANAPA. Nine additional senior forestry staff and more than 50 other staff are also found at the regional level.

Equipment

Across all 14 Districts the forestry management authorities have the following equipment at their disposal: 24.5 vehicles (1.75/district), 42 motorbikes (3/district), 15 computers (1.1/district) and 4 photocopying machines (0.3/district). None of the Districts we visited had field equipment, such as tents, boots, field clothes, GPS units etc, although some is available in the relevant Regional Catchment Forest Project offices (Moshi, Tanga, Morogoro) and the Districts can borrow these if required. The two national parks have a similar number of vehicles, but fewer

motorbikes or computers.

Management Funds

The Tanzanian government pays the salaries of all the forestry staff across the Eastern Arc, totalling over 400 million TSH (more than \$400,000) per annum. However, the funding available to support forest conservation activities on the ground is limited. In total around 54 million TSH (around \$50,000) is provided by the Tanzanian government to forest operations within the 14 Districts supporting Eastern Arc forest (Figure 3b). At least as much funding again is available at the Regional level, especially within the Regional Catchment Forest project offices. The District level funding comes from two sources.

The District Natural Resource Offices receive funds from the District Council. In most Districts only around 1-3 million TSH per annum is provided (less than US \$3,000 USD). In three Districts no funds are provided at all because Natural Resources is not one of the five priority Ministries (agriculture, roads, water, health and education).

The second source of funding is from central government, either through the catchment forest project, or from the Forest and Beekeeping Divisions retention scheme. Up to 20 million TSH (around US \$20,000) per annum is provided to a given District from these sources.

Table 1. Number and Area of Eastern Arc Forest Reserves and National Parks

District	National Park (n)	National FR (n)	National FR area (ha)	Local Authority FR (n)	Local Authority FR (ha)	Village Forest Reserve (n)	Village Forest Reserve (ha)	Private Forests (ha)	Number of foresters
Mpwapwa		4	15,465	0	0	0	0	0	5
Kilolo		8 (includes 1 proposed)	80,554	0	0	0	0	0	6
Mufindi		6	21,812	15	1,547	2	282	13,450	28
Same		2	19,748	7 (plus 2 prop)	7,420	3 (prop)	unknown	0	27
Mwanga		3 (plus 3 proposed)	7,407	0	0	0	0	0	14
Kilindi		11	30,337	0	0	0	0	0	12
Lushoto		16	34,015	7	1,360	11 (prop)	2,211	500	36
Korogwe		8	11,047	0	0	0	0	3,521	26
Muheza		11 (plus 1 NR and 1 proposed FR)	31,599	0	0	4	988	215	25
Kilombero	1	4	67,337	1	3,467	0	0	0	29
Kilosa	1	8	80,151	0	0	0	0	0	29
Morogoro	1	8	35,628	2	19.8	0	0	0	42
Mvomero		9	31,792	0	0	0	0	0	7
Ulanga		7	4,956	0	0	0	0	0	18

FR = Forest Reserve. NR=Nature Reserve. NP=National Park

Another source of funding is from donor support. The Norwegian government provides significant additional operational funds to Eastern Arc Districts; close to 60 million TSH (around \$60,000) in 2004, with at least as much again supporting the work of the regional and national catchment forest project offices. Participatory Forest Management, supported by DANIDA, GTZ and the World Bank, provides funds to some of the Eastern Arc Districts to support conservation approaches where local people are working together with government. Across the Eastern Arc, PFM funding provided 180 million TSH (about \$170,000 USD) into 7 Eastern Arc Districts during 2004. Irish Aid is also supporting the District foresters in Muheza and Kilombero, and UNDP-GEF is supporting Morogoro (via CARE). Contributions to forest conservation activities in Eastern Arc mountains also come from NGOs such as TFCG (Mvomero, Korogwe, Lushoto, Muheza, Mufindi), WWF (Kilombero, Muheza), and WCST/DOF (Morogoro). Currently the forests of Morogoro District receive the greatest input of funding from all combined sources (Figure 3c).

How is this capacity being used?

The two national parks within the Eastern Arc (managed by TANAPA), and Amani Nature Reserve (managed by the Forest and Beekeeping Division) have significantly higher capacity for management than the Districts. This is reflected in greater management inputs and protection of the resources.

In the District forest offices, the small amounts of available funding are used for tree nurseries, to maintain available equipment (especially transport), for fuel and for overnight allowances to attend meetings and workshops. Little money remains to support forest conservation activities in the field. In the District Catchment Forest Project offices, available funding is used for developing Joint Forest Management Agreements with communities, for patrolling and protection work, to maintain essential equipment (especially transport), fuel, and for attending meetings and workshops. Although better off than District forest offices, little money is available for forest conservation activities beyond solving the most immediate threats to the forests. The regional catchment forest project offices have higher capacity than those of the Districts, and greater amounts of available funding.

Only in those parts of the Eastern Arc with significant financial inputs from forestry-focused projects does the funding situation reach the suggested \$364/km² per annum for effective management. There have been four examples across the Eastern Arc in recent years. Firstly, adequate funds for management were provided during the 12 years (until 2002) of support by the Finnish government for the 295 km² of forest reserves in the East Usambara Mountains. Secondly, adequate management funds for 26 catchment forest reserves within the Eastern Arc (covering 267 km²) have been provided by the Norwegian government to the catchment forest project. Thirdly, the Danish government provided five years of support to two forest reserves in the Udzungwa Mountains (covering 230 km² of forest). Finally, in the Uluguru Mountains DANIDA (via WCST/DOF) and UNDP-GEF (via FBD and CARE)

Figure 2. Ranked forest area calculations within the Eastern Arc Mountains of Tanzania. A) across the 5 relevant Tanzanian Regions, B) across the 14 relevant Tanzanian Districts

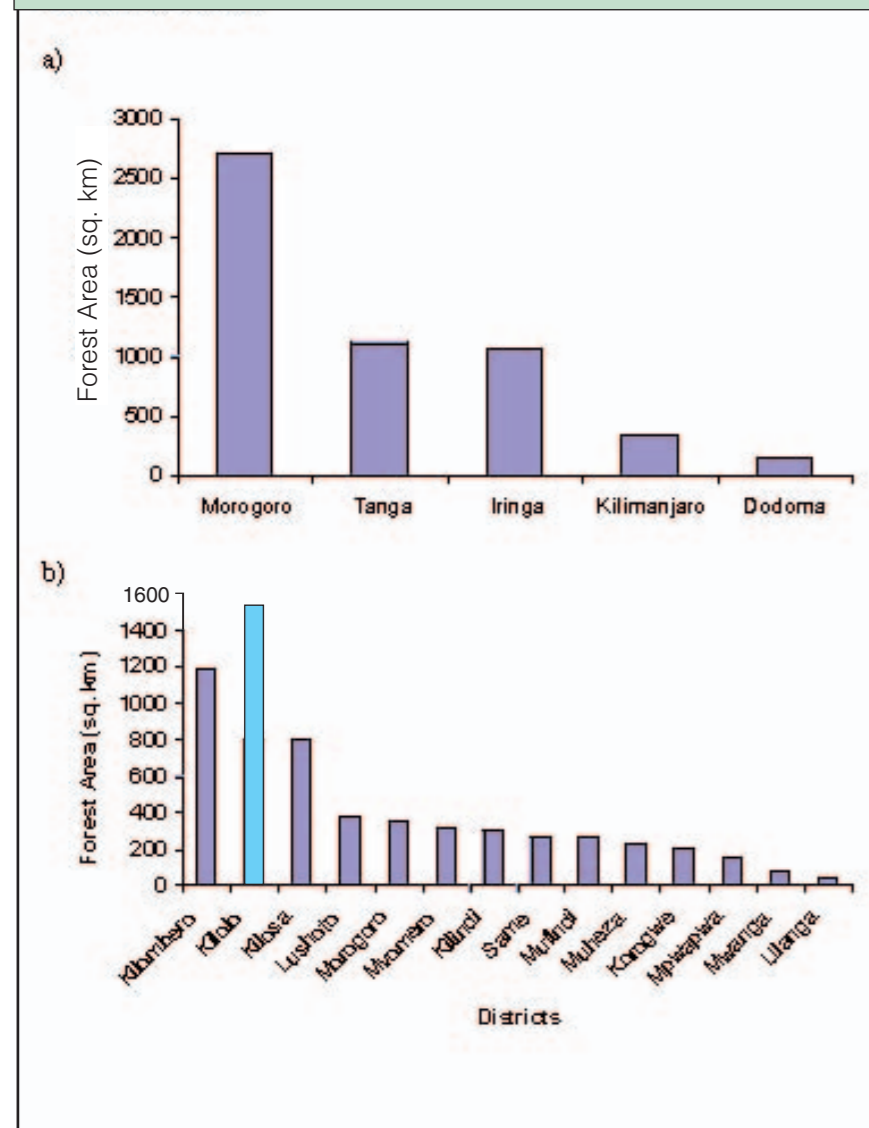
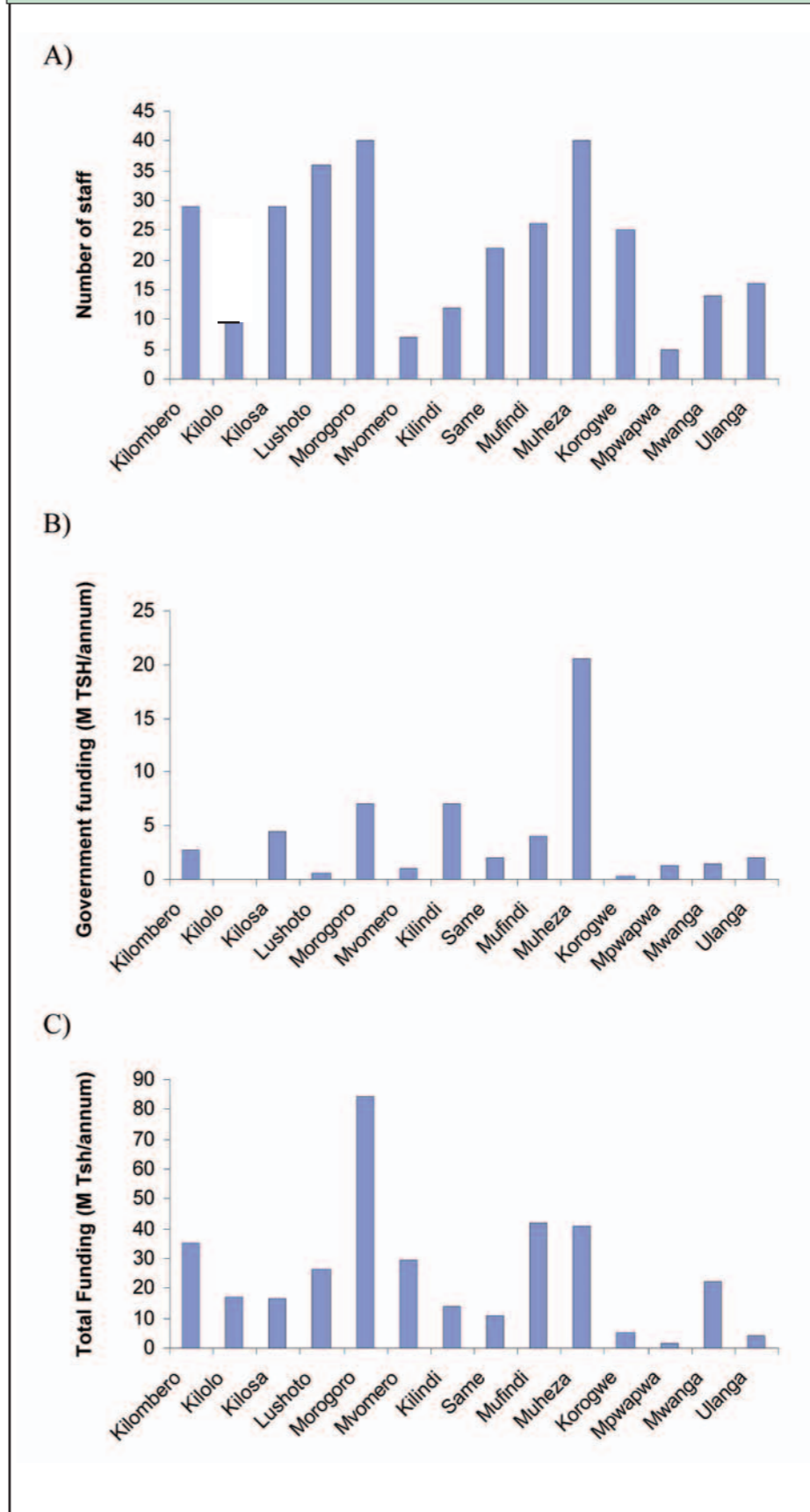


Figure 3. Distribution of management capacity across the 14 Districts of the Eastern Arc Mountains arranged left to right according to forest area. A) Number of foresters, B) Government funding (M TSH); C) Total funding including donor and NGO support (M TSH)



are providing adequate levels of funding to two forest reserves (220 km² of forest). In these areas there has been sufficient funding available to support management activities such as boundary clearing and marking, or the development of forest management plans and Participatory Forest Management (PFM) agreements.

In conclusion, the Eastern Arc mountains contain a large number of government managed reserves, mainly under the Forest and Beekeeping Division or the District Council. The management agencies (central and local government) have more than 300 staff at District level and at least another 50 at the regional levels, but these are thinly spread over large areas and have few operational facilities to undertake their work, and small government budgets. Donor support has been critical to maintaining conservation efforts across these mountains over the past decade, and the importance of these contributions is likely to remain in the foreseeable future. A key challenge for the government of Tanzania is to locate suitable sustainable sources of financing that can assist government with the management of the existing reserves, and provide benefits to local communities who are increasingly involved with their management. Potential sources of these funds are payments for environmental services such as water, but much work is needed to operationise these schemes to deliver funding to where it is needed.

Green Gold: Ongoing efforts towards preventing illegal harvesting and exports of Tanzania's most valuable hardwoods



Millettia stuhlmannii (Kis. Mpangapanga) billets prepared for export, Badr East Africa Enterprises, Ikiwiriri, Rufiji District

Erythrophleum africanum (Kis. Mkarati), *Combretum imberbe* (Kis. Mhama), *Afrormosia angolensis* (Kis. Mmangangwaru) and *Baphia kirkii* (Kis. Mkuruti). Similar trends are becoming evident south of the Rufiji River in Lindi and Mtwara Regions.

One of the largest and growing export markets for hardwood products from Tanzania is China (and other Southeast Asian countries). In 1998, China imposed a sweeping ban on logging following evidence that the worst flooding in almost half a century that killed more than 4,000 people and drove a further 18 million from their homes, was attributable to excessive tree-felling in the upper reaches of the Yangtze and other river systems. Currently the second largest importer of forest products in the world and continually growing in line with its booming economy (e.g. forest imports increased 75% between 1997 and 2002), China is inadvertently leaving a large 'timber footprint' in Russia and throughout Southeast Asia, as well as other parts of the world including East Africa.

The completion of the Mkapa Bridge across the Rufiji River in August 2003, an important catalyst for accelerated development in southern Tanzania, has brought unintended environmental impacts to the vast expanses of miombo woodlands and coastal forests. An earlier assessment of timber trade in southern Tanzania was summarised in Arc Journal Issue 16 (March 2004), entitled Forests and timber trade in southeast Tanzania: What will be the legacy of Mkapa Bridge? Even before the Mkapa Bridge was completed, there was clear evidence of unsustainable harvesting and high levels of illegal trade (around 80%). Both these scenarios were leading to degradation of the forests as well as lost government revenue.

TRAFFIC is currently working in collaboration with central and local government authorities with the support of the Critical Ecosystems Partnership Fund (CEPF) and WWF Coastal Forests Ecoregion

Programme to better understand timber trade dynamics since completion of the bridge through numerous innovative techniques, and gather perceptions from various stakeholders in order to positively influence management decisions. Regarding the latter, it is evident from recent work that the Government's strong standpoint against illegal and unregulated timber harvest and exports is supported by almost all stakeholders recently interviewed, including timber traders, village communities and government staff at different levels.

Major Government interventions since 2003

During 2003, it was increasingly recognised that some traders were mixing logs of hardwood species banned from export with the only two species permitted, *Swartzia madagascariensis* and *Tectona grandis* (Eng. Teak; Kis. Tiki). A directive from the Forestry and Beekeeping Division in September 2003 prevented the issuance of licences to harvest trees and export logs other than *Swartzia madagascariensis* and *Tectona grandis*, except for those sawmills permitted to process specific wood products. A nationwide order to stop issuing licences for *Combretum imberbe* (Kis. Mhama) was announced at the same time, following a similar ban placed on Rufiji District one month earlier.



Confiscated *Baphia kirkii* (Kis. Mkuruti) log marked with Forestry and Beekeeping Division 'arrow' hammer, Rufiji District

By December 2003, it was observed that increasing timber harvesting around the country had continued unabated, causing forest degradation and losses of revenue. The government responded with a national order to stop issuing new timber harvest licences from natural forest until further notice, following a review by the government. This order did not affect firewood or charcoal.

The review, as relayed back to relevant forest officials in January 2004, recommended that the issuance of harvest licences from natural forests be permitted from

1st February. This was in recognition of the contribution of forest product sawmills in terms of employment and income to the nation, as well as the responsibility of the government to ensure the availability of raw materials on a sustainable basis. However, the following strategy was laid down as a safeguard to the environment and government revenue generation, and also to ensure reduced illegal harvesting, enhanced supervision, and greater involvement of village communities. Firstly, the Ministry committed to strengthening forest product checkpoints, patrols, and education of forest product businessmen on the laws, rules and procedures for harvesting and trading in forest products. Secondly, all districts were ordered to prepare forest harvest plans and to inform village governments of the allowed harvest specifications. Thirdly, all harvesters were required to request for a licence according to the following procedure:

- i. Harvesters submit applications to village governments neighbouring the harvest area;
- ii. Village Executive Officers submit village government minutes to relevant DFO;
- iii. Customer pay for the licence to the district forest officer/district catchment forest officer;
- iv. Forest Officer issues a harvest licence for those approved by the village governments;
- v. Customer shows this licence to the respective village governments; and
- vi. Village governments, together with forest officers, supervise the harvesting.

By the time this temporary ban was lifted, timber traders and exporters were well aware of the impending enactment of the new regulations under the Forest Act (Act No.14 of 2002) on 1st July 2004, which effectively prohibited all exports of round wood. Facilitated by the newly completed Mkapa Bridge, the result was a massive rush to the forests and woodlands of southern Tanzania before this deadline. For example, some villages were loading up to three trucks carrying approximately 20 logs each per day. As is evident from the unprecedented front-page coverage in national press lasting over one month, large numbers of logs from banned species were discovered ready for export, whilst other consignments lacked or differed from supporting documentation. Operating within a relative vacuum of active controls, timber product traders were harvesting and exporting many more logs than legally allowed and with minimum payment of revenues at all levels. For example, it was normal for village harvesters to receive just USD 2/m³ (Tsh 2 000 per 8ft log estimated at 0.6 m³ total volume) for logs that may have taken some 60 - 80 years to grow and sold at prices many factors higher (e.g. USD 200 - 350/m³ round wood on international market from Tanzania, and even higher for parquet flooring produced in overseas markets). Local communities, the apparent custodians of the largest areas of forest that exist in general land (National Forest Policy, 1998), are largely unaware or disenfranchised of the true value of their 'green gold'

resource.

Also beginning in July, a multi-sectoral task force was set up to investigate irregularities over log exports, resulting in legal action taken against some traders as well as suspension of some government officials.

During July and August, the Ministry of Natural Resources and Tourism undertook patrols in Coast, Lindi and Mtwara regions, resulting in a second order to halt the issuance of harvest licences effective from 1st October 2004 to 31st January 2005. Similar to the first order in December 2003, charcoal licences are not affected. The Regional Natural Resource Advisors were further requested to collect all central and local government hammers by 27th September.

Since August, the Ministry of Natural Resources and Tourism has supplied three new vehicles to assist with patrolling in Kilwa, Lindi and Mtwara, areas that previously had little or no reliable transport. They have also continued to supervise task forces that have been assigned to confirm the location, volume and legality of all felled logs remaining in landing sites throughout Coast, Lindi and Mtwara Regions. The results of this arduous and expensive assignment totalling around 25,000 logs (≈ 10,000 m³, not including possibly an equivalent amount remaining in the forests) - have since been relayed to the Director of Forestry and Beekeeping, and a public announcement for auction of the confiscated logs recently published in daily local newspapers.

In the meantime, the Ministry of Natural Resources and Tourism, together with relevant stakeholders, is analysing the current situation to ensure measures are in place to prevent such harvesting in the future. The results of TRAFFIC's current work is aimed to complement this decision-making process prior to, and following, lifting of the current harvest ban in February 2005.



Mng'aru villagers passing time during trade ban at a nearby landing site, Rufiji District

Conclusions and recommendations

Well-managed forests and woodlands are an essential precursor for so many facets of livelihoods and national development in Tanzania, including the source of water supplies to many urban centres, arable irrigation, and hydroelectric power generation; maintaining local climates critical for subsistence agriculture; the source of wood fuels for the majority of the population; the source of considerable foreign exchange from export-quality hardwood timber products and tourism; and home to globally recognised biodiversity.

A combination of factors have resulted in the current ban on harvesting and exports, including a combination of weak enforcement, passive involvement of village communities in many areas, and high harvesting pressure subsequent to increasing overseas demand and associated high profits; increasing hardwood demand in urban markets (e.g. Dar es Salaam); increased access to woodlands following completion of Mkapa Bridge; and prior knowledge by exporters of an impending export deadline. Whilst concise recommendations will follow in due course and will be provided directly to central and local government, a number of key issues are already apparent.

- In the short term, and based upon recent experience (including significant losses in revenue and negative environmental impacts in some areas), hardwood timber harvesting should only be permitted following the finalisation of resource inventories and district harvest plans. In this regard, it is of some concern that some sawmills have been allowed to continue harvesting in the absence of clear knowledge over the status of the resource, and in some cases, indications of resource declines.
- Importantly, the necessary institutional framework and operational modalities need to be in place to ensure that the same scenario is not repeated in the longer term. Most of the recent interventions have been reactive in nature. A strategic planning exercise is required to ensure long-term viability of forests and woodlands and their role in national development, including harmonisation of the roles and linkages between the Ministry of Natural Resources and Tourism, and the President's Office, Regional Administration and Local Government. Importantly, forest utilisation strategies should be cost effective and ensure positive incentives for facilitating compliance, aiming to reduce the focus on reactive enforcement.

- Greater investment in staffing and equipment is urgently required within the forestry sector at all levels. For example, at district level, adequate skills capacity is needed to formulate and implement district forest management plans, as well as interface properly with village communities and traders. At the Ministerial level, there is a shortage of essential skills, such as an economist to model forest resource management. The creation of Zonal Natural Resource Units, similar to the existing model within the wildlife sector, should be considered to improve oversight and co-ordination between local and central government (covering forestry, wildlife and fisheries sectors). A systemic challenge to overcome is the insufficient incentives to attract the next generation of foresters.
- A consolidated community awareness programme needs to be initiated in southern Tanzania to ensure village communities fully understand the new Forest Act, especially their rights, issues of ownership and incentives, thus catalysing their role in forest management and benefit sharing as called for under the Forest Policy, National Forest Programme and Participatory Forest Management Guidelines.
- Revisions are still required with the current procedure for requesting harvest licences, which remains cumbersome and difficult to enforce.
- Continued efforts are required to increase positive economic incentives within the forestry sector (e.g. tax relief, loan facilities), thereby encouraging greater processing of hardwood products within Tanzania and attracting more private sector investment (e.g. plantations).

Acknowledgements: Thanks to Dr. H. Mwageni, Mr. S. Mariki and Mr. P. Sumbi for their review.



Millettia stuhlmannii (Kis. Mpangapanga) logs at forest landing site, Nachingwea District

MINING IN THE SELOUS GAME RESERVE MAY ENDANGER A WORLD HERITAGE SITE

By Dr. Rolf D. Baldus and Philbert M. Ngoti

The Ministry of Energy and Minerals has granted 13 licences to three mining companies to prospect for precious stones in various parts of the Selous Game Reserve. The Companies are: TLC Mining Limited (ten prospecting licences) Tan Platinum (two prospecting licences) and Interstate Mining and Minerals Ltd (one prospecting license).

Selous Game Reserve is the largest Protected Area in the World, the oldest in Africa (started in 1896) and a World Heritage Site since 1982. UNESCO granted this status because of its outstanding ecological importance.

Selous Game Reserve has had a history of detrimental initiatives or projects, these being oil prospecting and planned construction of dams at Stiegler's Gorge inside the reserve and Kidunda on the Ruvu river outside the game reserve. The dam constructions got discarded on different grounds. Nevertheless, the construction team at Stiegler's Gorge worked for several years and the unsupervised presence of a major workforce of the site was regarded by the Selous management as the major cause for virtually wiping out the large rhino population in that area in the early eighties. During oil prospecting in the central and southern Selous thousands of kilometres of geodesic lines were cut through formerly nearly impenetrable thickets. Again a large workforce was moving over large areas of the reserve, and the cut lines, many of them never overgrown and still existing today, opened up the Selous and facilitated poaching. In the late eighties a concentration of elephants skulls could still be observed along these cut lines, and we also found rhino skulls bearing the marks of bush knives along the routes. Shell later donated 30 uniports through WWF as a form of compensation for the destruction they had caused.

Prospecting and mining activity cause equally extensive damage to the environment through destruction of vegetation, poaching of wildlife and biodiversity loss in general. For example, in Muhesi Game Reserve, artisanal gold miners entered the reserve without permission and caused significant damage to the environment through digging of pits and the destruction of vegetation and recently, artisanal miners have been entering forest reserves in the Eastern Arc in pursuit of gold and causing

considerable damage to the water sources, natural vegetation and loss of biodiversity.

Mining in Protected Areas is regulated differently in different parts of the world. There is however, a broad consensus not to mine in World Heritage sites due to their outstanding importance. In August 2003 the International Council on Mining and Metals representing 15 of the world's largest mining and metal producing companies announced that its corporate members have committed themselves not to explore or mine in any World Heritage properties and to take all possible steps to ensure that operations are compatible with the outstanding universal values of World Heritage properties.

In Tanzania the Wildlife Conservation Act No. 12 of 1974 does not contain any provision on mining in Game Reserves or other areas under Wildlife Division's jurisdiction. However, the act prohibits entrance without written permission from the Director of Wildlife.

According to Tanzania National Park's Director General, the Board of Trustees has recently ruled not to allow any mining in any of the National Parks throughout the country.

The 13 prospecting licences allow the holders only to explore or prospect for gemstones in the Selous Game Reserve. The holders are not allowed to mine the minerals unless they complete the prospecting, submit an application for the grant of a gemstone mining license and receive such a license from the Department of Mineral Resources. However, the holder of such a licence is additionally required to obtain a written consent from the authority having control over the Protected Area before exercising any of the rights. The final authority and responsibility therefore lies with the conservation agency concerned. In the case of Selous Game Reserve this is the Wildlife Division under the Ministry of Natural Resources and Tourism.

The political responsibility for prospecting and mining in any Protected Area of Tanzania ultimately lies with the Ministry of Natural Resources and Tourism. The Ministry would be well advised to resist political pressures to allow mining activities in Protected Areas.

Mining in the Eastern Arc Mountains: the situation by early October 2004

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Information gathered between January to early October 2004, through visits to all 14 Districts containing Eastern Arc mountains in Tanzania, shows that gold mining is occurring in the Uluguru, Nguu, West Usambara and East Usambara Mountains. However, only in the last three of these has it involved significant numbers of people and caused important environmental damage.

The Eastern Arc Mountains ecoregion, especially the forests, are of global importance for biodiversity conservation. These values extend from birds and amphibians that might be affected by stream mining, to an almost unknown aquatic invertebrate fauna. For example there are two species of dragonflies (with wholly aquatic larvae) that are endemic to the forested mountain streams of the East Usambaras. Such species are likely to be intolerant of major aquatic disturbances such as that caused by gold mining. The swampy habitats within the East Usambaras, the target of much of the mining, are also habitat for the Critically Endangered Long-billed Apalis *Orthotomus moreaui*. These mountains are also the sources of water supply for the largest city in Tanzania – Dar es Salaam, as well as the large regional centres – Morogoro, Tanga and Iringa.

In early 2004 the gold mining in the East Usambaras was affecting Amani Nature Reserve and the following forest reserves: Semdoe, Nilo, Longuza and in the Derema proposed forest reserve. There were also large numbers of miners outside of these reserves, in particular in the swamp areas at Sakale, Nelusanga and Mlesa – with perhaps 40,000 miners found in these areas. In addition a peak of 40,000 people was recorded gold mining in the Balangai West forest reserve in the West Usambaras in early 2004. Prospecting teams were also found in other parts of the West Usambaras, for example in Baga I, Baga II and Ndelemai forest reserves. Early in 2004 there were also around 3,000 gold miners in farmlands and forests in the North Nguu (Nguu) mountains, including Pumula, Derema and Kilindi forest reserves. In the Ulugurus small numbers of miners were found panning for gold in the Kimboza, Ruvu and Mvuha/Chamanyani Forest reserves, within the rivers and streams.

Over the past six months the Tanzanian government has tried to bring the situation under control and the number of miners now present in the East and West Usambaras is considerably reduced. A combination of interventions by

international agencies, the president Benjamin Mkapa (Daily News article of 1 April 2004 – 'water is more precious than gold'), Regional and District Commissioners, and the Forestry and Water authorities made it more difficult for the miners to operate illegally within reserves or openly outside them. The number of miners present at the Sakale mine site in the East Usambaras by middle September 2004 had fallen dramatically to a few hundred people and most of the temporary housing has gone. In the West Usambaras mining has generally been stopped in Balangai West, and the activities of the prospecting parties have been much reduced. In the Nguu mountains around 2,000 miners are still present, with some of these having moved from the East and West Usambaras, despite actions to remove the miners by the local catchment forest officers.

However the gold mining in the East Usambaras continues in a different form. Smaller groups of miners (100s) are prospecting the smaller streams and swampy areas within the Amani Nature Reserve, Semdoe Forest Reserve and in secluded areas outside these reserves. Around 30% of the streams within the Nature Reserve have been already excavated and stopping the remaining areas being mined is a serious challenge. The reserve is incurring significant additional costs in trying to address this issue, supported only through funds from its own ventures and those from the Ministry of Natural Resources and Tourism. This has posed a strain on the reserve finances.

Figure 1. Gold mining along streams in the Amani Nature Reserve, October 7th 2004
a) Stream on edge of Amani Nature Reserve



PARTICIPATORY FOREST RESOURCE ASSESSMENT IN RUVU SOUTH FOREST RESERVE

By Sanford Kway, Senior Project Officer, Tanzania Forest Conservation Group (TFCG)

Introduction

Since 2000, the Tanzania Forest Conservation Group has been working with the Forestry and Beekeeping Division and other stakeholders to develop joint forest management for Ruvu South Forest Reserve. As part of this process, TFCG facilitated a participatory forest resource assessment. This article outlines the process that was followed and summarises the assessment results.

Ruvu South Forest Reserve (RSFR) covers 35,500 hectares. This includes approximately 1900 ha of dry coastal forest and 8300 ha of woodland. The remainder of the reserve is a mosaic of thicket, wetland and grassland. The reserve is in Kisarawe and Kibaha Districts in Coast Region within 20 km of Dar es Salaam. The reserve is part of the 'Kisarawe District Coastal Forests' Important Bird Area and has populations of at least two threatened bird species, the Sokoke Pipit and the East Coast Akalat. The close proximity of RSFR to Dar es Salaam and its outlying populations puts the reserve under significant pressure from resource use.

Ruvu South is surrounded by eight villages and two sub-villages. The total population of the communities in the immediate vicinity of the reserve is 12,501 people.

What is a Participatory Forest Resources Assessment (PFRA)

PFRA is an important part of the planning process for participatory forest management. The assessment in Ruvu South aimed:

- to provide information about the forest for management planning purposes
- to zone RSFR into different management zones

The PRFA exercise was conducted by a team comprising 2 facilitators from FBD, 1 staff from Ruvu Fuelwood Pilot Project, 2 staff from Kisarawe and Kibaha district councils, 5 staff from TFCG and CARE Tanzania and village planning team members (12 members from each village). The assessment was conducted village by village.

Steps done during the PFRA of Ruvu South

STEP 1: Village assembly meetings to introduce PFRA

General village assembly meetings for awareness raising and selection of the village planning team (VPT) members were carried out

in all eight villages and two sub villages surrounding RSFR. Briefing on legal instruments supportive of Participatory Forest Management processes were discussed including the National Forest Policy (1998), CBFM Guidelines, National Forest and Beekeeping Programs and the Forest Act (2002). The planning teams were selected for the purpose of representing other community members in the plans, by laws and management agreements preparation.

STEP 2: Train the village planning team members on PFRA

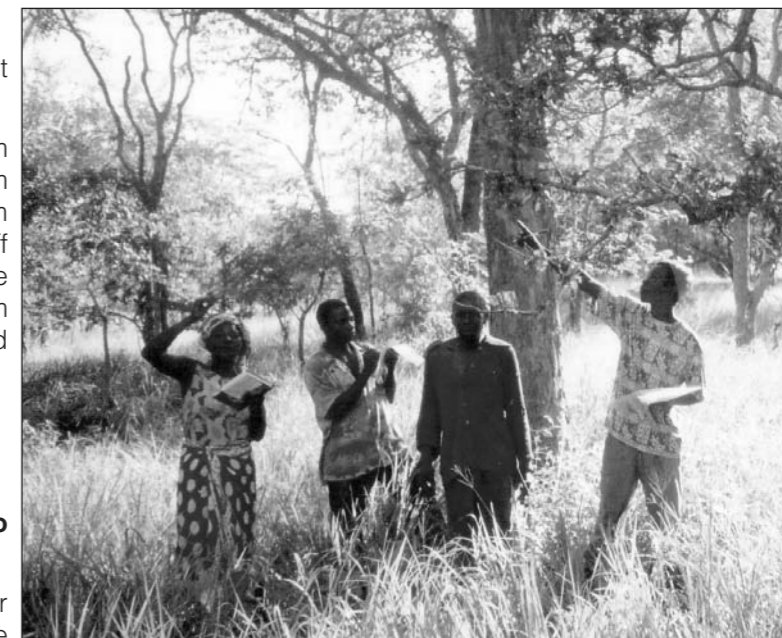
Prior to starting the exercise, the village planning team members were trained on the PFRA methods.

STEP 3: List the resources from RSFR that the community depends on.

The village planning team members were asked to list the tangible and non tangible forest resources/products which they depend on and obtained from the forest. Tangible forest products which were mentioned included:- poles, timber, fire wood, charcoal, traditional medicine and bush meat. Non tangible products/services included amenity, habitats for the plants and animals, water etc.

STEP 4: List other resources available in RSFR (This was specific for each Village Forest Management Area)

Other resources included dams, rivers, hills, cemetery/ritual areas and other natural and man made features which are found in a particular VFMA but which the planning team members considered to be useful. This was done in order to make sure that these resources would be considered during the zonation of



Assessing the resources available in Ruvu South Forest Reserve



TFCG's progress in the South Nguru Mountains

By Charles Ehrhart, Coordinator, PEMA
 Photographs of the South Ngurus by Michele Menegon, Natural History Museum of Trento

As reported in the last edition of the Arc Journal, TFCG is involved in the Participatory Environmental Management Programme (PEMA) in the South Nguru Mountains. Implementation of this highly innovative, regional Programme is being led in Tanzania by the Tanzania Forest Conservation Group with support from the Danish Institute for International Studies, CARE, WWF and Birdlife International.

PEMA's mission is to pilot and promote an approach to the management of natural resources in high-biodiversity areas that reconciles the conservation and development interests of multiple stakeholders at local, national and international levels.

Operations: PEMA is being implemented in two phases. The first phase, which began in January 2004, will last until July 2006. During this period, the Programme will:

1. Work with stakeholder groups to develop Landscape Management Plans that reflect their diverse interests
2. Work with government authorities to strengthen the ways in which Joint/Collaborative Forest Management agreements benefit local people's livelihood security

PEMA's second phase will span up to eight more years and focus on:

1. Supporting implementation of Landscape Management Plans
2. Mainstreaming approaches to Joint/Collaborative Forest Management that contribute to sustainable poverty reduction.

Approach: To overcome the constraints of existing co-management processes and the well-documented weaknesses of traditional integrated conservation and development (ICD) projects, PEMA is promoting several innovative approaches and methodologies, notably:

- A landscape approach: management of natural forests within a broader rural landscape to exploit opportunities for

collective action and trade-offs presented by common interests and environmental interdependencies, and to promote ecological connectivity.

- Vision-based planning: planning methodologies that define goals and strategies in relation to a desired future situation and existing strengths, which are more inclusive and therefore more effectively address the interests of the poor.
- Civil society strengthening: development and strengthening of civil society organisations and networks that empower the rural poor and assist them to effectively represent their interests.

Livelihood interventions that add value to forest resources and/or provide economic alternatives, but designed with local communities as part of co-management discussions to ensure more effective conservation-development linkages.

During the past year, PEMA's implementing partners have invested in getting to know the South Nguru Mountains. This has entailed learning about and documenting the area's remarkable biodiversity and investigating the contribution that the mountains' natural resources – and the environmental services they provide – make to local livelihoods and even the wellbeing of distant communities receiving water for domestic and farm use.

These types of studies, though time consuming, are a vital investment. They enable stakeholders to:

1. Make informed decisions
2. Monitor the impact of their collaborative work to see if it is, in fact, contributing to conservation and development goals

To access this information as it is ready – and to learn more about PEMA other achievements – visit the Programme's website at <http://www.pema-eastafrika.org>. To keep up to date on PEMA's progress, request to receive its bi-annual electronic newsletter from the Coordinator at cehrhart@tfcg.or.tz



the Village Forest Management Areas and the management planning.

STEP 5: Threat assessment

In order to assess the status of the resources available in Ruvu South, the team adopted the 'Threat Reduction Assessment' approach. The (TRA) methods provide both a monitoring system and a mechanism for assessing the current status of forest resources. For more information please visit (www.BSPonline.org).

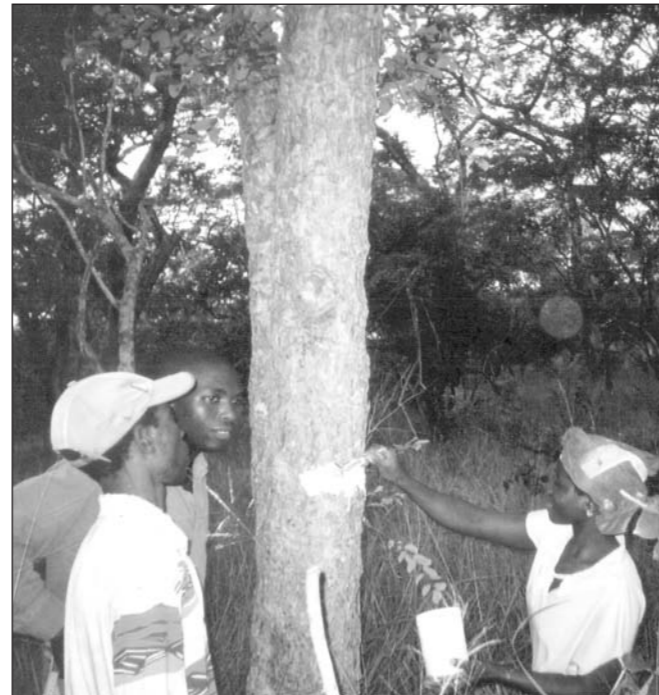
After identifying and ranking the threats in Ruvu South it was observed that, charcoal burning is the number one threat in all Village Forest Management Areas followed by tree cutting for timber, poles, logs, building withies, etc; forest fire; illegal hunting and grazing.

STEP 6: Zonation of the VFMA's

The village planning teams used the VFMA map to zone the VFMA's into different management zones. These zones include:- a biodiversity zone (for plant and animal conservation), water catchments zone (for conserving water sources), local use zone (for collection of Non-Wood Forest Products as they were identified and revealed that they are not destroying the forest) and ritual and worshipping zones. The village planning teams and the facilitators visited the forest with the aim of marking the zones, taking GPS readings and also laying the vegetation plots which were objectively selected by using the vegetation cover type map.

STEP 7: Establish monitoring plots

Vegetation and regeneration plots during the PFRA were used to compare the forest resources the

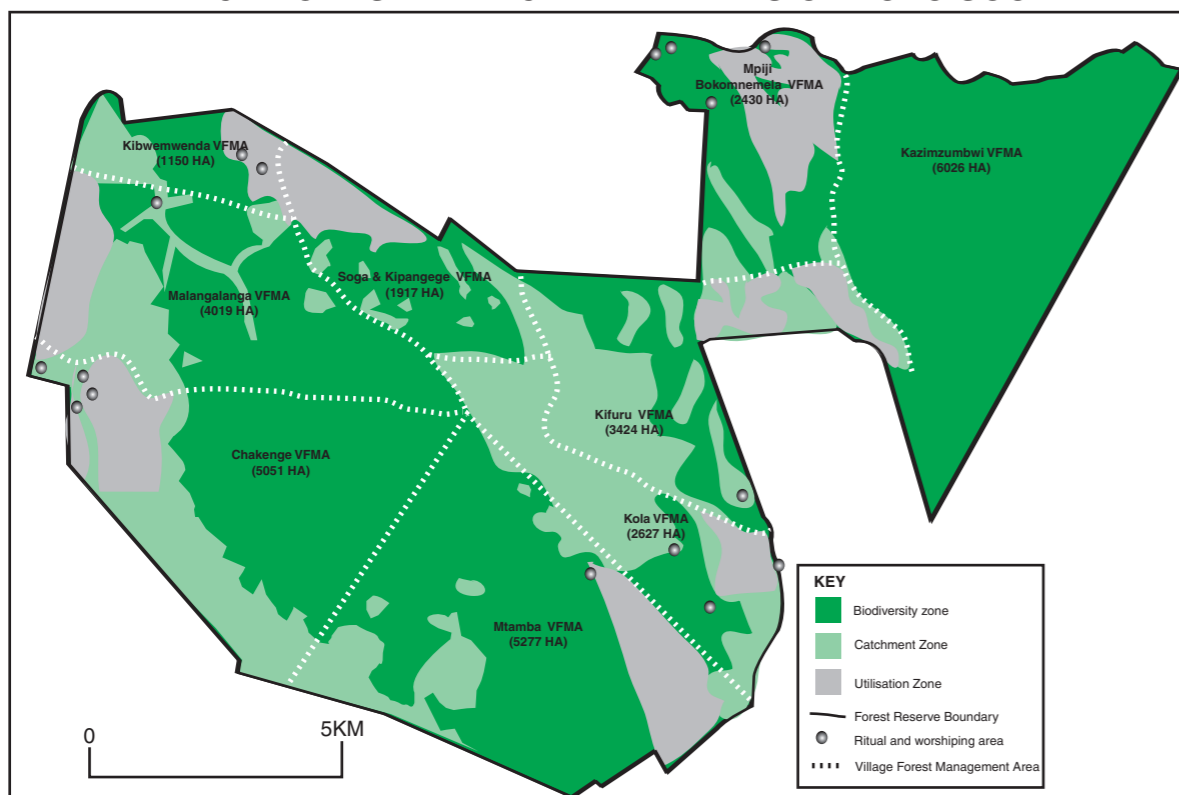


Marking the village forest management areas

communities mentioned that they depend on with what was available in the forest. They are also useful for monitoring. The vegetation in thirty-one 50m x 20m plots was recorded. The plots were located by using the vegetation type cover map prepared by the Misitu Yetu Project. This approach allowed all the vegetation types within a particular VFMA to be sampled.

Regeneration was analysed quantitatively in the 31 vegetation plots. A sub-plot 3m x 3m was placed in the eastern corner of each vegetation plot. All regeneration of trees and shrubs of less were counted

VILLAGE FOREST MANAGEMENT AREAS OF RUVU SOUTH



identified and recorded by the planning team members.

The team also made opportunistic records of animals using signs such as faeces, footprints and sightings.

STEP 8: Vegetation and regeneration plot data analysis

Before management plans preparation exercise the data, which were collected in the field specifically from the plots, were analyzed and interpreted by the planning team members and the facilitators.

The data from the vegetation plots were used to compare the resources which community members mentioned as being available in the forest with what was actually observed in the field. The comparison here was specifically for the tree species the community members mentioned they are using for different purposes such as charcoal making, poles, timber fire wood etc.

Results

It was observed that the tree species which were mentioned by the village planning team members that the communities used for charcoal production, timber, poles, firewood etc, were rarely found in the reserve. The few individuals of these species that were recorded were very small. This indicates that there is a high level of extraction of big trees in RSFR

Results of the regeneration surveys indicated that there is some regeneration within RSFR which has the potential to contribute to the forest canopy and under storey if human disturbances in terms of fire and tree cutting are controlled.

The PFRA required a considerable investment of time and money. The total exercise including the PFRA

continued from pg 10

Mining in the Eastern Arc Mountains: the situation by early October 2004

Other forms of mining also pose a threat to the forests of the Eastern Arc. Gemstones such as rubies, sapphires, tourmaline and rhodolite (garnet) are found in the region. Mining for these gems is artisanal, but the large number of people involved can cause significant damage to the forests. One issue is that the Ministry of Mines issues licences for mining without knowing where the mining will actually take place. There is also no proper monitoring of the impact of the mining.

In conclusion, the pressure from illegal gold mining on the forests of the East Usambaras has been reduced over the past 6 months, as it has on other parts of the Eastern Arc where it was occurring. However, the gold mining situation in the East Usambaras and particularly within the Amani Nature Reserve remains serious and shows no sign of ending. Other forms of mining are still

zoning of the VFMA's and management plans and by laws preparation took 60 days and cost TShs. 13,582,500. While participation from the community members (VPT) was very good, the issue of allowances undermined some government staff participation.

The steps followed during this exercise were designed to suit the needs of a forest to be managed through Joint Management Agreements between the communities and the government. PFRA needs to be more detailed and intensive as the level of utilization of the forest products increases. In this situation where the management objective of the forest is for protection, harvesting of most forest products is prohibited. For this reason the PFRA process for Ruvu South was much simplified since the PFRA did not need to determine sustainable utilisation levels.

The PFRA was very useful because the planning team members were able to appreciate the status of the resources at RSFR and this enabled them to prepare the management plans and by laws according to the current status of the forest as well as setting the monitoring programme for the village forest management areas by using the threat reduction assessment tools and vegetation plots. The effect of the PFRA on the forest management have not yet much realised because the plans and the by laws are still provisional as they are still in the process of approval at the district levels. However, the provisional plans have been started implemented at the village level as the community members are keeping on informing the relevant authorities on any illegal incidence in the forest as well as participating in the patrolling.

occurring in many forests across the Eastern Arc and pose a threat to forests and aquatic biodiversity. Where increased protection has controlled the gold mining, the situation still requires monitoring and financing as prospective gold miners are still living in the mountains, waiting for the vigilance of the government to decline which would provide them with an opportunity to resume their activities. To date no funding has been received from the international community to assist the government of Tanzania to address this issue, and tackling it is presenting a significant financial challenge to an already stretched budget within the Amani Nature Reserve and the Tanga Catchment Forest project. There is also a need for a government statement to prevent mining within the biologically globally important forests of the Eastern Arc Mountains and which form the water supplies for millions of urban Tanzanians.

Protected Area Categories and why they matter for the Eastern Arc and coastal forests in Tanzania

Neil Burgess* and Alan Rodgers, GEF-UNDP, P.O. Box 9182, Dar es Salaam, Tanzania. *also: WWF-USA Conservation Science Program, 1250 24th St. NW, Washington D.C., USA.

The World Conservation Union (IUCN) has established a system for categorising areas set aside for the conservation of natural resources, or 'protected areas'. Countries of the world use the system to define the management status of their own network of protected areas. These data are then used at the global level when statements are made on the percentage of the world that is 'protected' and the number of 'protected areas' that have been declared. However, although this system has been working effectively for many years for wildlife and national parks authorities, it has had less relevance or linkage to forest reserves and Forest Departments. Indeed, almost all the Forest Reserves across Africa, including those in Tanzania, are not included in the IUCN protected area code and thus are ignored when statistics are compiled on the protected areas of Africa (Fig. 1). This article explores the history of this issue and outlines some of the consequences for Tanzania and for the Eastern Arc and Coastal Forests in particular. We make some suggestions on how the Forestry Authorities could have their forests recognised as protected areas in the same way as National Parks and Game Reserves.

Definition of a Protected Area

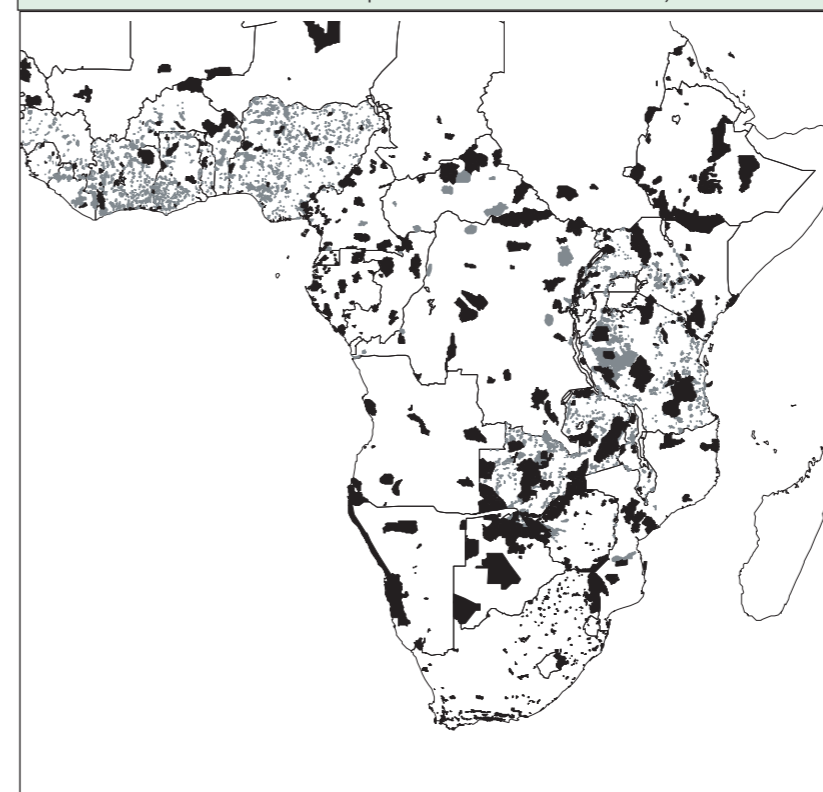
The IUCN definition of a protected area is *An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.* Until now it has been argued that many African Forest Reserves did not fit into this definition as they had been established for resource extraction (mainly timber) and not for biodiversity conservation. This argument was somewhat nonsensical as the majority of African wildlife protected areas were themselves originally established for resource utilisation (hunting) and almost all predated the invention of the term 'biodiversity' in the early 1990s. Moreover, in Tanzania recent changes to forest Policy and Laws clearly demonstrate that the government recognises the role of Forest Reserves in biodiversity conservation (see later). And, historically, most of Tanzania's Forest Reserves were created for water catchment by the German colonial government, who very early recognised the need for resource 'protection'.

Protected Area Categories

The six levels of protected area defined by the IUCN protected area classification system (downloaded from IUCN website, Jan 2004) are as follows:

CATEGORY Ia:	Strict Nature Reserve: protected area managed mainly for science
CATEGORY Ib	Wilderness Area: protected area managed mainly for wilderness protection
CATEGORY II	National Park: protected area managed mainly for ecosystem protection and recreation
CATEGORY III	Natural Monument: protected area managed mainly for conservation of specific natural features
CATEGORY IV	Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
CATEGORY V	Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
CATEGORY VI	Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

Fig. 1. Distribution of protected areas (IUCN I-VI) reserves (black) and forest reserves (grey) across Africa (from the August 2003 version of the UNEP-WCMC protected area database).



Relationships to Tanzanian Policy and Legislation

Can Tanzanian Forest Reserves be defined as Protected Areas? Tanzania has been rapidly developing its policies and laws relating to forests and Forest Reserves over the past 10 years, with the publication of the National Forest Policy in 1998, the National Forest Programme in 2001, and the new Forest Act in 2002 (Act 14 of 2002). Careful reading of these documents shows that biodiversity conservation is now very much one of the functions of these reserves. For example the National Forest Policy has four separate policy statements on the conservation of biodiversity within Forest Reserves:

Policy statement (15): New forest reserves for biodiversity conservation will be established in areas of high biodiversity value. Forest reserves with protection objectives of national strategic importance may be declared as nature reserves.

Policy statement (16): Biodiversity conservation and management will be included in the management plans for all protection forests. Involvement of local communities and other stakeholders in conservation and management will be encouraged through joint management agreements.

Policy statement (17): Biodiversity research and information dissemination will be strengthened in order to improve biodiversity conservation and management.

Policy statement (22): Management of forest reserves will incorporate wildlife conservation. Wildlife resource assessment will be intensified.

The National Forest Programme notes in Section 3.3, Section 7.4.4.2, Section 10.2 and Appendix 4, that Tanzanian forests harbour globally important biodiversity values – mentioning specifically the Eastern Arc Mountains and coastal forests as 'globally exceptional' for biodiversity conservation. Finally, the new Forest Act states that one of its objectives (Part II, section 3 c) is : to ensure ecosystem stability through conservation of forest biodiversity, water catchment and soil fertility. There are options for declaring reserves under central government control (and thus of national importance) as: forest reserves or 'nature' forest reserves. Hence, the government of Tanzania has clearly recognised the potential role of its forest reserves for the conservation of biodiversity, and has stated this in its several legal documents.

What category of Protected Area might Tanzanian Forest Reserves fall under? First it is important to note that a large number of the existing Forest Reserves, for example the majority of the woodland Forest Reserves of Tanzania are, managed for timber exploitation under District Authorities, and are of relatively low biodiversity importance. These Forest Reserves are probably best left without any international protected area designation. However, this is not the case with many of the national Forest Reserves, which are under central government control and where exploitation is not permitted, as these reserves are recognised as important for water catchment and/or biodiversity conservation. Many of the national Forest Reserves could be placed within a protected area category, as follows:

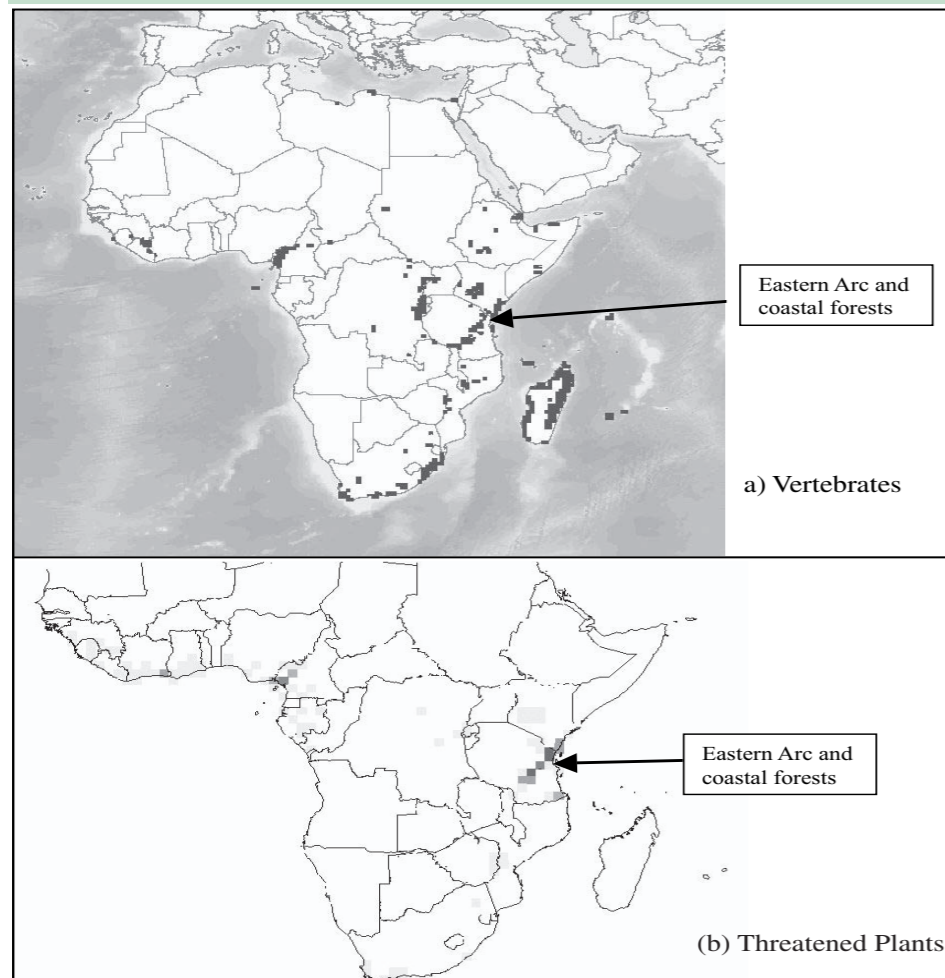
Nature reserves. Forest Nature Reserve is a new reservation category under the 2002 Forest Act that specifically relates to the conservation of high biodiversity value forests. The only such reserve so far declared, Amani Nature Reserve, is in the East Usambara Mountains. This nature reserve, managed by the Forest and Beekeeping Division, could be classified as an IUCN II protected area, the same category as applied to the Udzungwa Mountains National Park managed by Tanzania National Parks Authority (TANAPA). Other nature reserves are also being considered in high biodiversity value forests.

Catchment Forest Reserves. The legal requirements of the nationally managed Forest Reserves under the 'catchment' project specify no legal extraction, based upon the need to preserve the ecological service (water supply) and as a by-product the globally important biodiversity values of these reserves. 'Catchment' Forest Reserves would fit within the IUCN category IV of protected area, without any change in the management regime.

Other 'national' Forest Reserves. Many other forest

reserves classified as 'national' reserves and managed centrally (for example the mountain Forest Reserves of Iringa, Mbeya and Dodoma Regions that are outside the 'catchment' project) also function as effective protected areas. An appraisal of the reserves of these Regions might suggest which of them might be considered as Nature Reserves (the most biologically valuable) and which might be coded as IUCN IV protected areas.

Fig 2. 'Gaps' in the protected area network for Africa – (a) for all threatened species of birds, all amphibian species, and all threatened mammals (derived from the protected area gap analysis presented at the World Parks Congress in September 2003 – image kindly supplied by A. Rodrigues and T. Brooks of the Centre for Applied Biodiversity Science at Conservation International, USA); (b) for 121 plants threatened by extinction (from a database containing the distribution of 15% (5,900 species) of African plants (derived from an analysis to be published in the Journal Biodiversity and Conservation). The dark coloured areas on the African mainland show areas of protected area 'gap'. The Eastern Arc and Coastal Forest 'gap' is labelled.



Why does this matter?

The lack of 'protected area' coding for some of the Tanzanian Forest Reserves has excluded their recognition in a number of international discussions on the distribution and importance of 'protected areas' globally. For example, in recent years conservation scientists have tried to identify those biologically important parts of the world that lack protected areas, and hence where these 'gaps' in the protected area network need to be closed by the development of new protected areas. These 'gap analyses' were presented at the 2003 World Parks Congress in South Africa, and have helped define the work programmes for the next

decade within a number of large conservation organisations. For Africa, such analyses showed the Eastern Arc and coastal forests of Tanzania as a protected area 'gap' and hence the area has been recommended as a priority for the development of additional protected areas (see Fig. 2). Some of these analyses fail to realise there is no gap in official protection in these areas, only that the reserves on the ground are not yet recognised as protected areas according to the IUCN system.

What can Tanzania do about this?

We suggest that through a defined government process, Tanzania should assess its network of Forest Reserves and decide which ones should be allocated a protected area code in recognition of their functions for nature conservation as well as resource production and water catchment protection. As outlined above we believe that the Amani Nature reserve fits the criteria for an IUCN protected area category II, and many nationally managed forest reserves fit the criteria for IUCN IV. Other reserves with lower levels of importance and less strict management regimes might be accorded IUCN VI status – as multiple use areas. Once the decision has been made about which forests have a biodiversity conservation function, a simple letter and supporting documents (the 1998 Forest Policy, 2001 Tanzania National Forest Programme, and 2002 Forest Act and) could be sent to the UNEP World Conservation Monitoring Centre in Cambridge (UK). The letter could ask that the agreed

Forest Reserves be coded as 'protected areas' in the World Database on Protected Areas that they maintain for the United Nations and IUCN. Hence important protected area 'gaps' in the conservation of African biodiversity, especially those in the Eastern Arc and coastal forests, could be closed without the need to create any additional reserves.

Further Reading

The world database on protected areas: <http://sea.unep-wcmc.org/wdbpa/>

Conservation International Protected Area gap analyses: <http://www.biodiversityscience.org/>

TFCG News

Butterfly sales take off in the East Usambaras

By Theron Morgan-Brown, Research Advisor, Amani Butterfly Project

In the Amani area of the East Usambara Mountains, everyone is talking about TFCG's Amani Butterfly Project. In its first 12 months of business since November of 2003, the project has earned \$17,350 USD from butterfly pupae exports to live butterfly exhibitors in Europe and the US. There are now 250 farmers producing butterfly pupae, of whom over half are women. Butterfly farmers involved in the project have been paid 14,800,000 TSH for the pupae they have produced and a further 1,270,000 TSH has been saved as part of a growing village development fund that will be used for village wide development projects in the East Usambara Mountains. Host plant nurseries and netted butterfly enclosures are becoming a common sight in many villages in the Amani area.

Many live butterfly exhibitors in Europe have been attracted to the Amani Butterfly Project's combination of development and conservation and the project is now expected to earn up \$60,000 USD in the year 2005.

The success of the project has also attracted new donor support. The US-based McKnight Foundation has agreed to support the butterfly project over the next three years, after which point the project should be completely self-sufficient.



A typical household butterfly enclosure.



Sorting pupae at the purchasing centre.

Tanga districts maintain vigilance against forest fires

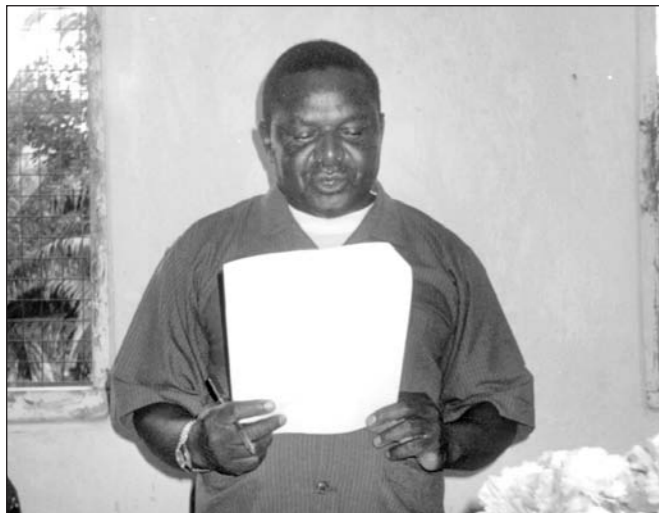
By Charles Meshack, Programme Officer, TFCG

During workshops organised by TFCG in Korogwe, Lushoto and Muheza Districts, participants urged people to be constantly vigilant against the threat of wild fires which can cause widespread destruction of forests. Constant awareness raising has succeeded in reducing the number of wild fires in Korogwe from 72 in January 2002, to only four during January 2004.

In Muheza District, the 48 workshop participants, highlighted fires and mining to be major threats to the forest of the Eastern Arc. They made a series of recommendations on action that can be taken to address these threats:

- Village forest by-laws should be strengthened and rigorously enforced against people involved in illegal gold mining and starting wild fires.
- Illegal gold mining in forests should be immediately reported to District Government officials.
- Training on forest monitoring should be provided to communities involved in participatory forest management.

In Morogoro Region, TFCG have also been facilitating an awareness raising campaign on forest fires. The campaign was launched by the Morogoro District Commissioner Mr Sedoyeka. The campaign team visited villages throughout the Ulugurus urging people to take responsibility for tackling wild fires.



The Morogoro District Commissioner representative urges people not to light bush fires

TFCG Organize the fourth Community Forest Conservation Network workshop

By: Bettie Luwuge, Assistant Network Officer

The TFCG Community Forest Conservation Network unit organised a three days workshop on "Livelihoods and Sustainable Management of Forests in Tanzania". The workshop was conducted in Tanga Region at VETA-Tanga between the 13th and 15th October 2004. This is the fourth Community Network workshop organised by TFCG, and attracted almost 135 people. Participants included community members living adjacent to natural forests in Tanzania; staff from projects and institutions implementing Participatory Forest Management in Tanzania; and Local Government representatives from both Tanzania Mainland and Zanzibar. Participants came from Dar es Salaam, Coast, Iringa, Morogoro, Tanga, Lindi, Kilimanjaro and Arusha Regions and from Zanzibar. The Tanga Regional Commissioner officiated the workshop.

The Workshop aimed to examine linkages between

rural livelihoods and sustainable forest management. This included discussions on simple, effective and sustainable income generating activities that have worked in Tanzania especially in communities living adjacent to natural forests and ways in which they can be scaled up.

Case studies were presented by farmers from Arumeru and Kilosa showing participants how improved livelihoods and forest conservation can be combined. Hadija Ramadhani from the Forestry and Beekeeping Division also presented a paper outlining the Government of Tanzania's strategy for improving the livelihoods of communities engaged in participatory forest management.

Whilst it was recognized that there are many opportunities for the sustainable utilisation of forest resources, the high dependence of many people on forest resources makes it a challenge to ensure that they are used sustainably. Individual efforts to change the attitude of people to encourage more sustainable use of forest resources is vital.

Many thanks go to all those who participated in one way or the other in making this workshop a success, including Misitu Yetu Project, the DANIDA Participatory Forest Management Component of the National Forest Programme, the Eastern Arc Forest Conservation Project and the African Rainforest Conservancy.

Allanblackia nuts generate an income for Usambara farmers

By Charles Meshack, Programme Officer, TFCG

The Novella Project's first harvest of Allanblackia nuts in the East Usambaras generated TSh 2,640,000 for local farmers. The Allanblackia nuts are collected from trees outside of the Amani Nature Reserve and Forest Reserves in the East Usambara Mountains. The nuts are being bought by UniLever in an experimental project to extract their oil. There are 543 farmers involved in the project (52% male and 48% female) who supplied 44,000 kg of nuts at a price of TSh 60 / kg. TFCG's role in the project is to try to ensure that the collection of the nuts is ecologically sustainable whilst benefiting communities in the vicinity of Eastern Arc forests.

'Approve our forest management plans', say the people of Mufindi.

By Charles Meshack, Programme Officer TFCG

During a recent workshop organised by TFCG in Lulanda Village, Mufindi District, participants called upon the District Council to approve the forest management plans and by-laws that have been submitted for their approval. The 42 participants in the workshop included district government officers, private sector representatives, politicians, village government leaders and representatives from village environmental committees. The Mufindi District Commissioner opened the workshop, Mr Muhongole acknowledged TFCG's contribution to forest conservation in his District. The workshop participants also recommended the following actions:

- The workshop participants including the DC requested that TFCG should continue to provide support in environmental awareness and Participatory Forest Management.
- The workshop participants recommended that Lulanda and Luhunga should be a training center for PFM where other villages and district should pay study visit.
- Since wild fires are a major problem in the district, village government officers, VECs, WEO, Ward councillors and all other participants should emphasize this in all community meetings.
- Measures to control wild fires should be put into effect including planting fire resistant trees along the farm boundary and clearing fire lines.



The Mufindi District Commissioner addresses participants of the workshop in Lulanda

- Stern measures should be taken to who ever start fires without following the preventive measures.
 - Participants agreed that if fire outbreaks occur it is the responsibility villagers and all other people around that area to stop it. The VEO, WEO, VEC should coordinate this.
 - Lastly the DC promised that there will be a meeting with all neighboring Districts to discuss how they can jointly tackle fire outbreaks.
- The workshop was supported by the JJ Charitable Trust.

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News of the Arc

Update on the Eastern Arc Strategy Project

The Eastern Arc Strategy project has completed its inception phase and is moving to implementation. TFCG is working on the information, education and communication component of the strategy. Over the last six months, the TFCG team have been working with Districts to quantify current levels of understanding across six of the Eastern Arc Districts.

The main strategy is starting three baseline studies: forest area, forest disturbance and hydrological values, and has compiled information on the reserve network, staffing and budgets across the Arc (see papers in this Journal issue). In addition stakeholder meetings are being held with all relevant sectors, and in each District to get the input of stakeholders from Villages, Wards, District, NGOs and the private sector. Five of the 14 Districts have been visited. The Uluguru component is undertaking a baseline study of biodiversity values and forest disturbance in Uluguru North and South Forest Reserves, and is operationalising its work on conservation education, agriculture and income generating activities.

Documents produced by the project are available on request from Dr. Felician Kilahama or Dr. Neil Burgess, P.O. Box 298, Morogoro.

CITES and timber trade exports from Tanzania



By Simon Milledge, TRAFFIC East/Southern Africa

In October 2004, some 166 nations and 150 other organisations gathered in Thailand for the 13th Conference of the Parties to the Convention of International Trade in Endangered Species of Flora and Fauna (CITES CoP13).

Decisions made at CITES CoP13 on timber trade focused on species found outside Tanzania. However, the increasing international recognition of CITES as a useful tool, not a barrier, to help achieve well regulated timber trade (see also The Arc Journal 15), will have future implications for Tanzania whose exports are increasing, recently prompting concern over levels of legality and sustainability (see feature article Green Gold: Positive steps to prevent illegal harvesting and exports of Tanzania's most valuable hardwoods).

Experience with some animal species exported from Tanzania has shown how properly implemented CITES controls can help maintain the balance between protecting conservation interests from excessive trade, whilst at the same time maintaining economic benefits from well regulated trade. The same potential exists for

timber species and is being realised by other nations.

In the interests of achieving both trade management and conservation goals, it is recommended that options are explored for the CITES listing of certain timber species. For example, *Dalbergia melanoxylon*, *Swartzia madagascariensis* and *Millettia stuhlmannii*. CITES capacity building is also required within the forestry sector.

Eastern Arc coordination committee.

The Eastern Arc strategy project, in collaboration with the main conservation implementers from government, donors and NGOs have met twice to coordinate activities across the 14 Districts of the Eastern Arc. Issues where coordination has been promoted are: collection of data on forests and adjacent communities, protected area improvements, conservation planning approaches, field site implementation gaps, fundraising and long term financing (e.g. Eastern Arc Trust Fund). The meetings also provide an important opportunity for disparate projects to talk together on similar issues of importance to conservation in the region, such as PFM and the potential relevance of payments for environmental services.

Five new Eastern Arc toads are described

Five new species of toad from the Eastern Arc have recently been described. The toads are in the genus *Nectophrynoides*. The animals have been described by Michele Menegon, Simon Loader and S. Salvidio and are published in 'Tropical Zoology' 17. The new toads are from the West Usambaras, East Usambaras, Ulugurus (2) and the Udzungwas. The restricted distributions of these species highlights the vulnerability of many Eastern Arc endemic species to habitat loss.

African palm civet recorded for the first time on Zanzibar

Recent surveys by Andrew Perkin in Jozani Forest, Unguja recorded palm civet for the first time in Zanzibar. Based on preliminary findings, the animals appear to be the same species as is found on the mainland, *Nandinia binotata*. Results of these surveys have been published in African Journal of Ecology: 42, pp. 232 – 234.

CEPF Coordination Unit

The Critical Ecosystem Partnership Fund has established a coordination unit in Kenya and Tanzania to provide guidance on the investment of CEPF's funds. There are four members of the coordination unit: BirdLife International, the International Centre for Insect

Physiology and Ecology (ICIPE), the Tanzania Forest Conservation Group and WWF. The coordination unit aims to raise awareness about funding from CEPF; to update stakeholders on what is being achieved; to assist applicants (particularly community based organizations) to apply and to participate in the review of applications. So far CEPF has received over 130 applications from civil society.



Participants in the CEPF consultative meeting in Tanga

In June, the Coordination Unit supported consultative meetings in Mombassa, Tanga, Dar es Salaam and Morogoro to inform potential applicants about CEPF. 146 people attended these meetings, representing 101 civil society organizations or government departments. This was followed by series of 'training of trainers' sessions to provide support to CBOs wishing to apply.



Participants in the CEPF "training of trainers" meeting in Morogoro

Pugu Forest: going, going.....

Antje Ahrends, University of Greifswald, Germany and Boniface Mohoro

Recent research in Pugu Forest Reserve documents once more the steady disappearance of this important forest. Since Moreau's work in Pugu in 1966, scientists have repeatedly found it to be amongst the most important sites for Coastal Forest endemics. However, despite its legal status as a Protective Forest Reserve, the forest has been in a state of gradual demise for the last 20 years.

Pugu lies approximately 25 km south west of Dar es Salaam. The forest is under intense pressure from

demand for wood resources by the residents of Dar es Salaam. In 1981 Howell estimated that 10 km² of the forest remained intact. In 1995 Clarke and Dickinson found that only 4 km² remained. By November 2004 not more than 2.5 km² of forest remains in a reasonable condition.

During the most recent study in Pugu, the forest condition was assessed along a set of transects that covered a total area of 5 ha. Severely degraded forest covered 30% of the reserve, with a further 40% so heavily disturbed that it had effectively turned into thicket. Equally alarming, more of the total transect area was either charcoal pits or completely burned (7%) than natural forest (6%). The remaining 17% was farmland (encroachment) and some was grassland. The density of charcoal pits was estimated at 8 pits per hectare of forest.



There are approximately 8 charcoal pits / hectare in parts of Pugu Forest Reserve.

Valuable timber tree species such as *Milicia excelsa*, *Brachylaena huillensis* and *Baphia kirkii*, are no longer present in the reserve (with the exception of a few small individuals). Instead, pressure has shifted to the logging of less valuable species such as *Scorodophloeus fischeri* and *Manilkara sulcata* – mainly used for the production of charcoal – and general utility hardwoods such as *Albizia* and *Bombax*. Preliminary data analysis shows a harvesting intensity of more than 20% for both timber and poles. The ratio of trees to shrubs was 0.3%, much less than the 1.6% measured along the nature trail, one of the few areas in Pugu Forest where the forest is more intact. In addition, a disturbingly high number of "naturally" dead timber trees were noted, which die as a result of the increasing liana density in degraded forest areas.

At the current rate of destruction, the future of Pugu Forest Reserve as a site for Coastal Forest endemics, looks dire. Full results from the forest surveys will be available in mid-2005.

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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McKnight Foundation
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M.A. Dobie
UNDP Small Grants Programme
UNDP/GEF

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: 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 June, 2005.

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The Arc Journal is also available online at: www.tfcg.org

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