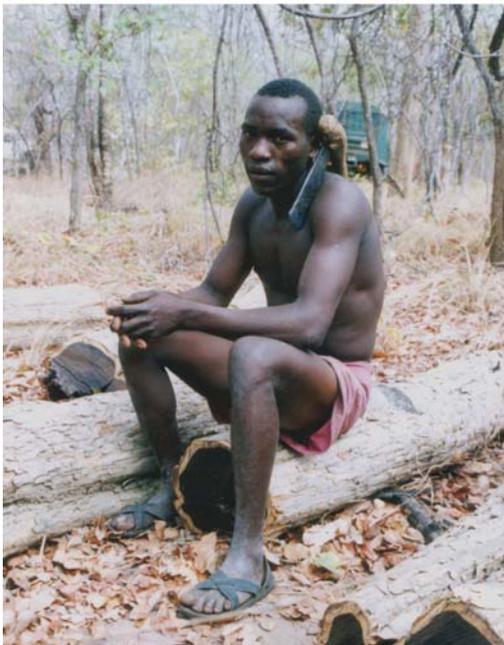


The Mpingo Conservation Project

Tanzanian Mpingo 99

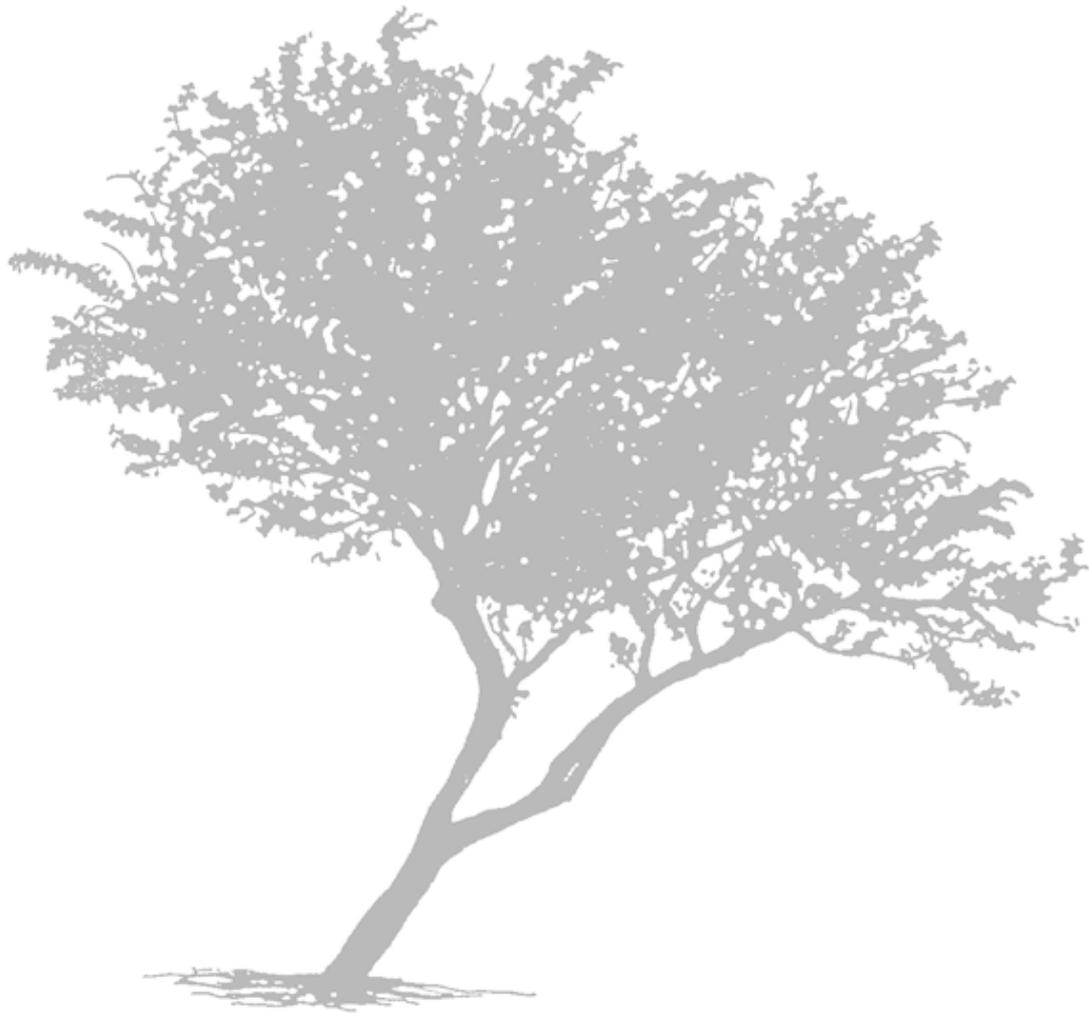
A Cambridge University Approved Expedition in association with Fauna & Flora International

Full Report



Bevan, L.J.V. & Harrison P.J.

Doubleday, J., Lesikari, J., Nicco, A., Timothy, J., Ball, S.M.J.



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Summary

1 Background

This study provides information on local uses of and attitudes towards the African Blackwood tree (scientific name: *Dalbergia melanoxylon*, local name: mpingo) in Tanzania. Despite being a protected species its availability is believed to be in decline. This is primarily due to its commercial value from the export of processed billets for the manufacture of woodwind instruments and use as a medium for wood carvers.

The *Mpingo 99* expedition was planned and carried out as a way to discover the largely unheard perspective and understandings of the situation regarding mpingo in the communities where mpingo is found and logged. This expedition was to provide a social dimension of understanding following the census and ecological field analysis of the *Tanzanian Mpingo 96* and *Tanzanian Mpingo 98* expeditions.

Previous ecological studies have indicated mpingo to be commercially threatened, the expedition aimed to assess the extent to which this was affecting local use and attitudes to the tree, if at all, of those whose rural livelihoods may or may not depend upon the wood for survival, prosperity and maintenance of their culture. It is an important voice, for if the tree is not of importance to rural livelihoods, promoting its conservation in rural areas would not only be difficult, but may also raise questions about the morality of conserving a species simply for the benefit of outsiders.

The expedition went to southern Tanzania to carry out this study due to the high importance of this region for mpingo usage both socially and economically. The expedition chose four villages for its study, all located in the district of Nachingwea.

2 Aim

The expedition aimed to evaluate the extent to which mpingo has a practical, social and economic function in rural Tanzania; and furthermore whether its value in this situation is commensurable with the perceived ecological value defined by conservationists and the use value attached to it by the woodwind industry.

When valuing indigenous tree resources it is important to recognise the views of small scale farmers may differ markedly from the perceptions of experts. This raises the question of how to promote the conservation of a single species when such a species does not dominate rural livelihoods.

This study examines how a local community in miombo woodland views and uses forest resources to ascertain the 'value' of the mpingo tree to different people. This 'value' cannot necessarily be expressed in quantifiable terms but qualitative results of its social, cultural and practical importance will be addressed.

This report pays attention to the local social and economic context and examines:

- How local people use forest resources.
- Which tree species are particularly significant in villager's daily lives.
- How licenses are issued for the logging of mpingo.
- Attitudes towards outside exploitation of the forest by loggers.
- Subsistence and income generating activities in the village.

We are concerned with the diversity of local people's own perspectives, as whilst it is useful to identify common characteristics within a sector of society, the village group is not homogeneous.

3 *Economic activities in the villages*

Village life revolves around agriculture and the planting and harvesting cycle. Crops are grown both for food use and cash and the work involves both men and women. In this context, the forest comes in as a source of wood for fuel and building, and gathering other forest products. However, the forest is not central to the villagers' lives. Their main concerns include the long distances travelled to fetch water, the vagaries of climate, and the distance to drug dispensaries, the market and schools. In order to stimulate interest in mpingo conservation, it would have to be incorporated into a more holistic economic system, where the economic benefits of the trees enable the villagers to acquire what they need, such as boreholes and agricultural inputs.

4 *Overview of mpingo usage*

It was apparent that the uses of mpingo are divided into two quite different areas: commercial timber processing for export, mainly to serve the woodwind instrument industry; and conversely for local use. Commercial logging does benefit local communities through employing some of its men, but this work is seasonal and unreliable, and the wages do not necessarily benefit others than the logger himself. At the community level, mpingo is used for carvings sold as artwork, and various building, fuel and medicinal uses.

Forest products are not the economic mainstay of village communities: the villagers' main income comes from cashew nuts and sesame. However, forest products do play a significant part in daily lifestyles, in particular for house building, firewood, employment in logging, medicine, charcoal, fruit, rope, and the carpentry business. Carpentry is especially important in Garibovu and Nangoi villages, where many men work in carving cooperatives, almost exclusively using mpingo for the traditional-style statuettes and masks that are the common perception of African souvenirs. These carvers are the only other group except commercial loggers to buy licenses and fell whole trees.

The forest is used extensively. The different tree species have different, although overlapping, main uses: some are favourites for building, etc, and although mpingo is favoured for some uses, there are always alternative species. However, the role of mpingo in traditional medicine is unique. Among its several perceived or actual curative properties is the important use in childbirth. However, it is important to note that this need does not necessarily compete with commercial uses of mpingo, since inferior quality trees at any stage of growth can be used for the medicinal purposes. Neither does medicinal use threaten the supply of mpingo.

Mpingo is considered the best wood for building houses, being hard and durable and not threatened by termites. It is also a superior firewood, because it burns with a hot flame and is easy to light. It is not a priority species for charcoal. Again, these uses can take advantage of trees that have been left behind by loggers: logging takes the straight trees, leaving twisted or otherwise 'cosmetically' defective trees.

5 *Conclusions and suggestions*

Logging itself is a good earner – sporadically, for young and fit men. While it pays better per log than logging other species, it is less reliable as an income. However, there is resentment towards the sawmill owners in the villages, particularly as villagers are beginning to realise the value of mpingo. Some women are inconvenienced by the scarcity of mpingo (for firewood, building and medicine) believed to result from commercial logging. During a discussion, the chairman and secretary of Mtua village said mpingo has the greatest economic value of all trees. They would like to see a management plan to plant and conserve mpingo, and would use their positions to help implement such a programme.

However, in general the community attitude towards conserving mpingo was not very enthusiastic, and little initiative was apparent. While the idea of conserving mpingo was received positively, the villagers' suggestions for action tended to be directed at others – a government programme,

funding from outside NGOs – which raises questions about the sustainability of the putative programme. However, the species has great potential as a cash earner for the local government and villages, and with a few simple measures such as increased resources for the forestry department, a cooperation system between carvers and sawmill, and community involvement in tending the trees, mpingo's benefits could be brought considerably closer to home and thus improving management of the species and its forest habitat.

Muhtasari

1 *Kujua Ukweli*

Masomo haya yanatoa habari juu ya matumizi ya kienyeji na maoni ya watu kuhusu mpingo (*Dalbergia melanoxylon*) katika nchi ya Tanzania. Ingawa imekuwa ikihifadhiwa kitaifa, uwepo wake unazidi kushuka. Kimsingi, hii inasababishwa na thamani yake ya kibiashara kutokana na usafirishaji wa vipande vilivyokwisha kuchongwa kwa ajili ya utengenezaji wa vifaa vya muziki.

Msafara wa *Mpingo 99* ilipangwa na kutekelezwa kama njia ya kugundua maoni na msimamo wa wananchi wanavyoelewa hali ya mpingo katika maeneo yao na inavyovunwa. Kwa wale wananchi wa kawaida, maisha yao inaweza au isiweze kutegemea juu ya mpingo kwa kuishi, kufaidika, na matumizi wa utamaduni wao. Msafara huu wa *Mpingo 99* ni kutoa uelewa wa kijamii; kufuatia sensa na utafiti wa kiekologia wa mpingo, uliofanyika kwenye misafara ya miaka ya 1996 na 1998, na kupanua uwezo wa utafiti wa siku za mbele.

Kutokana na matokeo ya masomo ya kiekologia na semina kuonyesha kwamba aina ya mti wa mpingo unaelekea kwisha, msafara ulikusudia kufanya mahojiano kwa mapana ili kujua ni kwa kiasi gani hali hii inaadhiri matumizi ya kienyeji, na kujua mawazo ya wanajamii juu ya mti huu. Kama kwa vyovote, ni sauti muhimu; kama mti sio muhimu kwa maisha ya kila siku ya wanajamii, uhifadhi wake katika sehemu za wanajamii hawa sio tu itakuwa mgumu, lakini pia inaweza kuanzisha maswali kuhusu haki ya kuhifadhi mti huu kwa sababu ya faida ya watu wa njema tu.

Msafara ulikwenda hadi kusini mwa Tanzania kufanya utafiti huu wa kuelewa kwamba katika ukanda huu matumizi mbalimbali wa mpingo ni zaidi katika mambo ya kijamii na kiuchumi. Msafara ulichagua vijiji vinne kwa ajili ya utafiti na vyote vinapatikana kandokando mwa mji wa Nachingwea kama tulivyohakikishiwa na Waziri wa Mali Asili wa Serikali ya Tanzania, hasa kutoka eneo analowakilisha la Lindi, na zaidi, Wilaya ya Nachingwea.

2 *Madhumini*

Madhumini ya msafara yalikuwa kuchambua ni kwa kiwango gani mpingo kwa vitendo, unahitajika kijamii na kiuchumi na watu wa mashambani. Aidha, kulinganisha thamani hiyo inalingana na thamani iliyotolewa na wahifadhi wa mazingira na vilevile thamani ya mti huu iliyotolewa na wafanyabiashara kataka viwanda vya kuchonga na kuandaa vipande vya mpingo kwa ajili ya matengenezo ya vifaa vya muziki.

Wakati wa kuthamanisha mali asili ya mti huu ni muhimu kujua maoni ya wananchi wa kawaida kwa sababu inaweza kuwa tofauti kabisa na maoni ya wataalamu. Hii inaanzisha maswali kwamba unawezaji kuongeza uhifadhi wa jamii ya mti mmoja, wakati mti huo haujaweza kusaidia maisha ya kila siku ya wananchi hawa.

Utafiti huu ulitazama jamii ya kawaida ya misitu wa miombo wanavyoona nakutumia mali asili ya msitu huu na kuangalia thamani ya mti wa mpingo kwa watu mbalimbali kijijini. Thamani hii haiwezi kuelezewa kihesabu, lakini inaweza kuelezewa kwa ubora wa mti wenyewe kwa mtazamo wa mapendekezo ya kijamii, kiutamaduni kwa kivitendo katika maisha ya watu.

Ripoti imezingatia mambo ya kijamii na kiuchumi kama yafuataoyo:

- Ni kwa njia gani watu wa kawaida wanatumia mali asili ya misitu
- Ni jamii ya mti gani hasa ni muhimu kwa wanakijiji kwa maisha yao ya kila siku
- Leseni inatolewaji kwa wakataji wa mpingo
- Mtazamo wa wanakijiji juu ya watu wanaotoka nje wanaotishia kumaliza msitu
- Ni kwa jinsi gani wanavyoishi na kupata faida sehemu gani ya kusaidia maisha

Ingawa mawazo ya wanajamii kwa jumla ni muhimu, lakini lazima ifahamike kwamba katika sehemu mbalimbali za jamii, mawazo ya watu binafsi inaweza kutofautiana.

3 Shughuli za kiuchumi vijijini

Maisha ya kijijini yanahusisha mzunguko wa kilimo. Mazao yanayooteshwa yote yanatumika kwa ajili ya chakula na biashara, na kazi inawahusu wote; wanawake na wanaume. Kwa sehemu hii, msitu unakuwa kama chanzo cha kuni kwa ajili ya kupikia, ujenzi, na kuokota mazao mengine ya msitu kama dawa na kadhalika. Hata hivyo, msitu hautumika kwa kiwango cha juu kijijini. Matatizo yao zaidi ni mwendo wa mbali kufuata maji, mabadilko yasiotabirika na umbali wa kwenda hosipitalini, sokoni na shuleni. Ili kusisimua uhifadhi wa mpingo, ingetakiwa kushirikishwa mfumo wa uchumi kwa ujumla ambapo faida ya uchumi wa mti huu utawezesha wanakijiji kupata mahitaji yao, kama mabwawa ya maji na mtaji wa kilimo.

4 Matumizi ya mpingo kwa jumla

Kwa uwazi, matumizi ya mpingo yamegawanyika katika sehemu kuu mbili: Kibiashara, kwa uuzaji wa mbao ya mpingo nje ya nchi ili kusaidia maendeleo ya viwanda vya kutengeneza vifaa vya muziki, na kwa kiasi, inatumika katika jamii. Viwanda vya kukata mpingo inasaidia jamii kupitia kuwaajiri vijana, lakini kazi hii ni ya msimu na sio ya kutegemea, na mishahara haitoshi kwa kuwasaidia zaidi ya mkataji. Katika ngazi ya jamii, mpingo unatumika kwa kuchonga vinyago vinaovyouzwa kisanii, na matumizi mengine kama ujenzi, mkaa, kuni, na madawa.

4.1 Leseni wa ukataji wa mti, na serikali kwa upande wake

Ingawa imekuwa ikihifadhiwa kitaifa, uwepo wake unazidi kushuka. Kimsingi, hii inasababishwa na thamani yake ya kibiashara kutokana na usafirishaji wa vipande vilivyokwisha kuchongwa kwa ajili ya utengenezaji wa vifaa vya muziki. Matumizi hayo yanaleta faida ndogo kwa wote; jamii ya kawaida, na serikali kuu. Wanajamii hawastahili au kumiliki mipingo, wakati hawafaidiki sana kutokana na ukataji wa mpingo. Ingawa mpingo kama mti uliyohifadhiwa unaelekea kushindikana kutokana na hali ya utoaji wa leseni ya kukata mti huu, faida serikali inayopokea kutokana na leseni hizi ni asilimia ndogo sana ya thamani halisi kwa sababu utawala kiserikali unakosa wafanyakazi na hata usafiri ambaye ni muhimu kutembelea msitu na kusimamia ukataji wa mpingo.

Katika Tanzania, kutolewa miti wa thamani kama mpingo ikatwe kwa kutozwa kodi kileseni. Kwa mti wa daraja la 1A, ambayo inajumuisha mpingo na ebony¹ haswa, bei ya kila m³ ya mbao ni TSh 60,000/- (ambayo inakaribia £50) inalipiwa katika serikali kuu kupitia ofisi ya misitu wilayani. Leseni kwa miti mingine inatofautiana kutoka TSh 5,000/- hadi TSh 25,000/- kwa daraja la 1B. Wakati DFO (District Forest Officer, au Ofisa ya Misitu Wilayani) inaweza kutoa leseni bure kwa kukata kwenye ardhi ya wananchi, inahitajika aombe ruhusa kutoka utawala wa serikali kuu kwa

¹ *Diospyros Spp.* Katika Afrika Mashariki, mpingo mara nyingi inafikiriwa kuwa ebony, ingawa ni jamii tofauti kabisa. (Lovett, 1988)

ajili ya ukataji katika eneo linalohifadhiwa. Hesabu inayopatikana kutoka Ofisi ya Mali Asili Nachingwea inaonyesha kwamba kati ya mwaka 1989 na 1999, 755.7 m³ ya mpingo ilitolewa kimagendo. Kiasi ya TSh 19,253,292/- imepotea ukilinganisha na bei ya leseni.²

Mbao pekee unaokaguliwa na kukatishwa kodi ni ule unaoondoka nchini kwa kupitia njia za rasmi; nafasi ya kupitisha mbao kwa njia magendo ni kubwa, haswa kupita mabandari madogomadogo kwenye bara na Unguja na Pemba. Hata hivyo, uzalishaji wa mpingo kwenye viwanda vya mbao – kama ni kwa njia za kisheria au kimagendo – huko Mkoa wa Lindi ni shughuli ndogo ya mara kwa mara tu. Hali hii inatokana na kubadilisha mwelekeo wa usafari, mapendeleo mengine ya mfanyabiashara, na kupanda na kushuka kwa masoko. Muda huo nguvu kubwa na matumizi yenye uharibifu wa mpingo, siyo njia ya kushinda kabisa.

4.2 Utambuzi na usawa wa matumizi kwa jumuiya.

Wakati wa kuchunguza usawa wa matumizi ya mpingo kwa umoja, mtu anatakiwa kujua yakwamba mazao ya misitu siyo ya njia kuu ya kuishi kiuchumi kwa moja wapo wa vijiji vya Mtau au Chimbendenga: kipato kikuu cha wanavijiji hawa kinatokana na korosho na ufuta. Hata hivyo mazao ya misitu ni mchango muhimu katika maisha yao ya kila siku, njia zenyewe ni katika ujenzi wa nyumba, kuni, kufanya kazi ya kukata magogo, miti shamba, mkaa, matunda, kamba, na biashara ya useremala. Useremala ni muhimu sana katika vijiji vya Garibovu na Nangoi, ambapo wanaume wengi wanashirikiana kuchonga, takriban pasipo kutumia mpingo katika mitindo ya kienyeji ya sanamu na barakoa ambazo ni za utambulishi katika ukumbusho ya kiafrika. Wachongaji hawa ndio kundi lingine ambalo ukiondoa wakataji wananunua leseni na kuangusha miti.

Msitu unatumika kwa ukubwa. Aina tofauti ya miti inatofautiana, japo inapishana, matumizi makuu: mingine ni kipenzi cha kujengea, n.k, na japokuwa mpingo unapendelewa kwa matumizi mengine, kuna uwezekano wa kuchagua aina nyingine ya mti. Hata hivyo nafasi ya mpingo katika madawa ya miti shamba ni ya kipekee. Miongoni mwa nguvu chache zinazotambulika au halisi za kutibu ni ile ya kutumika katika kujifungua mtoto. Hata hivyo ni muhimu kunukuu ya kwamba haja hii siyo lazima kushindana na matumizi ya biashara ya mpingo, tangu wakati ule sifa duni ya miti katika kiwango chochote cha kukua unaweza kutumika kwa matumizi ya madawa ya miti shamba. Wala siyo matumizi ya dawa za miti shamba ambayo yanahatarisha uzalishaji wa mpingo.

Mpingo unadhaniwa kuwa ndiyo mbao nzuri ya kujengea nyumba, kwa sababu ni mgumu na yakudumu na siyo wa kutishiwa na mchwa. Pia ni bora kama kuni, kwa sababu inachomeka na joto lenye mwanga na ni rahisi kuwasha. Siyo jamii ya kipaumbele kwa mkaa. Tena, matumizi hayaweza kuchukuwa faida ya miti ambayo imeachwa nyuma na wakataji: ukataji kwa njia rahisi, miti inayo hifadhi maji, unaacha miti iliyojisokota au (iliyopodoka) na yenye upungufu.

5 Maamuzi na mapendeleo

Ukataji wenyewe unaingiza kipato kizuri wenye mtawanyiko, kwa vijana chipukizi na wenye nguvu. Wakati inalipa vizuri kwa gogo kuliko ukataji miti ya aina nyingine, ni tegemezi la chini kama kipato. Hata hivyo, kuna hisia mbaya kwa wamiliki wa viwanda vya mbao katika vijiji, kwa kiwango fulani wanakijiji wanaanza kugundua au kujua thamani ya mpingo. Wanawake wengine ni wasumbufu kutokana na shida au uhaba wa mpingo (kwa kuni, kujengea, na madawa) matokeo yanayoaminika kutokana na biashara ya ukataji miti. Wakati wa kikao, mwenyekiti na katibu wa kijiji cha Mtua walisema mpingo unathamani kubwa kiuchumi kati ya miti yote. Walitaka kuona mipango ya uongozi ya kupanda miti na kutunza mpingo, na wangetumia nafasi zao kutekeleza taratibu hizo.

Hata hivyo, kwa ujumla msimamo wa jumuiya ya kutunza mpingo ulikuwa siyo wa shauku, na kidogo ari ya kuonekana. Wakati wazo la kutunza mpingo lilipokelewa kwa uhakika, mapendeleo ya wanavijiji kwa vitendo vinavyoelekea moja kwa moja kwa nyingine-taratibu za

² Bei ya leseni ilipanda katika muda huu.

serekali, kuwekeza kutoka shirika za msaada ambazo zinazuwa maswali juu ya himili ya taratibu iliyodhaniwa. Hata hivyo, aina hii ina uwezekano wa kuingiza kipato kikubwa cha pesa katika serekali maalum na vijiji, na vipimo vichache kama vile ongezeko la mali katika idara ya misitu, mfumo wa ushirikiano baina ya wachongaji na wapasuaji mbao, na kujijumuisha kwa jumua katika kutunza miti, faida za mpingo inaweza kuletwa kwa maana zaidi karibu nyumbani na hivyo kuimarisha utawala wa jamii hii na makazi yake msituni.

The Team

British Members

Lucinda Bevan – Co-Leader & Treasurer

BA in Geography from Fitzwilliam College, Cambridge and now has an MA in Rural Development from the University of East Anglia.

Lucinda took part in the *Tanzanian Mpingo 98* expedition, and taught in Tanzania in 1996.

Paul Harrison – Co-Leader & Photographer

BA in African Language & Culture from the School of Oriental and African Studies (SOAS), University of London, and now has an MSc in Tourism, Environment and Development, also from SOAS. Fluent in Swahili, with a keen interest in protected areas management and community development. He has experience in conservation projects in Uganda, Kenya and Namibia.

James Doubleday – Medical Officer

BA in Anthropology from Jesus College, Cambridge.

James has a keen interest in socio-economic perspectives of Africa developed after two years of schooling in Swaziland.

Tanzanian Members

Jonas Timothy – Co-Leader & Advisor

Assistant Forestry Officer with the Kilimanjaro Catchment Forest Project.

The sage advisor for the team, Jonas comes from a background of many years in the natural resources field, with a particular interest and experience in community-based natural resource management. Veteran of the *Tanzania Mpingo 96* and *98* expeditions.

James Lesckari

Conservationist and village chairman from Arusha Region

An enthusiastic and highly capable RRA man, James is now pursuing further studies in natural resource management at the College of African Wildlife Management, Mweka, while continuing to be chairman of his village.

Anette Nicco

BA in Social Sciences from the University of Dar es Salaam

Paskal Ngonyani – Driver & Mechanic

Driver on the *Tanzanian Mpingo 98* expedition, Ngonyani has a background as a mechanic for the Tanzanian police, and appears able to fix almost any mechanical problem.

Contents

Summary	3
The Team	10
PART I : CONTEXT.....	12
Defining Mpingo: Context, Ecology and Trade.....	13
Geographical Context.....	15
Land Status & Licensing.....	18
Role of the Forest in Rural Livelihoods.....	21
PART II : THE RESEARCH.....	23
Methodology	24
Village Activities	26
Forest Uses and Values	27
Logging and Timber.....	33
Carvers and the Carving Industry	40
Discussion	45
PART III : THE REALISATION.....	49
Logistics.....	50
Health and Safety	54
PART IV : APPENDICES.....	57
Appendix I : Farming Activities	58
Appendix II : Tree Species List	59
Appendix III : Script for RRA Groups.....	60
Appendix IV : Script for Semi-Structured Interviews with Loggers	65
Appendix V : Medicinal Uses of Mpingo by Petro Xseri	67
Appendix VI : Accounts.....	69
Appendix VII : Acknowledgements.....	70
Appendix IX : References.....	71
Appendix IX : Contact Details.....	73

Part I : Context

Defining Mpingo: Context, Ecology and Trade

1 Context

Over the last thirty years, there has been an increasing international interest in the sustainable use and conservation of the world's natural resources, that more recently has combined with the recognition of people's role as users of these resources. These two have combined in what is known as sustainable development. A number of world conferences have taken place to promote safeguarding the environment and biodiversity for the welfare of future – and present – generations (UNCHE 1972, IUCN 1980, WCED 1987, UNCED 1992) (Adams 2001).

In light of this growing international consciousness, efforts have been made to conserve East African Blackwood (*Dalbergia melanoxylon*), locally known as mpingo. "A species of local, national and international value and importance is being totally neglected in terms of conservation (it) is in fact the most highly valued traded timber in the world and is of cultural, ecological and economic significance where it grows" (Sharman 1995). Since 1992 Fauna and Flora International have made efforts to focus attention on the species as part of their *Soundwood Programme* (FFI 1995). In 1994 it assisted the governments of Kenya and Germany in preparing a proposal to present to CITES (Convention on International Trade in Endangered Species). The proposal was subsequently withdrawn but enough concern had been raised for the government of Mozambique to invite an international group of conservationists, academic experts and representatives of the music and woodworking industries to meet in Maputo in 1995 to prepare a management strategy for mpingo. Lack of funding has prevented implementation of the initiatives drawn up at the conference.

2 Ecology

Mpingo is estimated to take 70-100 years to grow to a harvestable size (Gregory *et al.* 1999). It is notable for the beautiful dark heartwood (surrounded by up to 2.5cm of lighter colour sapwood) which in the top quality timber is inky black. It is found throughout east and central Africa, although marketable quantities are only available in southern Tanzania and northern Mozambique. The dominant land cover in this region is the savannah-like Miombo open woodlands, and it is within these woodlands and the ecologically distinct coastal forests that much mpingo is found. Miombo's structure and composition is largely maintained by periodic dry season fires. Under anthropological influence miombo can be burnt as frequently as twice a year. In the context of the research area, this was a very common occurrence in order to clear land for cash and food crops. More detailed descriptions of mpingo ecology and its miombo habitat are given in the reports of the Mpingo Conservation Project expeditions *Tanzanian Mpingo 96* (Ball *et al.* 1998) and *Tanzanian Mpingo 98* (Gregory *et al.* 1999).

3 The Music Trade

Mpingo is considered to be "the finest of all turnery timbers, cutting most exactly and finishing to a brilliantly polished lustrous surface" (Bryce 1967). It is the preferred wood of the musical instrument trade, particularly clarinets, because of its high density, fine texture and exceptional durability (Moore & Hall 1987). One cubic metre of processed mpingo blocks is worth up to US \$18,000 (Jenkins *et al.* 2002).

A theoretical consideration of sound production in woodwind instruments dictates that the wood used does not affect the sound produced. "So long as the walls of the instrument are thick enough to be rigid—two millimetres for woods—and the inside walls are smooth, the kind of material is, for the most part, immaterial" (Harby 1998). However "no professional would be seen dead

playing a plastic instrument” (quotation from a leading manufacturer in UNEP 1988). The timber species used is widely believed to affect tonal quality, see for example Burns (1999). Some scientists say that this difference of opinion is largely due to the craftsmanship that goes into instruments made from different materials (Harby 1998) although wood grain size could influence the sound produced. Boosey and Hawkes’s subsidiary Buffet Crampon have pioneered the use of a composite material using mpingo sawdust to make a ‘Green Line’ of oboes and clarinets (FFI 1999). This sawdust would otherwise be a waste product. They face suspicion from musicians who believe that mpingo wood, rather than craftsmanship, is critical to the sound produced (Harby 1998). Currently professional musicians almost exclusively use instruments made from solid wood and it is likely to take years to change this situation.

Musical instruments are created from the heartwood. Large, good quality pieces of heartwood have always been scarce because the tree is naturally twisted and branched and the wood tends to split (Lovett 1987, Moore & Hall 1987, McCoy-Hill 1993, Ball *et al.* 1998). Mpingo is known to be attacked by one species of boring insect, a cerambycid larva. Pinholes made by the larvae are often found in logs (Moore & Hall 1987). At sawmills any billet with a visible pinhole fault is rejected because it is indicative of a serious fault deep inside the wood. A tree with a large fault, for example caused by heart rot or fire damage cannot yield a billet sufficiently large enough to make a clarinet or a bagpipe chanter (Lovett 1987).

Geographical Context

1 *Southern Tanzania*

The southern part of Tanzania, particularly inland, is characterised by large expanses of forest and scrubland, and, receiving an average of 400 to 800mm of rain each year, is considerably dryer in climate than the fertile coastal region and the verdant and mountainous regions of the north. With minimal infrastructure, little industry and fewer natural resources, the south has remained relatively underdeveloped compared to the richer north and consequently is one of the poorest areas of a poor country.

« Southern Tanzania is isolated from the north by the Rufiji river which can only be crossed during daylight by a single ferry. This ferry does not operate at all during the wet season, which would be difficult in any case for most of the roads are unsurfaced to the south. Road travel is almost impossible during this time, and even during the dry season the deep ruts cause considerable wear and tear to all vehicles.

The soil in this region is of such low fertility that herbaceous crops cannot readily be grown commercially without fertilizing. However, tree crops are successfully grown on *shambas* (smallholdings) and commercial plantations. Consistent to Tanzania's economic reliance on agriculture as a whole, the southern region is heavily reliant on its main cash crop, cashew. In 1999 Tanzania produced 106,500 metric tons of cashew nuts. In the region we worked in, cashew was the basis for smallholder economic sustainability, followed distantly by sesame and forest products including timber and honey. » (Gregory *et al.*, 1999)

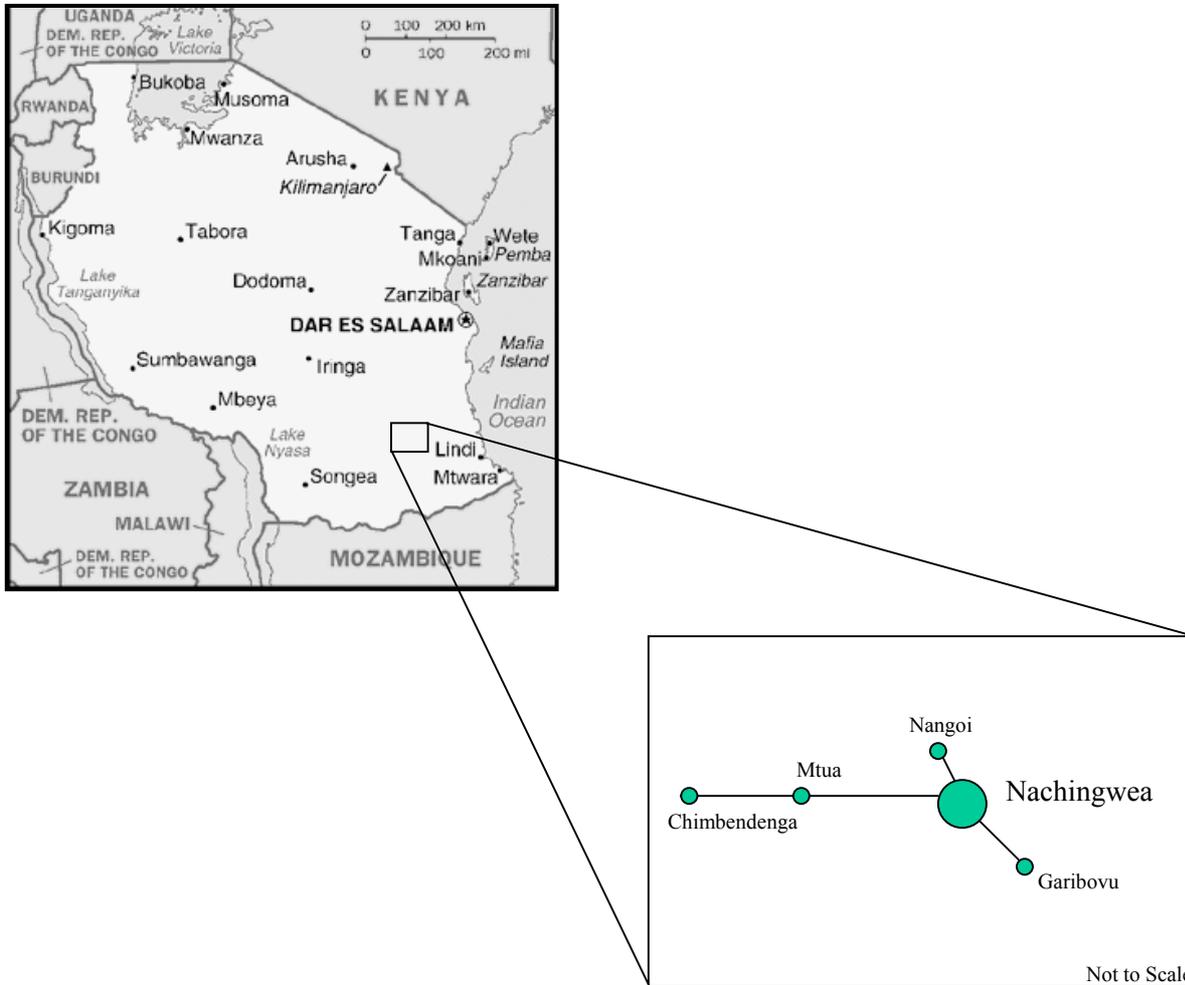
Politically, Tanzania is, for all practical purposes, a single-party country. CCM – Chama Cha Mapinduzi, or the Party of the Revolution – has remained in power since independence in 1961, albeit with several innovations and reforms. The 1967 Arusha Declaration was one such milestone, charting a course of agricultural self-reliance for the economy, and popular democracy – elections within the single party – as the electoral form. In 1974 a country-wide experiment with collectivisation was attempted, called *Ujamaa Vijijini* – 'villagization'. During this time several of the villages dealt with in this survey were officially organised. Ujamaa petered out after causing chaos and misery in the production chains. Tanzania has always been socialist in outlook, although economic ruin and world consensus has recently moderated and re-privatised the economic structures. Multi-party parliamentary elections and political decentralisation have also been introduced in recent years. The opposition remains weak and splintered, except on the islands of Zanzibar.

Administratively, the country is subdivided into regions, then districts, divisions, wards, villages, sub villages, and cells. In theory, the ten-household cell influences policy upwards through the layers of administration. Nachingwea is a district of the Lindi region, and the town Nachingwea is its administrative centre. Its main ethnic groups are the Mwera, Makua and Ndondi.

2 *Nachingwea*

A small market town, Nachingwea was used as a base for the team during the research period. With the feel of a pioneering settlement amid the bush, access to this town is gained only by rough, unsurfaced roads from Masasi and Lindi, and one consequently tends to arrive at the town covered in a fine layer of the iron-rich red dust that characterises the area. Nachingwea has a number of churches of different denominations, several primary schools, and a hospital with reasonable medical facilities, at least enough to treat minor conditions and offer advice on any illness. It is however, considerably smaller and poorer than the Ndanda hospital outside Masasi.

Nachingwea has a permanently thriving market where it is possible to buy basic supplies and a variety of fruits and vegetables. Most of the town is built along one main road which runs north-south through the town. Trade flows regularly between Nachingwea and the coastal towns of Lindi and Mtwara, as well as Dar es Salaam during the dry season, often by carrying goods within the regular buses. Due to the lack of infrastructure Nachingwea is effectively cut off from the majority



of Tanzania during the rainy season.

3 Mtua

This village was our first base for research. It was recommended to us as a potential study site by the Natural Resources office in Nachingwea who knew people there used mpingo wood for a number of social and economic functions. Mtua is about 10 miles or some 50 minutes drive west from Nachingwea town. Following a successful and friendly meeting with the village chairman and fellow elders we were given permission to camp on a cashew plantation on the western outskirts of the village. The village centre was twenty minutes walk from this camp. Our water supply was a nearby well used daily by the village.

The village management is divided into nine sub-villages, known as *kitongoji*. These are centred around the first, Mapinduzi, where the CCM office is based and are named: Darajambili (west), Mchangani Jiungeni (beyond the sawmill to east), Limbanyama (southeast), Sina Mapinduzi, Farm17, Mtua Farm, Amani and Umoja. The total population is estimated to be 2400 people, living in 466 households. Of those with working ability, 420 are men , and 469 are women. There

are 519 men under 18, and 557 women, and the disabled community amount to 46 men and 37 women.

Mtua has a number of institutions: there is one primary school, a basic dispensary, one Roman Catholic Church and a smaller Apostle Church, one Mosque and the Cooperative Union where the crops are gathered for sale, including the cashew yield. The nearest secondary schools are in Nachingwea, Matekwe and Mnero.

The Ward Office is in Mtua, but the Division Office is in Maipanga, some 30 miles beyond Nachingwea. There is a privately owned sawmill to the east of the village. According to the villagers Mtua depends on crops, timber, charcoal, wood for building and firewood to sustain itself.

4 *Chimbendenga*

This village was our second site for research. Its eight sub villages include Zambia road, Jiungeni, Nauvi B and Nalengwe, and research was carried out in the latter three. Chimbendenga village is surrounded by both public forest and the Lionja Forest Reserve, which was gazetted in 1954. It is situated 20 miles west from Nachingwea town. It has a total population of 1359, with 309 households. The village was chosen as, according to the Nachingwea District Forestry Officer, it is where the best quality mpingo can now be found and where the majority of mpingo logging occurs. The village was formally founded in 1974 under the Ujamaa villagization program. A history prior to this was given by Petro Xseri, a respected elder in the community.¹

The village is on a dirt road making travel to Nachingwea in the wet season problematic. There are no buses or formal modes of transport and people travel by bicycle, walk or catch a lift with a timber lorry. There is a primary school but no nursery or secondary school. There is no running water or electricity. A small shop sells sweets, cigarettes, and other minor provisions. There is also a dispensary, although it lacks many medicines and trained staff.

5 *Nangoi and Garibovu*

Research in these two villages was much less extensive than at Mtua and Chimbendenga, and concentrated on the mpingo carving workshops – the Juhudi cooperative in Garibovu and the Chipukizi Makonde Carvings Cooperative (P.O.Box 207 Nachingwea) in Matangani Sub Village, Nangoi. Only the carvers were interviewed. The carving cooperative of Nangoi is found ten minutes drive north from Nachingwea. Originally a small village, Nangoi has been slowly swallowed up by Nachingwea's gentle expansion. Garibovu is half an hour's drive south-west of Nachingwea, on the road to Masasi, and the carving cooperative itself is half a mile from the village, on the roadside in order to attract business.

¹ According to Petro Xseri the village was founded in 1926. A group of European researchers were flying over the forest and saw a man, Gande Bin Kunchip, who had been presumed dead. When it was learnt he was living in the forest people from his local area, Masasi, came to collect him. He attempted to escape but they managed to find and feed him. The villagers then realised the area was much better for agriculture than Masasi and a percentage of them settled. The village grew slowly with scattered farms until 1974 when villagization forced people to move to the centre.

Land Status & Licensing

1 *An African perspective*

Although central Africa's dry tropical forests have received less media attention than the tropical rainforests, this biome too is under threat.² These forests – which include the miombo woodland the project has studied in Tanzania – are degraded by the combined effects of economic acceleration and population growth: more people are using the woods to satisfy the increased demand for timber and other tree products. Most unprotected forests in Tanzania have been degraded or destroyed to some extent.³ These facts apply to mpingo: although some trees are found in protected areas such as the Selous Game Reserve and Mikumi National Park, most grow on public land.

2 *Tanzania's forests*

A forest reserve is an area with restricted user access: activities like logging, fuelwood gathering, farming and hunting are prohibited. Only 30 % of Tanzania's forested land lies within a forest reserve, and so the main source of mpingo is public, unprotected, land.

The formal administration as well as day-to-day implementation of forest policy is highly decentralised. Policy direction, however, comes directly from the central government.

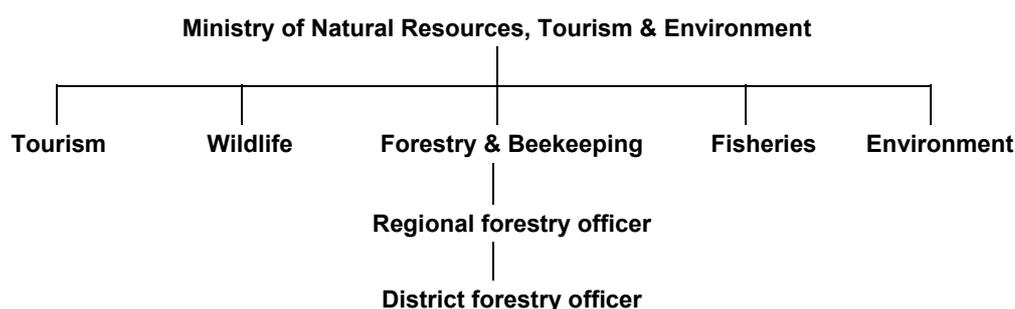


Figure 1. Administration structure in Tanzanian forestry. (Source: Gregory *et al.*, 1999)

The central government only has direct control over forestry projects of national importance. At the regional level, officers provide guidance and technical assistance. Implementation and enforcement of regulations is at the district level. In Nachingwea, Mr. Cosmos Mundo was District Forestry Officer (DFO) at the time of research. The feature of forestry control that concerns mpingo most closely is the licensing system.

In Tanzania, extraction of valuable tree species is taxed in the form of licensing. For grade 1A trees, including mpingo and true ebony⁴, the price is TSh 60,000/- per m³ of wood (approximately £50), paid to the central government through the district forestry office. Licences for other trees vary from TSh 5,000/- to TSh 25,000/- for class 1B. While the DFO can issue licences freely for logging on public land, he has to apply for permission from central government to authorise felling inside forest reserves.

² Janzen, 1988; FAO, 1993

³ Puhakka, 1991; Clarke, 1995

⁴ *Diospyros spp.* In East Africa mpingo is often referred to as ebony, even though it belongs to a completely unrelated genus (Lovett, 1988).

Figures obtained from the Natural Resources Office in Nachingwea show that between 1989 and 1999 755.7m³ of mpingo was legally extracted, amounting to TSh 19,253,292/- in license fees.⁵ However the most harvested tree, by volume, is mninga (*Pterocarpus angolensis*); of which 1,992.6m³ was extracted over the same period (over 2.5 times greater than mpingo), amounting to license fees of TSh 8,230,054/-. However between 1995-1999, more than twice as much mpingo as mninga was felled.

3 *Land use patterns*

Julius Nyerere, the first president of Tanzania, was opposed to the individual ownership of land, and transformed land from a communally owned resource into a public resource controlled by the state.⁶ Individuals or groups have user rights which can be held as long as the state deems fit, with people from one part of the country having access to land in other parts of the country. The term 'public land' here means communal lands - land collectively owned and not allocated for use by a particular individual or family. Forest lands, grazing lands and unallocated arable lands could constitute communal land.⁷ This is not synonymous with collective land tenure and works as a regulated open access resource.⁸

Prior to villagization⁹, areas of surplus arable land which were under customary tenure could be obtained by anyone by clearing it, and for example establish a grazing area or watering point – provided the person had the permission of the individual who exercised effective authority in the area. Investment in labour gave the land resource value and created ownership rights, which were held by the person who had cleared the lands, and by his heirs. Since the villagization programme's rise and demise, undeveloped land and other unclaimed resources – the type of land where most logging occurs – are allocated only by the village council. This may change with the recent policy climate that stresses private property rights.

4 *Land ownership patterns in Mtua village*

On an individual scale, land use is regulated by supply, demand, and the village council – not legislation from above. Land patterns are not static, with crops and plots rotated on a user need-basis – new land has to be cleared every 3-4 years. Unsurprisingly, owned resources are conserved with more care than communal ones: the villagers of Mapinduzi sub village stated that forest cover is largely removed to plant cashew trees (*mkorosho*); in Jiungeni the women suggested planting *mkorosho*, *mvule* and *mninga* instead of mpingo, since they grow faster and therefore provide more immediate economic benefits.

The area of land owned varied by village, age, and the amount of different crops grown. Old men claimed to own on average 10 acres, younger men stating three. The women of Darajambili listed the different crops and plot areas.

⁵ The price for licenses increased over the time period.

⁶ Lane, 1998

⁷ James & Fimbo, 1973

⁸ Bromley, 1991

⁹ *Ujamaa* villagization program - much of the country's population was resettled into villages in 1974. Initially the objective was to collectivise agricultural production and land resource management was devolved to the village level. In practice much of the agricultural production was carried out on privately managed plots and over time a greater tolerance of private enterprise in agriculture was noted.

Crop	Typical area of land devoted to it (acres)
Maize	1 – 3
Millet	1 – 4
Rice	1 – 3
Groundnuts	1 – 2
Cashew nuts	1 – 3
<i>Kunde</i> (brown beans)	1 – 2
<i>Njugu</i> (peanut)	1
Peas	2
<i>Fiwi</i> (beans)	½
<i>Choroko</i>	1

Table 1. Typical area of land devoted to various crops per household as listed by the women of Darajambili.

The old men, in turn, listed the areas used for cash crops and forest products.

Land Use	Typical area of land devoted to it (acres)
Forest : firewood, poles, ropes	2
Millet	1
Maize	1
Sesame	1
Cashew	1
Mix : cassava, groundnuts, peas	4

Table 2. Typical area of land devoted to various uses as listed by the old men of Darajambili.

Even a man with more than 10 acres of land, including 4 acres of maize and 6 of cashew, may have to buy food in bad years – this happened to the headman of Mapinduzi sub-village in 1998. By law, everyone is required to plant two acres of cassava and business crops, to alleviate the famine risk.

When it comes to forest resources, local villagers receive no payment for trees cut in their area. In Singa, the village council allows collection of poles, firewood and bark for ropes without needing to ask permission. Valuable trees, however, can't be felled without a licence. This means the farmers who clear land can't fell trees like *mninga*, *mpingo*, *mbambakofi* or *mbalamwezi*. Instead, the village council benefits from the tax when these trees are felled by outsiders, e.g. Mr. Dulbai, who takes timber to the market in Nachingwea in his truck. Whether the villagers benefit more from this tax than they would from using those trees themselves, is a matter of contention. To a large extent, the practice of agroforestry is a normal occurrence in this environment. When land is cleared for crops, larger trees are often left standing including those of high value (which remain the property of the potential licence holder). Allowing a limited variety of tree species to remain in a cleared area brings not only the benefits of shade, but also easy access to forest products.¹⁰

¹⁰ See *Role of the Forest in Rural Livelihoods* chapter.

Role of the Forest in Rural Livelihoods

It is perhaps important to understand the tree in a utilitarian context. In Tanzania a tree will rarely be conserved simply for the sake of it. It will be conserved or managed if there is an incentive to do so and benefits to be gained, particularly in an area with high levels of poverty and a near subsistence level of livelihood. Therefore when approaching the issue of the conservation of a single species it is essential to find out how it can be used by the community.

The use of the forest, and of particular species in it can be important or even essential for rural livelihoods. Forests are a natural capital base, and can be divided into two use-categories: the wood itself, and the other 'products' found within. Water catchment properties and illegal firewood were the main perceived benefits of Lionja Forest Reserve, others cited it as a good source of building poles and honey. The principal uses of forest as a natural resource for rural livelihoods in these two categories are summarised below.

1 Forests for timber and energy

Wood is one of the most versatile and ubiquitous products in human use. Construction and timber trade, plus carvings and other marketable tourist products provide an important economic asset. In addition, wood meets virtually all energy needs for many people in the developing world.

Examples of wood based forest uses are:

- Timber exploitation
- Carvings (tourist industry)
- Paper
- Furniture
- Construction
- Tool making
- Fuelwood, including tobacco & tea curing
- Charcoal production

2 Non-wood forest products

It is important to recognise the economic and social importance of other forest products:

- Medicinal (may utilise plant leaves, shoots, roots etc.)
- Bamboo
- Fodder for livestock
- Cultural value
- Tourist destination
- Biodiversity / ethical reasons

Not to be forgotten is the fact that woodland, where not specifically reserved by government, always has the potential to be cleared for agricultural uses.

Part II :

The Research

Methodology

1 Background

Community Based Conservation (CBC) or Community Based Natural Resource Management (CBNRM) approaches are steadily changing the face of conservation in Africa. This research was undertaken with the view that CBNRM is ultimately the most realistic and equitable step when dealing with the conservation of a species such as mpingo. To this end the research was focussed on gathering as complete and truthful picture as possible of the community view of mpingo, and how they value it, relative to other species use and development activities in general. The approach was simply; if the community gains value from mpingo, then the incentive will probably be there to manage it sustainably. If it is of no use to the community, then there is little chance that it will be conserved.

Thus the research aimed to ascertain the degree to which the tree was valued. In doing so, careful consideration was taken in assuring that the viewpoints gathered were representative of different groups within the community. Certain groups, such as women and younger adults, may be less powerful than others, the “excluded voices”¹, and care must be taken that their views are not swamped by a vocal minority. This was particularly important given the likelihood of diverse and conflicting resource priorities, values and beliefs pervading social life with reference to mpingo.

Given the context, scale of research and the time available, the methodology tried to incorporate these interests by using Rapid Rural Appraisal (RRA) practises to encourage local villagers’ participation, and to give an insight into their values, priorities and preferences. RRA is a series of techniques that are reported to generate results of less apparent precision, but greater evidential value, than classic quantitative survey techniques. The approach is flexible, sensitive and quick. It is essentially extractive as a process with the agenda still that of the outside researcher. The emphasis is on the importance and relevance of situational local knowledge, realising that rural people have valuable insight regarding the subjects that affect their lives.

The nature of our research varied slightly from site to site, although the basic principles were the same. Discussion groups were held at times least destructive to farm work. In Mtua, we ran most of the RRA sessions in the morning, leaving the afternoon free to write up results and plan further sessions. Semi-structured interviews were carried out in the afternoon. In Chimbendenga, the community advised us that due to their need to carry out farming activities in the morning, the sessions would be better carried out in the afternoons, which is what happened. Interviews with Chimbendenga loggers were semi-structured (see *Appendix V*). While based in Garibovu, discussions and interviews with individuals in Garibovu and Nangoi occurred at various times during the day, based on the free time of the interviewees. RRA sessions tended to last about three hours, with journey time to different parts of the village varying. At each session, we tended to have one or two team members involved in the discussion and another taking notes. Whenever possible, we tried to use female facilitators with female groups, and male facilitators with male groups. However, given that we had only one female Swahili speaker in the team, this was not always achievable. The number of groups per each session varied, but were split by gender and/or age. Methods of obtaining data during the discussions included pair-wise ranking and the use of visual aids such as cards.

¹ Foucault, 1980

2 *Data Collection*

In Mtua and Chimbendenga we first introduced ourselves to the village chairman and members of the village council. We held a letter of introduction from the District Forestry Officer. Following the introductory meeting we were allowed to carry out the research split into two sub-villages.

In each sub-village there were four discussion groups divided by age and gender. This was to try to reduce social biases. Within each group we requested there to be 10-15 people. All discussion was in Swahili. We provided drinks and food to encourage participation with sessions lasting for up to three hours. In some sessions it was difficult to divide by age and therefore mixed age discussion groups took place.

The topics discussed included income opportunities, use of the forest, which trees are preferred for the given uses and opinions on the forest reserve. To determine the preferred species for each of the uses identified the groups were asked to identify verbally the five most used trees for the particular purpose (such as fuelwood). Initially, this was gathered through pair-wise ranking, but later, in order to get a more equitable result, these tree names were written on cards and the group was asked to place the cards in order from the best to worst on the ground. This generated much discussion and the different qualities of the different tree species were ascertained. These topics are listed in *Appendix II*.

Semi-structured interviews were also carried out with various villagers aimed at giving more specific case studies of some of the aspects discussed in the groups. The interviews were to ascertain personal opinions, specific experience, and reduce the likelihood of responses being coloured by other people's views. In Mtua we interviewed the village Chairman and Secretary. In Chimbendenga we interviewed the village chairman, loggers of mpingo and other timber species, a charcoal maker, a farmer and a traditional medical practitioner. We also interviewed (in Nachingwea) the District Forestry Officer and the Acting District Natural Resources Officer, and a number of carvers at Garibovu and Nangoi villages. These interviews were structured conversations which ran through a checklist of topics. They took place in Swahili with the exception of the DFO and DNRO, who were interviewed in English.

Village Activities

Village life revolves around the productive agricultural conditions created through the conversion of the public forest to managed environments. This is overseen by the village headman. Fertile plots of land (shambas) are used for 3-4 years before being abandoned and are seen by villagers as an essential forest derived resource. For seasonal and daily activities, which are conditioned by seasonal climatic variation see *Appendix I*.

The main crops for subsistence food are millet, maize, rice, cassava, peas, beans, groundnuts and sorghum. Crops which are produced for cash sale are sesame and cashew nuts, and occasionally sunflower. Cashew and sesame is bought up by Mohammed Enterprises and exported; as a monopoly buyer, Mohammed can afford to depress the prices received for these crops.

The tasks done are divided by gender, with women involved in digging and weeding and men responsible for ploughing using hoes. The amount of land owned by households varies although the majority of our respondents owned 4-5 acres. Work is done by family members, but if help is needed during a busy time of year it is usual for friends and neighbours to help in return for reciprocated help or food.

Household incomes and expenditures claimed during the group discussions were not consistent and often there was a greater expenditure noted than that of income received. Expenditures include purchasing implements (hoes and machetes), hiring occasional farm labour, and the hiring of a machine to spray sulphur on the cashew nut trees. On the other hand, carpentry, pottery and mat weaving are sources of income. Agricultural crops were usually sold through private sales with crops taken to Nachingwea by bicycle or on foot. Money is spent to buy food, clothes, soap, Vaseline, kerosene and cooking utensils. It was commonly estimated that after agricultural sales it was possible to save approximately TSh 20,000/- per household per year for emergencies and receiving guests.

Other economic activities included small businesses. Three to four months after harvesting, when there are no crops to sell, the women especially work hard at earning some money. Examples include cooking and selling rice cakes, selling brooms, making local brew, and buying cigarettes from the town and then selling them at a marked-up price in the village. Some animals (goats, pigs, chickens) were also kept, which could be sold if money was needed. The involvement in all of the above varied between households.

Most of the villagers' most urgent troubles have to do with basic infrastructure and service provision. The lack of water was listed first in nearly all sub-village interviews. The other contender for worst problem was the vagaries of climate; the years 1986 and 1998 had seen hunger because of drought or flood. The distances to the nearest well varied from a half-hour walk, to five miles – many of the sub-villages do not have a well of their own and have to fetch water from Mtua. The villagers wanted to drill their own wells, but frequently lacked the equipment. Similarly, the long walk to school and the hospital or dispensary, market and church caused problems.

There is also a lack of agricultural equipment. Farming inputs like fertilisers, pesticides, sprayers, tractors, *pangas* (machetes) and hoes are not enough; similarly scissors and antiseptics are needed for delivering babies. This could probably be alleviated by establishing co-operative shops in the sub-villages, although that does not help if people remain too poor to buy. Mohammed Enterprises' price monopoly on buying up cash crops was mentioned in one village.

Pests are another problem; baboons, bush pigs, parrots, monkeys and insects, and it takes a lot of effort to chase them away from the ripe crops with sticks and stones. Here, it seems the proximity of forest reserves is a liability rather than an advantage.

Forest Uses and Values

The centrality of agriculture to social and economic life in Chimbendenga and Mtua villages is indisputable. A key forest resource is therefore the farm land which derives from the conversion of forested land. However, villagers also make extensive use of timber and non-timber products. To them “forest is life” and “the natural wealth of the nation” (data from discussion groups).¹ Villagers in the group discussions broadly categorised tree uses as fuelwood, building materials, logging, charcoal, healing and medicine, and carpentry. Other uses of the forest include honey collection, material for making rope, toothbrushes, wells and wind breaks, and importantly, the ecological influence of the forest “in bringing rain” (Discussion Group, Chimbendenga). In Garibovu and Nangoi, the forest is used to collect mpingo for carving.

Principal uses and values of the forest are noted below, with the exceptions of timber and carving. These are discussed in separate chapters due to their importance. There are often contradictions between different peoples’ opinions of others activities and which tree species are best for a defined means, but it is still possible to draw some meaningful conclusions.

1 *Building Materials*

In Nachingwea District houses are made from wood and mud and have grass roofs. Poles are the main building material. In contrast with women’s predominance of collecting and using fuelwood, most of the wood collection for use in constructing and repairing buildings, furniture and other household items is done by men. Only in one of the sub villages, Nalengwe, was it said that women had any involvement in the collecting of wood for building. Here a mixed aged group of women stated that both parents were involved, a group of young men said that the men cut the wood and the women collected it, while a group of old men said that women follow the men taking the smaller pieces. All other groups described it as a purely a male activity, with some explaining that women do not have the strength to carry large pieces of wood. There was general consensus that it was not necessary to travel more than two miles to find suitable wood, although journeys up to five miles were estimated by a group of old women.

Most building is done in the dry season. Certain species have qualities which make them preferable for building uses – the best wood being strong and durable. In total 12 species were named when each of the groups was asked to name the best five trees for building and then rank them. Mpingo, *mchiimbiti* and *mchejea* were consistently mentioned by both men and women. *Mnejele* was ranked either as best or second best by all the men’s groups although not mentioned by any of the women’s groups. In Singa and Mapinduzi sub-villages of Mtua, mpingo was not mentioned at all as a building material; in fact, Mtua answers varied considerably, and much more so than at Chimbendenga.

Mpingo was noted as being durable and lasting for estimations ranging from 10-15 years to over 30 years. The strength and hardness of the wood prevents termites eating the wood therefore making it good for the central pole in a house. The villagers, who knew that cutting mpingo required a license, did not see the absence of one as a problem because they were not involved in cutting large numbers of trees and they were unlikely to be caught. The main problem identified with mpingo was the difficulty in finding trees that were not twisted. Straight poles are needed for building and all mpingo trees still in the vicinity of the village have been rejected by loggers due to poor shape, and are therefore also not necessarily suitable for building. Substituting other species that were more available was acceptable common practise.

¹ Note that these comments are likely to have been influenced by Forest Division promotional posters which use such slogans, i.e *Msitu ni Uhai* (forest is life) and *Mali Asili* (Natural Wealth) showing pictures of trees in community environments.

2 Fuelwood

Fuelwood is the main source of domestic energy and is needed daily for cooking. It is collected locally and not commonly sold. It is mainly women who collect fuelwood although it is not unusual for children of both sexes to help out. Men commonly cited both sexes as being involved in fuelwood collection, but women consistently stated that it was them (and sometimes children) but not men who performed this task. From observations by the team it appeared women performed the task more frequently. The distance stated as necessary to travel to find firewood varied. It was most commonly said to be within two miles, the greatest distance ever stated being five miles. The distance was consistently noted to be further than in the past.

Wood is normally collected on returning from the *shamba*² and is carried in bundles on the head. Most Chimbendenga groups said collection was from the public forest and *shambas*, but three groups stated it was taken from the forest reserve. The respondents were aware this was illegal and admitted they were “stealing”. From personal observations it was clear that the majority of firewood did come from the forest reserve and this was where we were taken to obtain our fuelwood supply. In Mtua the situation seems slightly different, where several groups stated that they didn’t go into the reserves at all, and people were well aware that interfering in the reserves is illegal.

A number of preferred tree species for use as fuel can be identified. A wood which is considered good for firewood is one that has qualities which make the wood ignite easily, burn with a strong flame and stay alight for a long time. In Chimbendenga, the species that was most often given the highest ranking by both men and women was mpingo. *Mchenga*, *mchiimbiti*, *mkolobonjo*, and *ng’windi* were also consistently mentioned in the top five by both men and women. In Mtua, *mchenga* was consistently rated as a favourite – one of its good qualities being staying hot all night – with mpingo coming second. In both villages, mpingo was identified as being particularly useful due to the ease with which it could be lit in the rainy season. Comments that were made include:

- Mpingo burns very well with a good flame and lasts a long time (*male elder*)
- It burns easily when green (*female elder*)
- The strong fire is useful for hunting and chasing away animals from the *shambas* in the rainy season (*young women*)
- It is easy to start a fire with mpingo in the rainy season, other woods can be difficult when wet (*female elder*)
- Mpingo stays alight a long time which makes things easier (*female elder*)
- Mpingo is best because it even works when wet – its sap is like petrol (*young man*)

Despite all these qualities however, it is often necessary for women to substitute other species for mpingo due to difficulty in obtaining it. Many people stated “mpingo is the best but very difficult to find, *mchenga* is good as it is easy to find”. *Mkorosho*, or cashew wood, is also considered a good firewood alternative.

Mpingo was also not without criticisms: one group of elderly Chimbendenga women noting that due to its hardness it breaks tools, and that it was smoky making the cleaning of *sufurias*³ very difficult, not to mention the hot fire from burning mpingo damaging the metal. These women after discussion however concluded that despite these problems they still ranked mpingo as number one. The DFO, contrary to what we found in the village, told us that because of the smokiness the villagers did not use mpingo for firewood. This indicates he lacks understanding of village uses of the forest.

² smallholding

³ aluminium cooking pots that are widely used for cooking

3 Charcoal

One means of earning a cash income from the forest is by producing charcoal. This is mostly a male activity and can be done throughout the year. Only one or two people per sub village are involved in charcoal production. It is demand-controlled and primarily made for business; selling in sacks to Nachingwea, or to fill orders from the Worker's Union. Estimations in the price for the two villages studied were consistently between TSh 1,000-1,500/- per sack, with only one group of women in Chimbendenga believing a sack to cost TSh 2,500/- and another group of women not knowing⁴. There is some demand locally and in women's groups we were told that when the woman of the household is ill and does not have time to collect firewood for cooking, her husband may buy charcoal. It is also used by households to heat irons and to cook *ugali*.⁵ One of the primary local business users is the blacksmith who use the high temperatures produced to mould metal and make implements such as hoes and *pangas*.⁶

A wood considered good for charcoal production is one that produces little ash and retains heat well. *Mjembe* (mango) has such qualities and was identified by all groups in Chimbendenga as one of the top five trees, often ranked first. This is the wood that is used by blacksmiths and for iron smelting. Some mentioned that as *mjembe* was available locally it was not necessary to use any other trees. However, in Mtua *mjembe* was mentioned only once, the clear favourites being *mpingo*, *mchenga* and *mchejea* – the same woods that are highly esteemed as firewood.

Mpingo was only mentioned in one Chimbendenga group as making very good charcoal despite the difficulty of finding trees. This and the effort required to fell mpingo, due to the hardness of the wood⁷, makes other species preferable for charcoal production. Other trees that were mentioned by both men and women in Chimbendenga were *mchenga* and *mjelejele*. In total 14 trees were named. All groups said trees needed to make charcoal could be found within ½ mile of their sub village.

A charcoal maker in Jiungeni sub village, Forian Banaba, was interviewed. He is the only charcoal maker in Jiungeni and sells charcoal to the small restaurant in Chimbendenga and to local people for home uses, but not to Nachingwea. Charcoal can be made at any time although he makes less when he is busy with his *shamba* during November. He estimated his income from making charcoal is TSh 10,000/- profit per month. This is greater than the income received from his four-acre *shamba* of cashew nuts and sesame which generates TSh 80,000/- per year.⁸

To burn charcoal he uses big trees not minding whether they are twisted or straight. He mentioned the use of eleven tree species.⁹ Mpingo, he commented, made very good, heavy charcoal which stays hot over night but is hard to find and therefore he does not use it often. He is more likely to use *mchenga*. He cuts all trees without a license but is not worried about being caught because he feels he does not really need one as he does not cut trees in large quantities. He is antagonistic towards outside loggers who cut the trees which he would like to use.

4 Carpentry

Carpentry is a male occupation, for both personal use and sale. Typical products include beds, chairs, stools, hand hoes, wooden spoons and doors, with different trees being used to make different items. There was little agreement between groups which trees were used for what, except

⁴ mostly a male activity

⁵ staple food made from maize flour

⁶ machetes

⁷ For charcoal production it is necessary to use the trunk or thick branches of the tree rather than the smaller dead branches which are used for firewood.

⁸ For this he needs help from neighbours to help with weeding and harvesting whom he pays by giving maize

⁹ mchenga, mjembe, mwanga, chiimbiti, mkwaju, mchejea, mjelejele, mnakala, mjanda and mpingo

mtumbati which was frequently named as making the best doors and window frames. Mpingo was always identified as being used for making the large mortar and pounder used for grinding maize and millet and combs. If mpingo became unavailable some believed *mnenjele* could be used for the pounders, although others thought there were no alternatives as other woods are not hard enough. For combs, some suggested bamboo (*mwanzi*) as a substitute.

5 *Healing and Medicine*

Forest use for medicinal purposes is widespread and it has been estimated by WHO that 80% of the world's population relies on traditional medicine to meet their daily health requirements.¹⁰ Traditional medicine plays a very important role in Tanzania due to the high cost of conventional medicine, the inaccessibility of modern health care facilities, and because traditional medicine is often deemed a more appropriate method of treatment.¹¹ From a cultural perspective people are comfortable with traditional medicine and seem satisfied with its results.¹² They hence may choose traditional medicine regardless of the existence of Western medicine, and plant products remain central to the medical practices in Mtua and Chimbendenga. Traditional medicines retain their social and cultural importance as an old man noted, "*it is important for us to have affairs of culture, we follow our traditions and customs.*"

In Nachingwea District traditional medicine, relying primarily on plant materials, substantially outweighs the availability of western medicine and is therefore predominant. In all group discussions medicine was stated as a major use of the forest. An enormous range of leaves, roots, barks and seeds are used locally to prevent and treat conditions of both body and mind. The trees are chosen because of their particular properties and because the treatments rely principally on the 'natural' properties of the substance concerned, anyone, in principle, can prepare and use them. People are prepared to travel any distance to find the tree they require, although this is typically within one mile and rarely over five miles. Both men and women of any age can be involved in the collection and preparation of medicine, although a handful of older men and women were usually approached for their accumulated skill in everyday treatments.

Petro Xseri, a village elder and healer in Chimbendenga, was particularly noted for his specialist knowledge, allegedly curing all those in a mixed age male discussion group at one time or another. During a private interview Mzee Xseri talked about the different uses of trees, and the ritual importance of mpingo (see *Appendix VI*). Some of the roots he collects he sells to the hospital, which refines the medicinal ingredients. He had the following to tell about mpingo:

« Mpingo has specific value as a medicine. In a variety of circumstances and has a history of culturally based uses. When a child is born, it is necessary that he or she is bathed in the smoke of burning mpingo, ideally the leaves, as a cleansing process. The birthing room is filled with this smoke as soon as the child's umbilical cord has been cut. The amount of smoke is carefully controlled, with the result that the baby and the room is cleansed. This practise is an intrinsic part of the culture and tradition of the Mwera ethnic group of Nachingwea and Lindi districts, within Lindi region. Similar practises occur within the traditions of neighbouring ethnic groups of this region including the Yao and Makua. Similar uses (with differing methods) of mpingo during birthing are found in Tundura, Ruvuma, Songea, Masasi and other areas of Mtwara region. Mpingo used in this way is said to bring good health. »

In addition, Mr Xseri knew the plants used in death and burial: *mpinji* for washing the corpse, and *mianzi* (bamboo) or *msolo* for lining the grave.

¹⁰ Tomlinson & Akerele, 1998

¹¹ Marshall, 1998

¹² Anderson & Staugard, 1986

In discussions, when asked to name the five main trees used in medicine there was much variation between groups and up to eighteen were given. As one young man commented “*Special trees have special uses*”. The most important of these are listed in Table 3 below.

Tree	Ailment	Cure
Mbambakofi	Crop failure	Grind the bark with millet before sowing
Mtumbati	Wounds	Pound bark , boil in water
	Stomach problems	Leaves and roots
Mmanga	Teeth	Chew the bark
Mtope	Coughing	Use arial roots
Msolo	Stomach	Use the leaves
Mtomoni	Wounds	Use the latex
	Malaria	
Mnj'eva	Coughing	Aerial roots
Mwarobaini	Many things	“tree of forty cures” including malaria, stomach
Mtamba	Eyesight problems	Infusion
Michango	Stomach	
Mkuju	Dental problems	

Table 3. Tree species commonly mentioned for their medicinal properties.

However mpingo was always mentioned and often characterised as being the most important. Often only the leaves or bark of the tree are needed and therefore younger trees can be used. Consequently to find a suitable tree does not normally require walking further than two miles, although people are prepared to travel as far as necessary to find the appropriate tree. Mpingo has a large number of medicinal uses, see Table 4 below. The detail was largely given by women who tend to know more about treating children and who specialise in ailments associated with pregnancy and newborn babies.

Complaint	Use of mpingo
Tooth ache	Chew the bark
Swelling	Boil leaves and place on afflicted part of body
Headache	Boil leaves in water and put mixture onto face
Newly born baby (particularly the Mwera ethnic group)	After birth and before being seen by visitors encircle baby and mother in smoke from a fire of mpingo wood. Mix mpingo leaves with leaves of <i>mnemela</i> and pound, then wash water over baby before being seen by others. Wash the new born baby in pounded mpingo leaves mixed with a little warm water everyday after washing the baby in soap. This must be done for seven days after the birth of the baby until the navel cord falls off by itself. “very important”. For seven days after the birth the baby must also be given one teaspoon of pounded mpingo leaves mixed with cold water to drink. This medicine makes the baby strong and fat and therefore people are happy to hold it. Doing this is also believed to prevent any deformities and abnormalities of the limbs and stop future stomach problems.
During labour	Mix pounded mpingo leaves with water and use as an antiseptic on midwife's hands.
Cuts and wounds	Leaves and wood
Stomach ache	Roots and leaves

Complaint	Use of mpingo
Menstrual cramps	Drink pounded mpingo leaves mixed with a little cold water for two to three days prior to the start of the period. One treatment of this is believed to prevent such pains for the rest of life.
Bilharzia	Leaves and roots (only mentioned once)

Table 4. Examples of medicinal uses of mpingo.

Mpingo was ranked the highest for medicinal value, and its role in childbirth is quite unrivalled. The importance of mpingo is clear, the Chimbendenga village chairman stating, “*there is no replacement of mpingo for medicinal uses*”. People will walk eight hours to find mpingo if these problems occur. A strong healthy child is of fundamental importance to people and, for the Mwera tribe in particular, mpingo is essential for this. Despite its medicinal importance however there is little concern for the availability of mpingo for medicinal uses as often only the leaves are needed and for this a young tree or one of poor quality can be used.

6 *Mpingo and potential replacements*

The inhabitants Jiungeni sub-village were definitely of the opinion that the availability of mpingo has definitely declined in the past 30 years. Now the nearest trees are 25 miles, or six hours’ walk away from the sub-village.

When asked about the woods one would use if mpingo ran out, a number of suggestions arose. For kitchen spatulas and spoons, *mchenga*, *ng’ambe*, and *mtandabara*. *Mwenjele* or *ng’ambe* could substitute in pounding sticks. For charcoal, *mchenga*; for firewood, *nyenjere* and *mkorobonjo* and *mkorosho* (cashew) which anyway grows close to homes and is easy to collect.

Combs are mostly bought in Nachingwea, and although mpingo is important, bamboo or coconut wood were suggested as replacements.

For medicine, mpingo is irreplaceable. Mpingo is very important to the Mwera people when giving birth, and has many other specific medicinal functions.

The two main woods rivalling mpingo in carpentry and building, *mninga* and *mbambakofi*, are also becoming more rare.

- *mpingo ikisha tutakata mtumbati badala yake* – if mpingo runs out we will cut mtumbati instead (young man)
- *mtumbati ina faida zaidi kuliko mpingo* – mtumbati has more benefits than mpingo (young man)
- *mpingo hera nyingi kuliko mtumbati, mbao moja ya mpingo ni sawa ya mbao kume ya mtumbati* – mpingo has greater financial benefits than mtumbati, one mpingo log is worth ten mtumbati logs (old man)

A mtumbati (= mninga) tree takes 15-20 years to grow, and replacements for that and mbambakofi may become necessary. Mbalamwezi was generally seen as the next best candidate for use.

Logging and Timber

1 Overview

The best quality Tanzanian timber is widely acknowledged to come from Nachingwea District. Moore and Hall state that the most important harvesting areas are Liwale, Nachingwea, Masasi and Ruvuma River.¹ Processed mpingo blocks, known as billets, are reportedly worth up to \$18,000 per cubic metre.² By far the biggest demand is for clarinets. Most users prefer dark wood and only the blackest is acceptable for the manufacturing of musical instruments.³ Mpingo is the preferred material for instrument manufacture for a number of reasons. Its natural oiliness seals the surface, prevents absorption of moisture and protects metal fittings from corrosion. Its fine grain means that the finish is very smooth⁴, it is durable and, due to its high density, holds its tone well in different conditions. Since the early 19th century, traders have moved progressively south through mpingo range states.⁵

Unseasoned mpingo is cut into cuboid billets⁶ with the approximate dimensions of the sections of the finished instrument. These are exported as 'sets', which make one instrument. Billets for woodwind instruments must be free from defects otherwise they will split when put on a lathe. Hence only faultless, top quality black mpingo makes up these exported sets⁷ Tanzania only allows the export of processed timber⁸ so the quantity of mpingo exported from the entire country is very low, averaging 42m³ over the period 1980-1991.⁹ Demand for musical instruments has been more-or-less static for the last few years¹⁰. 90% of European trade is via five importing companies, and it is estimated that the UK's demand is 4-5,000 mpingo clarinets per year.¹¹

2 Commercial timber exploitation

Commercial timber companies practice selective timber exploitation and utilise sawmills to process logs for industry or export. In Nachingwea District it is mainly Indians who are involved in the management of such activities. There is no sawmill in Chimbendenga but one can be found at Mtua village (7 miles west) and also at Nachingwea, Mtwara and Lindi. In fact, Mtua village grew up around the sawmill under its first owner, Singasinga. In Chimbendenga although it was widely known a license was necessary to cut certain species the cost was not known by the villagers since this was seen to be the responsibility of the sawmill owner.

It is illegal to cut any trees in forest reserves without a special license, and therefore all timber is supposed to come from the public lands (there are no plantations of mpingo). Officially the licence number must be stamped on both the felled trunk and stump but due to lack of staff and inadequate

¹ Moore & Hall, 1987

² Jenkins *et al.*, 2002

³ Moore & Hall, 1987

⁴ Bryce, 1969

⁵ Sharman, 1995

⁶ Or, in the case of billets for the bell-end of the instrument, a truncated pyramid.

⁷ Hall, 1988; McCoy-Hill, 1993

⁸ Beale, 1995

⁹ Marshall, 1995

¹⁰ Krauth, 1995

¹¹ Beale, 1995

transport the logs get measured and stamped at the forestry office in Nachingwea¹² and the stump is thus not stamped. Central government receives the money from the license sales although a new tax has recently been introduced which benefits the local government. However, according to the District Natural Resources Officer the only benefit of the license fee is that it pays for his and the DFO's salary.

The logging contract is between the sawmill owner and the central government. According to the DFO the main harvester involved, Mr. Sameja (whose sawmill is in Lindi – see below), is able to operate without the consent of the local village government and he has no obligation to pay them money for extracting trees on their land. However the village chairman and secretary presented a different version of the rules. According to them all trees which require a license are controlled by the village government and therefore anyone who obtains a license must go to the village government and pay money. They insisted on the strength of the village government and that it had the ability to stop anyone they wished from cutting trees and send them away. However they noted that this was never done as the village benefits from the tax they demand when a person comes to cut trees. All of the discussion groups felt that the “rich people” (referring to the sawmill owner) and the central government received the most benefits from the logging. The benefits the villagers themselves were seen to gain varied between respondents (see below). However, the overall impression is that the community feels it has no relationship with the sawmillers, Mr. Sameja or Mr. Dulbai (see below), to the extent that if one of the sawmill vehicles has finished work and is returning to Nachingwea, it is unlikely that it will give villagers a lift. There is a genuine lack of mutual respect, with resulting feelings of powerlessness and resentment on the behalf of villagers. Consequently, the villagers see no benefit in safeguarding their timber supplies, as they have no control over them.

3 Logging

Logging can be divided into two categories: planks and logs.

3.1 Timber planks

The main tree species identified by villagers for extraction were *mninga*, *mbangbakofi*, *mtumbatibondi* and *msufwimwitu*. For every 300 planks the village government receives TSh 10,000/- in tax. *Mninga* is the preferred species but due to high extraction rates its availability is reported to have declined substantially, and it is increasingly necessary to use other species. Jobs are dependent on orders from outside and it was estimated approximately 200 men (mostly young) could be involved in logging. All loggers are also farmers but if an order came it was stressed they would be available for work.

3.2 Mpingo Logs

A village tax of TSh 10-15,000/- is paid for a six month period of extraction depending on the quality of mpingo. Fewer people are involved in mpingo logging and, as with other timber, it is dependent on outside orders. Opinion on whether harvesting had increased or decreased was equally divided with no clear patterns along the basis of gender or age. There are currently seven mpingo loggers employed in Chimbendenga, all from Jiungeni sub-village, and some more in Mtua village. The tools they need are supplied by Sameja. When an order comes they travel approximately 15 miles into the forest and make a camp. From here they walk for three to four miles to find a tree. All the loggers said that it was harder to find mpingo than in the past but there was still much available, it was just necessary to travel further to find it. All except those that are small, twisted and under 20 ft tall are taken. Despite much literature stating the contrary (e.g. Moore and Hall 1987, Sharman 1995) wood that contained termite damage and had holes running up the centre of the heartwood was not automatically rejected.

¹² *Pers. comm.* DFO

3.3 Logging in Chimbendenga

It was difficult to ascertain how much money could be earned from employment from mpingo logging. The amount that people believed was paid to villagers for cutting an mpingo log varied between discussion groups (see Table 5).

Respondent	Log size (ft)	Estimation of price paid (TSh)
Female elders	6	1,000
Male elders	7	500
Mixed age men	6	1,000
Young women	6	1,000 – 1,500
Mixed age men	4	600
Young men	6	200
Mixed age men	6	250 - 400

Table 5. Estimations of how much is paid to an mpingo logger per log.

Those not involved in logging tended to give higher estimates for prices than loggers, and women tended to estimate higher prices than men.

One tree can produce between 2 and 10 logs. Loggers claimed to be paid 600/- per four-foot log and therefore for each tree harvested they receive an average of 6,000/-. The work is physically demanding and they spend about one week in the forest. A lorry collects the logs from each individually felled tree. Loading the logs into the lorry requires at least 6 men per log due to their weight. 200/- is paid per log carried into the lorry. In 1999, according to John Joseph, an mpingo logger, logging started in March and finished in August. There had been ten lorry loads of 36 logs, each approximately four foot long with a three foot circumference (Figure 13). He estimated the average income per logger per year is TSh 400,000/- based on 4-5 months work per year.¹³ The particularly busy months are May to September. He describes the work as “very good” despite being very tiring and sometimes working twelve hours per day.

The general opinion of mpingo loggers was “*kwa hapo, mpingo unafaida, unatuletea pesa*” (here mpingo benefits us as it brings us money). John Joseph lives with his parents in a household of seven with all the family involved in agriculture. He estimated that from the five acres of land his family own, crop sales (cashew nut and sesame) generate an income of TSh 100,000/- per year. This is relatively less than can be earned from logging mpingo on a time and per person basis. Another logger stated, “we will lose money if mpingo runs out- it is our wealth.”

Money from mpingo logging however is not seen to benefit all. Women, who estimated a mpingo logger could earn TSh 150,000/- per year complained that very little actually reaches the family because the loggers spend all the money on alcohol. A young man stated that despite mpingo being of incredible economic importance in the area, greater economically than cashew and *mninga*, “as orders are not consistent we cannot rely on it”. There was also concern for the decreasing stocks of mpingo in the area with “no work these days”.

Diverse opinions were found throughout Chimbendenga. One logger, not part of the seven currently employed by Sameja said “we sweat for nothing, there are no benefits from logging”. He felt, like the vast majority, that all the benefits go to outsiders and the government. It was therefore generally felt that “the big benefits go to rich people who know the benefits, we don’t know what mpingo is used for” (young woman). One charcoal maker from Jiungeni sub-village said how it

¹³ Problem with estimates: if 360 logs at TSh 800/- (including transport) then total payment would be TSh 288,000/- and this divided by 7 is TSh 41,143/- per person. We were going to interview again but due to illness it was necessary to leave camp without confirming figures. In a group discussion of old men in the sub village of Nalengwe it was estimated that the profit for mpingo logging per person per year was TSh 70,000/-.

was hard to find mpingo because so many outsiders come and cut it: “they should be stopped as villagers need to use it for themselves”.

3.4 Logging in Mtua

The Mtua situation differs from Chimbendenga mainly in Mtua’s greater proximity to the mpingo sawmill. More people here are involved in timber and logging work. Around Mtua, according to the Chairman and Secretary of Mtua Village Committee, the mpingo distribution in the area has decreased. Standing trees are mainly substandard specimens that have been rejected during previous harvesting episodes, and the sawmill is seen as the reason. Nonetheless the sawmill owned by Mr. Dulbai makes up the bulk of local industrial activity.

4 *The Mtua Sawmill*

Previously, two sawmills in the Mtua area (one for mpingo, and one for timber in general) were operated by other businessmen, then nationalized in 1967 under the ownership of Nachingwea Trading Company (NATCO). In 1970 NATCO collapsed because high rates of taxation made the enterprise unviable. Nonetheless it continued sporadic operations until the mpingo sawmill was sold off for a pittance to Mr. Dulbai in 1989.

Since 1989 operations have been restricted to one order from Japan, a few tests, and stockpiling logs in anticipation of an upswing in the market – essentially the mill has been dormant since 1992. The benefits from the sawmill for local people include employment for sawmill workers and loggers, and taxes from the logging licenses which are channelled through the local government.

At the time of research, the sawmill was due to begin operations imminently. Its capacity is 25 logs per day – all logs come from Chimbendenga, Chimindinge, and Chiwale as there is no mpingo around Mtua. On resumption of operations in 1999 it was expected to process mpingo from three districts: Nachingwea, Masasi and Liwale.

Ten men from Mtua village are employed as loggers, having been lent five saws. They get paid TSh 1,100/- per mpingo log- compared to *mninga*, *mbambakofi* and *mchenga* for which they are paid 600-1,000/- per log. It is possible for two loggers to cut 16 mpingo or *mninga* logs in a day, resulting in earnings of TSh 8,000/- per day. On sawing mpingo planks a logger can earn TSh 39,000/- in a month, lower-standard logging only means a salary of 30,000/- a year! Planks from other trees only fetch half that price. However, the mpingo work is seasonal and irregular, and payment can be delayed by a month from the actual work. The villagers of Singa sub-village, Chimbendenga, say stocks of mpingo, *mninga*, and to a lesser extent *mbambakofi* have decreased considerably. There is still plenty of *msolo*, *mchiimbiti*, *mchejea* and *mchenga*. In their opinion mpingo is nearly finished – if the sawmill owners were reduced to one and if logging was minimised, stocks could be maintained.

Bent mpingo logs are accepted at the sawmill, but not termite-eaten ones. The mpingo sawmill in theory employs 15 men; the timber mill employs 8, at a wage of TSh 30,000/- per month, a decent salary, comparative to the 40,000/- earned by a teacher in an urban setting. Mpingo brings greater benefits than normal timber to the workers, seeing as mpingo’s value is so much higher. Recently the loggers have planted some mpingo (under government pressure) where the logging has been intensive.

At the mill the trunks – which are typically 5-6” long and 3” thick – are cut into 2ft pieces, and then further into smaller blocks for musical instruments. Waste products are used to make charcoal which is then sold.

At the time of research the mill had no orders and local trade was mainly in sesame. Instead they have been stockpiling logs until there is enough to process profitably.

They have 300 mpingo logs collected in 1998/1999 waiting for the sawmill to be ready, although there is a risk of the logs cracking and drying out if left for too long. Those 300 logs take a month to be processed for export. Another factor affecting the mill is the rainy season, when transport

becomes a problem and logging stops, although other business in the factory can continue. A pile of logs has been lying around Mapinduzi village because the sawmill has been inactive.

5 Interview with Mr. Sameja

Sameja has been logging for five years, in Namikulo and Nachingwea. He says he only harvests enough each year for one or two containers with 2-3 m³ of mpingo in each. All his exports are to Germany, for musical instruments. He won't disclose the value of the trade, saying only that prices have been declining for the past few years, while licence fees have gone up. Mpingo only constitutes a small proportion of his income. He agrees it is not a sustainable market source; perhaps it will last another 50 years, although some people¹⁴ in Moshi are planting mpingo. The reason the sawmill operates only 3-4 months a year is the limited amount of exports – it is not dependent on the rains in any sense. See Gregory *et al.* (1999) for more information about this sawmill.

6 Licensing

In general, a set of double standards operates for licensing; private persons and carvers fell trees on a smaller scale, and don't buy the licences that are necessary for sawmill operators. These cost TSh 150,000/- for 200 trees, or 10,000/- for 50 smaller trees. If the authorities catch somebody felling trees illegally they theoretically face a jail sentence of six months. However, as in Chimbendenga, in practice the stamping system which is supposed to keep track of felling, is impossible for forestry officials to enforce without transport. Logs are only stamped once at the sawmill, giving considerable leeway to illegal felling.

7 Local Opinions

When it comes to timber, the debate veers between *mninga* (for doors, windows, boxes, medicine, firewood) and mpingo. The value of mpingo is ten times that of *mninga*, but *mninga*, and similar woods *mtumbati bonde* and *mbambakofi*, were still rated as superior timber – perhaps because of their slightly greater accessibility relative to mpingo. Still, some people hold that there is enough mpingo.

The respondents do not know for what purposes mpingo is exported. To them mpingo is used for medicine, building, charcoal, firewood, maize pounding sticks, combs – and these needs (except some medicinal uses) can be satisfied from other trees. *Mninga* and *mpande* were considered good substitutes, so mpingo is not a crucial to local people.

In general, the opinions on the sawmill owner Dulbai is that he gets the main benefits from mpingo and the villagers' labour, without giving enough back. Although the sawmill is seen to provide valuable labour – and opinions differ on the scarcity of labour, from “a dire situation” to “no unemployment whatsoever” – the mill is blamed for the reduction in mpingo. Since the logging operations can travel up to 60 miles in pursuit of trees, Mr. Dulbai does not care if mpingo is depleted in Mtua. The women of Jiungeni sub-village were not happy about having the sawmill in their village, but saw no alternative since the sawmillers get their licence from Nachingwea District Council. Nonetheless, the old men of the same sub-village wanted the sawmill to stay because of its tax and employment benefits.

The village chairman and secretary of Mtua were positively inclined to mpingo replanting and sustainable management. They were prepared to take responsibility for implementing and supervising potential projects, with the help of specialist knowledge and funding – from the government or an NGO. They would like to see a law passed where sawmill owners and loggers would have to plant a mpingo seedling for each one that is cut. Areas would be set aside for

¹⁴ The African Blackwood Conservation Project (www.blackwoodconservation.org)

planting, and others for logging, which would be rotated as the trees mature. Both are keen to be involved in a mpingo planting/management scheme, using their positions in the village. Regarding the sawmill owners, they are happy to live and let live, as long as the taxes are paid and new seedlings planted. Although it is hard to live off farming without modern tools and seeing the profits from forestry taken elsewhere, enough comes round to the villagers to make the mill worthwhile.

The sawmill and government are held responsible for maintaining mpingo stocks:

- *“kuishi bila ya mpingo ni kuishi bila ya chumvi”* Living without mpingo is like living without salt
- *“tunataka upungufu wa matajiri”* We want a reduction of the wealthy (i.e. sawmill owners)
- *“wanachukua tu na wanaondoka”* They take, then they leave (sawmill owners)

The mill was also used to crush sunflower seeds. During its inactivity sunflower cultivation has dropped off because of this.

The respondents do not know where the profits from licences and taxes go as they have no access to the official records, but feel some sort of compensation to the villagers, for example a tax, is in order. The attitudes of villagers to replanting were cautiously positive, and leaned on outside initiative:

- *“sisi tunaweza kupanda miti, yaani miche, lakini, kupalilia na huouma nyingine ni shida kwa sababu ya ukosefu wa maji”* We can plant trees (seedlings) but their weeding and other maintenance is a problem due to lack of water
- *“Serikali inahitaji kufanya utafiti wa maji kwanza, halafu kutusaidia na miche”* The government needs to first do research on water before helping us with seedlings

The villagers and village chairman of Mapinduzi sub-village were interested in starting a plantation, with outside help and initiative. They valued replanting mainly because trees bind water in the soil and air, and they would like future generations to see mpingo. Forest reserves are used for secret firewood gathering, collection of poles for building, and harvesting honey; as such, their benefit is perceived to be the same as of a forest or tree plantation in general. Some respondents stated wild animals as a positive factor vis-à-vis reserves, but seeing as wild pigs are a serious pest (frequently listed as a major problem) this increases the ambiguity of forest reserves.

8 Logging, replanting and conservation

The older respondents in Mtua generally held that mpingo stocks were decreasing, due to logging, fire and land clearance for agriculture, but this view was not universal:

- *mpingo bado ni wengi tu* – there are still lots of mpingo (young man)
- *mpingo si wengi* – there are not many mpingo (old man)

Some respondents thought mpingo is abundant, others held that it is decreasing, but that this does not matter since it is not a very important wood. Others worried that mpingo would disappear – mainly because of its economic significance, but also from fondness for the tree and to preserve it for coming generations. People also think cutting down trees reduces rainfall.

Opinions on logging were divided. Mostly, the villagers of Mtua resented not the logging itself, but its unequally divided benefits. A tax directly to the villagers was suggested; at present they don't know where the licensing money goes, since the records aren't public. Many felt that logging was beneficial since it provides jobs and an income, and the leftovers could be used for firewood, but increased legislation and more selective licensing was called for to keep logging in check.

Replanting mpingo was often suggested, although this would require considerable government/NGO input. Many respondents said other trees would bring more benefits; *mkorosho* for the cashews, coconut and groundnut for the crops, and faster growing timber trees, for example *mvule* and *mninga*, for timber and furniture for local use. Although a common remark was that mpingo takes so long to grow that the respondents would not live to see the benefit, they still believed mpingo should be planted for future generations:

- *tunaomba shamba la kupanga mpingo kuuasaidia vizazi vya mbale* - we ask for an area of mpingo planting to help future generations.
- *sisi tunaweza kupanda miti, yaani miche, lakini, kupalilia na huouma nyingine ni shida kwasababu ya ukosefu wa maji* – we can plant trees (seedlings) but their weeding and other maintenance is a problem due to lack of water.

Carvers and the Carving Industry

1 Overview

Mpingo is traditionally used for carving by several peoples in East Africa, particularly the Makonde people whose lands straddle the Tanzania-Mozambique border. Originally mpingo masks were used in initiation rituals and *ngoma* dance ceremonies such as the *Unyago* initiation rites. The occurrence of these has declined with the arrival of world religions, and such instruction masks are now considered antiques. The Makonde are also known for their intricately carved abstract depictions of drummers, hunters and dancers. Skilled carvers incorporate the natural twists, turns and faults of mpingo into their work and use a much broader range of mpingo wood than the music trade.

The long drawn out civil war in Mozambique and the consequent displacement and increased poverty has led to many thousands of refugees, including large numbers of Makonde people, crossing into Tanzania over the last three decades. Many moved into the Dar es Salaam region (East African Movies 1998) and established carving co-operatives there. However, while the Makonde still dominate this art, with the growing tourist industry carving has become increasingly lucrative and carvers now come from several other ethnic groups. Mpingo carvings are also available in ethnic craft shops and markets in many European and North American cities.

Several distinctive styles of sculpture have developed to represent scenes from everyday village life and more abstract work, such as *Shetani* spirits or the *Ushirikiano* family groups. Carvers also supply tourists with novel items such as tea pots, chess sets, candlesticks and ash trays that can be seen at Mwenge Carvers Co-operative or the *Nyumba ya Sanaa* (the Dar es Salaam art gallery), but it is the distinct Maasai figurines and representations of African wildlife which are most popular. Practical objects like tea sets, with less emphasis on the purely aesthetic, are produced for wealthy Tanzanians.

The relative importance of harvesting for the music industry versus for local use is uncertain (Moore & Hall 1987). Even in 1987 it was appreciated that carving is an increasingly important factor in mpingo harvesting (*ibid.*). Moore and Hall estimated that 1,500m³ (37%) of mpingo is used by Tanzanian carvers each year, and it is likely to have increased since. The price of exported mpingo is still significantly higher in Tanzania according to figures produced by the Government of Tanzania, but the value of exported carvings is catching up. The volume of mpingo exports – both timber and carvings – rose dramatically in 1996-97 from the previous year's depressed figures (see Figure 2 & Figure 3 below).¹

¹ Figures obtained from the Forests and Beekeeping Division.

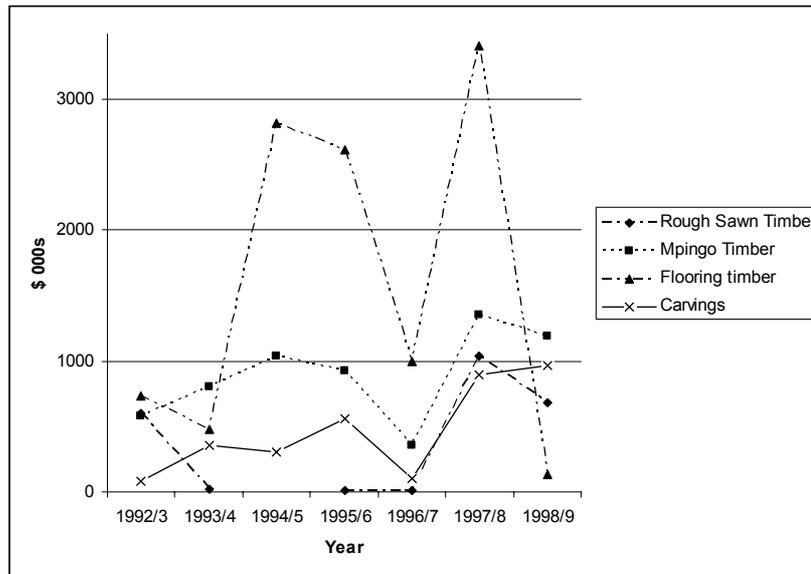


Figure 2. Comparisons of Export Values for different forms in USD 000s.

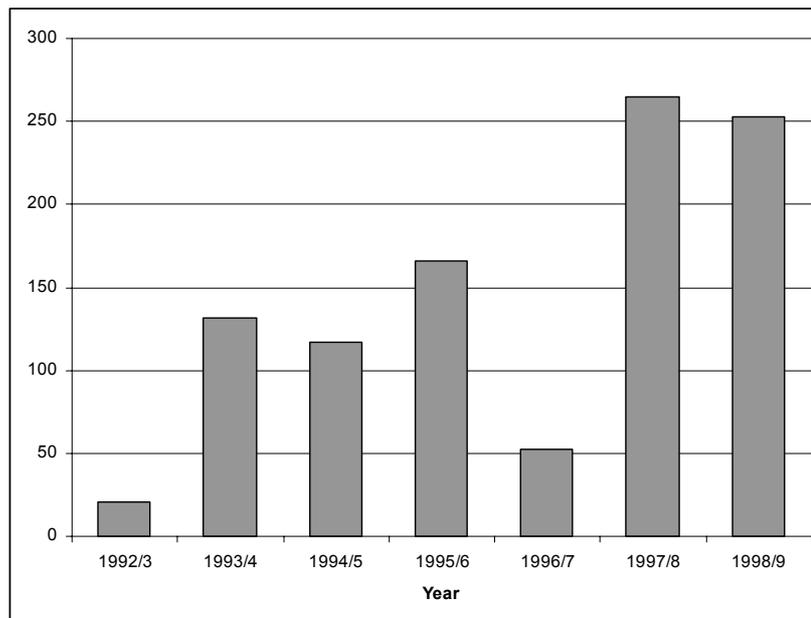


Figure 3. Carving Exports, quantity by pieces sold.

2 The Dar es Salaam Carving Market

Moore and Hall (1987) estimate that there are about 1,500 carvers in Tanzania, most using less than 1m³ timber each year. The highest concentration, including around 1,150 carvers, is in the Dar es Salaam area which includes Bagamoyo, Kisarawe and, significantly, the Mwenge Hand Craft ‘Village’ or co-operative. Within the city itself, carvings and handcrafts are largely either carved and sold at Mwenge. However, finer pieces are sold at the Dar es Salaam art gallery; the *Nyumba ya Sanaa* on Ohio Street, and at small roadside stores, particularly bunched together on Upanga road. The majority are located near the Sheraton and areas of interest for tourists near the city centre, and their pricing and stock varies according to the market. The *Nyumba ya Sanaa* tends to attract the richer tourists and the prices reflect this.

2.1 Nyumba ya Sanaa

According to the manager, Mr. Rweyemamu, mpingo woodwork remain the most sought-after by tourists. Most of the mpingo pieces found at Nyumba ya Sanaa are brought in by contracted carvers. Most of the wood comes from Pwani region – not Lindi. Nyumba ya Sanaa remains a fairly small market when compared to Mwenge. Its principal clientele are walk-in tourists from the nearby Sheraton hotel, who also buy non-wood souvenirs and art. Mpingo is sold at highly inflated prices, and tends to be of a consistently higher quality than that offered at Mwenge or Upanga Road.

2.2 Mwenge and Upanga Road

Mwenge, a co-operative on the main artery road leading north from Dar es Salaam, has become a tourist attraction where visitors can buy mpingo items ranging from small letter openers to imposing two-metre high carvings. In Mwenge ‘village’, stretching along the roadside between Mwenge bus terminal and the University–Ubungu road, there are 78 shops, nearly all of which sell mpingo products.² In fact, nearly 80% of all sales are mpingo carvings. The most popular products sold there, to tourists or to retailers buying in bulk for export, are Maasai figures, candlesticks, elephants, giraffes, chess sets, and occasionally pestle and mortars. Pieces are sold by weight, but lighter pieces are most popular with the tourists. Many pieces arrive unfinished and the salesmen sandpaper and polish them – although some are only waxed lightly, for tourists who prefer the ‘natural look’.

The pieces come to Mwenge both from carvers who come to sell, and from procurement trips by the salespeople. Loggers (such as Mr. Sameja who runs the Lindi sawmill) also sometimes bring raw logs and surplus scraps to Mwenge to be carved. Once in the shops, some carvings are retailed to tourists, and some exported. Both ends of exports operate in Mwenge; buyers come from abroad to place orders, and Mwenge businessmen deal with sending orders out.

Mawenzi, Siasa and Senya are all of the opinion that carving is far less of a threat to mpingo than logging (for the musical instrument trade), and that if mpingo destruction is to be halted, felling licences should be granted only for carvers, not loggers. Where loggers take only the prime part of the trunks, carvers use the entire tree as well as scraps from the sawmills. In Dar es Salaam it is quite easy to get to the sawmills, where scraps are also sold for firewood.

Recognising the scarcity of mpingo, Mr. Senya and the Mwenge artisans are trying to diversify and introduce carvings in other woods, for example *msekeke*, *mninga* and *mchongoma*. Mninga is used for chests, as mpingo is too heavy. The market for figurines in these woods is not as good as for mpingo – it is still a young market and the tourists have the upper hand in dictating prices and choice of wood. Recently, environmental and tourist groups have started promoting carvings and bowls in coconut wood, which has a distinctive look and fresh appeal. This may work to diversify the type of wood used.

Alongside varying the wood types used, steps are being taken to further develop the carving industry and assist would-be carvers to become engaged in the trade. The art college in Bagamoyo trains young carvers who make innovative and individual pieces. Focus Senya has set up the Bagamoyo Sculpture Project, where 15 students a year are taught carving skills under the Chama cha Wasanii – the Tanzanian Carvers Association, a local NGO. It is based in Mwenge and aims to protect the art of carving and the artists themselves.

3 Carvers in Nachingwea

All village groups mentioned carving as a use of the forest although there are no carvers in Chimbendenga or Mtua villages. The Natural Resources Officer identified Garibovu and Nangoi villages as where much of the carving in the area was done. We therefore visited Garibovu, 3 miles

² At Mwenge we interviewed the chairman of the co-operative, Focus Senya. On Upanga road we spoke to two roadside sellers, Mr. Haji Mawenzi and his uncle Mr. Siasa.

south of Nachingwea, and Nangoi, on the town's northern outskirts, to ascertain the carvers' perspective towards mpingo.

3.1 Garibovu

In Garibovu there is a carving group, called *Juhudi* which was started in 1970 with 46 members. This has now reduced in size to fifteen, with some Makonde people having returned to Mozambique. Carvers are still predominantly Makonde but other ethnic groups, such as Mwera, also participate.

Carvers start learning the skill at the age of 7-8 years, practising after school and in holidays, and earn money for school fees and uniform. Each member of the group pays TSh 500/- a month which pays for the mpingo license obtained from the DFO in Nachingwea and also for tools.³ The license costs TSh 60,000/- for a years supply of mpingo, regardless of how much is used. According to the chairman of the group the DFO comes from Nachingwea to stamp the logs, however, from personal observation and from talking to the DFO it was clear this did not occur. It was estimated that each year approximately thirty-six trees are felled by the *Juhudi* group for carving.

The vice chairman of the group, who has been carving since 1970, stated that between 1970-1990 mpingo was plentiful around the houses of Garibovu but since 1990 it had been necessary to travel increasingly further. In 1999 they have to travel over 20 km to find trees of suitable quality for carving. Wood is needed that does not have heart-rot or knots⁴ and only has a thin surrounding layer of sapwood. The village chairman explained that the decrease in trees was due to logging which occurred between 1970-1990. Logging has since moved to other areas (e.g. Chimbendenga) because there is little available around Garibovu now. This information was confirmed by the DFO.

Carvers travel the 20km by bicycle or foot to find a suitable tree and fell it by using a cross cut saw. Before felling they check the wood is dark enough and the sapwood not too thick using a machete – if after three cuts no black wood can be seen they find another tree. The logs are then cut into small pieces according to the size of carvings to be made. As many pieces as possible are then carried to the village by bicycle or on the head. The day after cutting a tree is taken as a rest day due to physical exhaustion. The wood is used to make a large selection of carvings.⁵

The markets for the carvings are at the groups' workshop in Garibovu (on the road between Nachingwea and Masasi), in Nachingwea and in Dar es Salaam. Most of the ornaments taken to Dar es Salaam are sold wholesale to Mwenge (the major tourist carving market also selling batiks and jewellery). On a trip to Dar es Salaam a carver hopes to make a profit of TSh 120,000/- and it is normal to make two trips per year. However only three members of the group make the trip – those who make the trip can expect to make more money than those who stay down south. Traders come from Arusha and Dar es Salaam to buy carvings directly from the workshop in order to later sell them in their shops and stalls at prices 3-5 times those at the workshop. The '*Juhudi*' carvers said that since 1995 business had become more difficult due to increased competition resulting from more people being involved in carving. In the rainy season business is particularly difficult since the road to Dar es Salaam is impassable at this time of year.

All carvers, like the majority of Tanzanians, are also farmers but spend varying amounts of the time at the shamba depending on the month of year and the availability of other family members to help with the crops. Carving was seen by all members of the groups to be a better occupation than that of agriculture; "it earns more profit than farming and the income from farming is only seasonal whereas from carving it is constant" (Chairman of *Juhudi* Makonde carvings).

³ Tools used include a cross cut saw, hammer, axe and file.

⁴ Where a branch meets the main stem.

⁵ Objects made using a rude, hand driven lathe include sugar pots, candlesticks, cups, water jug and pestle and mortars for pounding spices. Hand carved items include giraffes, leopards, combs, Maasai figures, rhinoceros, and ashtrays.

3.2 Nangoi

Nangoi village on the outskirts of Nachingwea has a reputation for carvers. We interviewed carvers Issa Abdalla (30 years old) and Alois Manunda (75).

Mzee Manunda started the Nangoi workshop – Chipukizi Makonde Carvings – in 1985. He himself is a Makonde, having carved mpingo since he was 10 years old. Mr. Abdalla has learned the Makonde language to use at work. Mzee Manunda is still responsible for the hand-carved figurines, while the others work with foot-powered lathes. There are no electric tools in the workshops, and the hard wood is worked entirely by muscle power. The workshop includes four carvers; there used to be eleven men there, but most of the Makonde have returned to Mozambique.

The prices for carvings vary from TSh 200/- to 2,600/- per piece.

Piece	Price (TSh)
Sugar pot	600-800
Pair of candlesticks	700
Cup	400-600
Water jug (Birika)	2,000
Mortar and pestle	700
Animal ashtray	800
Plain ashtray	500
Mashetani spirits	200-300
Carving of old man, smoker	200-300
Antelope, elephant, birds	450-800
Large rhino	2,600
Giraffe (1")	1,200

Table 6. Average prices received by carvers for different pieces.

Carving is done after the farming day, and in the dry season when there is little agricultural work. This is also when the buyers can come for business. The workshop has both occasional and steady customers, but the prices fetched for carvings have declined because of the increasing competition. Sometimes a bulk order will arrive in advance, and sometimes the customer waits around until his order is completed. The income is irregular and hard to gauge. Mr. Abdullah says he “sells, eats, sells again, eats.”. Income is shared among the carvers who all contribute TSh 500/- per month to the logging licence.

Officially the licence costs TSh 60,000/- per cubic meter of mpingo, but in practice the amounts felled are unlimited once the licence is bought. The carvers go to the forest with the Nachingwea-based forestry officer, sometimes Mr. Cosmus Mungo, who can also stamp already felled logs at the workshop. The carvers choose mpingo logs that are straight and as large and black as possible. In 1998 they hired a truck to transport logs, but lately the wood has been carried on bicycle, twice a year. The workshop uses three 3-6 m tall trees a month. If a tree has heart-rot they leave it to grow – since trees rot at the top and grow from the bottom, it might be of use to future generations.

Should mpingo run out locally the cooperative are prepared to hire a car and travel far to find trees, but they acknowledge that a proper replanting scheme would be useful. They would prefer the government to stop issuing licences to loggers like Mr. Dulbai and Mr Sameja – the loggers cut down both good and bad mpingo, leaving the bad trees to rot, where carvers only fell the good trees.

Since 1990 the carvers have had to search further afield for mpingo. Although carvers are taxed individually, this tax has been reduced and carving is considered very important locally. There was a suggestion that the carvers should unionise, like the blacksmiths.

Discussion

Miombo woodland is an ideal environment for indigenous Agroforestry practices. In southern Tanzania this system works successfully, as in miombo woodland trees are quite widely spaced such that their canopies do not form a complete cover. Shifting cultivation, initiated by slash and burn techniques, allows for agricultural growth and expansion in these areas without necessarily losing the hardwood biomass as much of the hardwoods are able to survive the fires. Logging is only permitted by license. Mpingo is one such example.

1 Research Findings

Our research shows community dependence to varying degrees, both economic and social, on mpingo and a positive attitude towards its survival for the use of future generations in this area. In terms of logging, there are weak controls and few actual penalties for logging without license. The bulk of the logging is carried out by sawmill owners, i.e. those who process and export the mpingo for western markets, and they far exceed local carvers in the number of trees felled. Thus the main problem for mpingo in this area lies with the sawmill logging. This is an area of profit for very few people, an activity from which most of those interviewed receive little benefit. This differs from other uses of mpingo, which commonly benefit many sections of the local community. The most damage to mpingo stocks is being done by a small number of outsiders (from the point of view of the villagers) and it is on this group that attention should be focused when trying to restrict mpingo usage.

There is a need for tighter controls on the number of trees logged and on the amount of wastage left. Regarding the latter it is perhaps possible for some system of bonuses or tax-benefits for sawmill owners who allow carvers to use their mpingo wastage, cheaply or free of charge, thereby reducing the need for carvers to buy licenses and harvest the trees themselves. Though most carvers will want to carve a large, top quality log from time to time to produce prestige show-pieces.

In both Mtua and Chimbendenga the main village income does not come from forest products. It comes from cashew nuts and sesame. However, forest products play a significant and important part in daily lifestyles. Particularly for the following purposes: house building, firewood, logging (employment), medicine, charcoal, rope, small business (selling carpentry products). No money is made from carving mpingo in these two villages (with the exception of combs). In Garibovu and Nangoi villages a selection of people work in cooperatives whose members' livelihoods depend on carving, almost exclusively using mpingo.

Mpingo is considered the best wood for building. It is hard and strong and long-lasting and not threatened by termites. It is considered the best wood for firewood, closely followed by mchenga. It burns for a very long time, even through the night and is thus economical and easy to start the fire again in the morning from hot embers. It lights even when wet due to a 'sap like petrol'. It burns very hot, sometimes too hot and some women prefer not to use it as its flame damages the cooking pots.

Thus, the forest is used extensively. Multiple trees have multiple uses, but in both Chimbendenga and Mtua a certain number of trees almost always came up as favourites for a particular need, e.g. building. For each use there are usually several options, with one exception: medicine. Mpingo has certain perceived or actual properties which mean it alone can be used for certain cures. Particularly for childbirth, there are no alternatives to mpingo. However, this is not threatened by logging as young trees can provide the leaves and bark necessary to make the medicines. The poorer quality trees which have been rejected by loggers can also be used.

Villagers employed by mpingo logging operations may be seen to benefit financially from felling mpingo but they are only a small proportion of the 'community' most of whom do not have the

opportunity to benefit from this income earning activity. Some loggers do see it as a good source of income but others say the work is hard and unreliable, casual and insecure. However, indirect benefits accrue to other service industries in the villages from those earning money from mpingo (i.e. loggers and charcoal burners). Hence the mpingo industry does fuel small-scale economic enterprise to a minor extent.

For carvers mpingo wood is an essential resource of their occupation and cannot easily be substituted due to its unique colouring and density. Although some attempts have been made to use other woods, such as mango, they are not as easy to sell and the Makonde people attach a great deal of importance to the tradition of mpingo carving. For them it has an economic and cultural importance.

Mpingo is not a priority species for charcoal although it does make good charcoal. Again charcoal selling only benefits one or two people within a village, and thus mpingo is not a community requirement in this respect.

In the larger perspective, mpingo logging is a bigger earner than mninga logging, but mninga logging is more frequent and thus more reliable. From the perspective of local people mpingo logging takes place at the whim of the sawmill owners. Nevertheless mpingo logging is desired as it brings significant income to a proportion of young fit men, who in turn aid their families (though not always). It is a big enough earner to make it worth a young man's while to leave his farm for several weeks per year to do the hard work of logging. The problem is that the trader gives a very low pay relative to the income he gains. There is considerable envy towards the logging operations, particularly as many villagers are beginning to realise the value of mpingo. In addition, some of the women felt mpingo was now more difficult to find for firewood, building and medicine due to this logging. People would like to see a way of sustaining the wood, perhaps through a planting programme, although they know little about the processes involved in managing it.

Overall, though, commercial use of mpingo brings scant benefit to either local communities or central government. Communities do not feel responsibility or ownership for mpingo stocks, since they hardly benefit from its logging. Although, as a protected species, mpingo is subject to felling quotas according to a licensing system, government revenue from felling licenses is a fraction of their real value since the enforcing authorities lack the staff or even basic transport necessary to oversee operations.

2 Practical bases for further action

Considering practical opportunities, the chairman and secretary of Mtua village are of the opinion that mpingo has the greatest economic value over all other trees. It is the best wood for firewood, charcoal and building and its benefits exceed those of other trees. They would like to see a management plan to plant and conserve mpingo and would use their positions to implement the programme. However it would need the finance and the educated background of the Tanzanian Government or an NGO to get it running as they do not have either the know-how or the financial resources. They do not object to the logging provided the loggers are obliged by a new law to plant a new tree each time an old one is cut. They believe the villagers do not see the potential of their trees and would like to see a programme where the villagers are educated on this matter.

Regarding the views of villagers themselves, there is no clear consciousness about the state of mpingo, nor clear initiatives for its use. In Chimbendenga there are conflicting opinions on the consequence of mpingo disappearing and whether this is a likely scenario. Some say there is more logging of mpingo now than in the past while others say it was greater in the past. Similarly whether mpingo can be found near to the villages or far away is unclear. Table 7 shows examples of the contradictions found within Nalengwe sub-village.

Group	Mpingo Availability	Comments
Mixed age women	mpingo difficult to find	when mpingo runs out there will be problems - we will lose income from logging and general uses
Old men	mpingo readily available all around village	if it died out locally there would be substantial losses to the area as there is no alternative to it for logging
Mixed age men	mpingo easy to find	if it did disappear it would not matter
Young women	mpingo far from village	think mpingo will disappear but do not care as its uses are not known and the benefits go only to the rich who know it uses

Table 7. Opinions on the availability of mpingo and attitudes towards it's possible exhaustion in Nalengwe sub-village.

Many comment if they were told what mpingo is needed for and how they and their children could benefit then they would readily plant it given specialist help. In most cases, however, there was a preference to grow faster-growing timber species (mbalamwezi, mbambakofi and mninga). Mpingo as a species is not regarded as a priority for the majority of villagers.

Carvers are very concerned for future supplies and are in support of any planting. They want logging by 'outsiders' stopped and feel some sort of planting scheme should be set up by the government to ensure future supplies of mpingo. It is significant that those most directly involved with the wood name the authorities as the responsible party. Ultimately, a viable and mutually beneficial (to conservationists and villagers alike) conservation strategy demands improvements in ownership and democratisation.

Mpingo has the potential to contribute to the cash economy of rural households due to its high international market value. However little effort has been directed towards ensuring the sustainable use of this tree. Conventional protected area strategies are problematic, politically and morally, with people needing to utilise the forest to achieve a sustainable livelihood. And in practice Tanzania suffers institutional weakness and an under-resourced forestry department prevents the efficient and effective control over logging activities with much illegal harvesting occurring in forest reserves. This increases the attraction of 'community' participation in conservation. However this study has shown there are multiple perspectives on forest resources and the ambivalent responses of most villagers towards mpingo planting and management indicates a difficulty in linking conservation with development.

Conservationists must contribute to solving the problems of the rural poor¹ and it is therefore necessary to identify the issues that forest management can help and those it cannot. Vira notes exclusive management of forest resources for single objectives is no longer feasible as a long term strategy.² Forest management must aim to strike a balance between meeting household needs and responding to market opportunities³ while addressing broader developmental objectives. For the villagers of Chimbendenga health, education, and transport⁴ are issues which are considered of greater importance than the forest, in part due to the relative abundance of land and low population density. For the success of any forestry programme these issues must therefore be addressed.

¹ Adams & McShane, 1992

² Vira, 1997

³ Arnold & Dewees, 1997

⁴ Derived from discussion group responses.

Sustainable management of mpingo is particularly problematic due to the long time it takes for the tree to reach a harvestable age. The primary concern of villagers is day to day living and in reality it is unlikely they would sacrifice time and energy to planting trees, which are not a priority to them, if there are no immediate benefits. They need to benefit directly from the license fees and logging contracts. The financial benefits must then be used to improve the village infrastructure. This would increase the likely long term success of the project as they would be more likely to play a greater role in preventing illegal harvesting. However with uncertainties in demand, no fixed contracts and weak institutional administration they are unlikely to be willing to protect or plant a species which, up to the present time, does not play a significant role in their livelihood strategies.

Mpingo does not dominate the rural economy and conservationists must consider the ways in which locals could be made to value it more. When valuing indigenous tree resources, the views of the small scale farmers are likely to differ from those of the researchers and implementing inappropriate measures can waste money, resources and time. Hulme and Murphree identify three strands in a 'new' approach to conservation.⁵ Firstly there is greater interest in local level and community based natural resource management. Secondly conservation and development are seen as goals to be achieved at the same time with natural resources viewed as renewable and able to be utilised as long as sustainability is not compromised. Thirdly there is a belief in the contribution that markets can make to the achievement of conservation goals.

While there is potential synergy between the objectives of conservationists (e.g. maintaining biodiversity) and villagers (e.g. alleviating poverty) there may also be conflict, and for any scheme to be successful it must try to integrate the values of both. It is essential to recognise that people's needs are not static and that other economic options available to the household may offer a better use of its land and resources than adding forest management. Forest management at the present time is not a priority for the villagers and is unlikely to become so unless a scheme can be introduced to make the villagers value the forest more whether through mpingo or another focus. The achievement of conservation goals in Africa requires that the state, 'community' and market operate flexibly and openly in the field of conservation and development and that they are able to adapt to changing environmental, economic and social conditions.⁶ In Tanzania with regard to the mpingo tree there are problems in all three: an under-resourced forestry department, communities which are not homogeneous and an uncertain market. These contribute to making the possibility of conservation of the mpingo tree appear highly problematic. None the less, opportunities exist for the successful and hopefully sustainable initiation of conservation schemes by targeting the right stakeholders – for example carvers – and involving local authority and local democracy programmes already in place⁷ in a two-pronged, carefully considered effort.

⁵ Hulme & Murphree, 1999

⁶ Hulme & Murphree, 1999, p.283

⁷ E.g. the Finnish backed Rural Integrated Project Support (RIPS), see IDS, 2002, for more details.

Part III :

The Realisation

Logistics

1 *Dates of the Expedition*

6 th July	British party arrives in Dar es Salaam
19 th – 21 st July	Drive to Nachingwea, via Kilwa & Lindi
22 nd – 23 rd July	Reconnaissance of possible study areas
24 th July	Establish camp at Mtua
5 th Aug	Shift camp to Chimbendenga
18 th Aug	Shift camp to Garibovu
21 st Aug	Strike camp, return to Nachingwea
22 nd – 24 th Aug	Drive to Dar es Salaam, via Lindi & Kilwa
25 th – 29 th Aug	Remaining interviews and data collation
30 th Aug	British members return to UK

2 *Exchange Rates*

Costs below are given in Tanzanian Shillings. During our time there the exchange rate was approximately:

GBP £1 = TSh 1,200/- or USD \$1 = TSh 760/-

Inflation is a big problem, especially in Dar es Salaam, and it is likely that even costs in hard currency will increase over the next few years. The Economist Intelligence Unit estimates inflation to be at approximately 5%.¹ Exchange rates were less favourable down south but the above figure is an average. The team took out USD travellers cheques.

3 *Transport*

3.1 **Travel to and from Tanzania**

Three of the British members flew to Dar es Salaam from London Heathrow by *British Airways*. The fourth British member flew with *Alliance Air*.

3.2 **Public Transport within Tanzania**

For the long distance journeys to and from the research area, the expedition used a privately hired Landrover. However, during our stay in Dar es Salaam, before and after the journey south, we used *daladala* buses and taxis.

Daladalas are privately owned Japanese mini buses, fitted with as many seats as possible. These are the cheapest and most frequent form of public transport in the city. They run throughout Dar es Salaam during the day but there are no services at night. Journeys cost from 100/- to 150/-. The expedition used these whenever possible.

Taxis were used when *daladalas* were not available. Such as at night, on obscure routes, or when increased security was necessary – such as journeys to and from the airport. Taxis around the city cost between 1,500/- and 3,000/-. Taxis to the airport cost between 5,000/- and 7,000/-.

¹ EIU, 2000

3.3 The Expedition Landrover

With echoes of last years expedition, hiring a Landrover took a great deal of time and energy. Initially the team looked at hiring the Landrover of a friend but the condition of this vehicle was so poor that considerable expense would have been necessary to make it roadworthy, reliable and safe. Through our driver and mechanic Paskal Ngonyani we began negotiations to hire a Landrover 110. Agreed daily hire was approximately double that of the previous expedition; the vehicle cost.

TSh 15,000/- per day. However, the vehicle was sturdy, in good condition and generally roadworthy and the team considered the extra expense worthwhile bearing in mind the increased reliability and extra safety the vehicle would offer us whilst in the research area, a good distance from medical facilities. There were a number of minor mechanical repairs made during the duration of the stay, fixed by Ngonyani or overseen by him in garages in Nachingwea, Lindi, Kilwa and Dar es Salaam.

Fuel prices are relatively high in Tanzania, particularly outside Dar es Salaam. We were therefore very grateful to receive sponsorship in kind from BP Tanzania. By agreement with BP head office in Dar es Salaam, we obtained in total 500 litres of petrol from filling stations in Dar, Kilwa, Lindi and Nachingwea whenever necessary during the expedition.

3.4 Road Quality

A relatively smooth tarmac road ,which covered much of the distance from Dar to the river Rufiji, meant a quick start to our journey south, but the remainder was on unsurfaced roads of sand, gravel and earth. The roads, both to Kilwa, Lindi and on to Nachingwea were passable but at times slow-going. We had a short wait for the car ferry across the Rufiji partly due to the fact we had left Dar at sunrise before most of the commercial traffic had begun their journeys.

4 Accommodation

4.1 Dar es Salaam

The team split the time in Dar between staying with friends initially, and later at the Safari Inn, on Band Street (off Libya Street). The Safari Inn was being renovated during our visit and had raised its prices considerably since the previous year. However, the team arranged a group discount and the manager allowed us to store belongings and equipment, and park our Landrover, in its guarded driveway. The hotel is clean, secure, and the price of 10,000/- per twin room day included a basic breakfast.

4.2 Kilwa

The expedition passed through Kilwa en route and on return from the research area. We stayed in both guest houses owned by *Mjaka Enterprises*. Self-contained twin rooms cost 2000/- per night.

4.3 Lindi

The expedition visited Lindi on two occasions and stayed at a guesthouse in the centre of town, at 2500/- per twin room per night.

4.4 Nachingwea

En route, and on return from the research area, the expedition stayed at a guesthouse in Nachingwea, a short drive to the Natural Resources office. Twin rooms cost 2000/- per night. We would regularly visit Nachingwea for supplies, and usually ate at the Hollywood Café.

5 *Equipment*

5.1 **Camp equipment**

One British expedition member brought his own tent, while the remainder were those used in the previous year's expedition. The tents remained well looked-after and in good condition despite some damage from ants. With the exception of Ngonyani, two team members shared each tent. A small kitchen tent limited damage to supplies by insects, rodents, and the elements, although goods were also stored in plastic bags and boxes, for further protection.

British expedition members provided their own sleeping and personal equipment. Tanzanian members used their own sleeping equipment or blankets brought by the expedition from the UK. The medical kit was likewise brought from the UK.

While some camp equipment was bought in Kariakoo market, Dar es Salaam, the majority was that of the previous year's expedition, which had kindly been kept in storage at WCST's office in Dar. The expedition brought as much as possible of the equipment from Dar, knowing it would be more expensive in Nachingwea. However, a few items were bought in the Nachingwea area, including two woven mats for seating.

5.2 **Equipment**

The British members of the team brought a supply of biros, coloured pens, notepads, A3 drawing paper, scissors, and other stationery supplies relevant to the field research.

6 *Supplies*

Breakfast was usually one or more of *maandazi* (like savoury doughnuts), camp-baked bread and *chapatis*. Lunch and dinner were based around the staples of rice and *ugali* (a stiff porridge-like base made from maize flour and water). A vital ingredient for keeping these meals varied was the stock of spices bought in Nachingwea.

The vast majority of our supplies (often including drinking water) were obtained from Nachingwea. The drive to Nachingwea took about 40 minutes from Mtua, one hour and ten minutes from Chimbendenga and half an hour from Garibovu. Drinking water was obtained locally from wells, with the permission of the local community.

Our supply trips were also used to send and collect post – we were lucky to be able to use the Natural Resources office post box.

7 *Camp Details*

7.1 **Location**

The expedition camped at three locally recommended sites on the village outskirts of Mtua, Chimbendenga, and Garibovu. The camps were usually of a similar layout.

7.2 **Layout**

The tents were usually arranged in an arc under one of the cashew trees. In the centre of this arc was the main sitting area.

The cooking area was situated a little way from the tents. We cooked over small fires. A shallow pit could be used as an oven (hot coals would be buried under and around the sides of the pan, and a few more put on the lid). A much bigger pit was used to burn all organic waste – a task performed regularly so as not to attract rodents. Other waste was buried in another pit a bit further away.

8 *Daily Routine*

8.1 **Camp duty**

Two people were always left in camp in order to prepare the day's food and maintain the camp. This was a full day's work, involving rising just before dawn to prepare tea and breakfast. After the rest of the team had departed, preparations for lunch were begun (sorting beans and rice etc.). Later on they had to prepare the breakfast for the following day, and cook dinner.

8.2 **Research**

The nature of our research varied slightly from site to site, although the basic principles were the same. In Mtua, we ran most of the RRA sessions in the morning, leaving the afternoon free to write up results and plan further sessions. Semi-structured interviews were carried out in the afternoon. RRA sessions tended to last about three hours, with journey time to different parts of the village varying. At each session, we tended to have one team member involved in the discussion and another taking notes per group. The number of groups per each session varied, but were split by gender and/or age. Methods of obtaining data during the discussions included pair-wise ranking. In Chimbendenga, the community advised us that due to their need to carry out farming activities in the morning, the sessions would be better carried out in the afternoons, which is what happened. While based in Garibovu, discussions and interviews with individuals in Garibovu and Nangoi occurred at various times during the day, based on the free time of the interviewees.

Health and Safety

1 *Pre-Expedition Preparations*

1.1 Advice

Advice on all medical aspects of the expedition was given by Cambridge University Occupational Health Service at Fenners, Gresham Road, Cambridge. Previous expedition reports in the area and our individual doctors also provided valuable information.

1.2 Training

The Expedition's Medical Officer attended the Wilderness Medical Training Course, run by the RGS. Additionally one other British team member held a first aid award.

1.3 Medical Equipment

The bulk of the Medical Kit was purchased from the Cambridge University Occupational Health Service, including all prescription drugs and emergency aid equipment such as bandages, needles, dressings etc. The more common items of the medical kit, such as painkillers and bandages were purchased from pharmacists and supermarkets in the UK.

The kit consisted of:

- IV Kit, syringes
- Dressings - absorbent lint, open weave bandages, Steri-strips etc.
- Dihydrocodein
- Rehydration powders
- Immodium
- Hydrocortisone cream (Efcortelan)
- Caladryl cream
- Fansidar and quinine sulphate
- Antibiotics: Norfloxacin (400mg), Tinidazole (500mg), Erythroped A (500mg), Tetracyclint (250mg), Augmentin
- Suncream (factors 10 and 25)
- Micotil (fungicidal powder)
- Paracetamol
- Piriton
- Betadine antiseptic paint

In addition each expedition member took their own small first aid kit containing extra medication to supplement supplies of the most likely needed items, such as paracetamol, plasters and sun-cream.

1.4 Immunisation

All British expedition members were fully immunised before departure against yellow fever (certificate required at airport to enter Tanzania), typhoid, polio, tetanus, meningococcal meningitis and hepatitis A. The rabies vaccination was not considered vital although two team members already had been immunised. All vaccinations were obtained by each team member's own G.P. surgery and paid for by the expedition.

1.5 Prophylaxis and the Malarial Risk

Advice on the risks of malaria were given by the researcher's individual G.P. and the Cambridge Occupational Health Service. Advice was often conflicting with concerns over possible side effects of mefloquine (Larium) and the added risk in Tanzania of many chloroquine resistant

strains. Choice of prophylactic was therefore personal and two team members chose to take Mefloquine (Larium) and one doxycycline. The Tanzanian members of the team relied on their acquired resistance to infection.

Much emphasis was placed on prevention of mosquito bites with the tents having inbuilt mosquito nets and ample supplies of repellent being carried. Risk was far greatest in towns and only guest houses which supplied mosquito nets were used (although repellent was also necessary as many nets were found to be unreliable). Fortunately areas where we camped were found to be relatively mosquito free.

1.6 Blood Group Assessment and Medical Histories

All team members were required to give summaries of their medical history as relevant to the expedition and information on their blood type, for the potential blood transfusions within the group. Medical information and next of kin were supplied for each individual to our contacts in Tanzania upon arrival.

2 Expedition Phase

2.1 City Phase

In Dar es Salaam the close proximity to hospitals made reliance on our own medical expertise less important. However at all times our own medical kit was accessible for easily diagnosable and treatable ailments; also in the case of an emergency essential items such as syringes and needles were available.

2.2 Fieldwork Phase

The full medical kit was available in camp. The nearest hospital was in Nachingwea (a maximum drive of 1 hour 20 minutes from camp) and on arrival we made contact with the doctors there.

3 Medical Problems

3.1 Malaria and other Serious Illnesses

One British team member, taking Larium, fell ill with malaria. This was diagnosed by a blood test in Lindi on our journey from Dar es Salaam to Nachingwea. He took a course of quinine sulphate. Due to weakness of the immune system the same team member then was diagnosed as having pneumonia and put onto a course of anti-biotics. Throughout the trip this member had a severe headache and this grew in extremity. It was finally decided to leave our fieldwork a few days early to travel to get medical advice in Dar es Salaam. Here we went to the medical centre at the International School. Comprehensive tests were done and it was discovered that the main problem was that of severe dehydration. The patient was therefore given rehydration drinks and told to consume vast quantities of water.

3.2 Gut Infections and Water Supply

Water drunk in the field was collected from both Nachingwea (on shopping trips) and local sources. In Mtua water was collected early in the morning from a spring and in Chimbendenga there was a water pump. All water was either iodised before using or boiled. Due to these precautions there were only a couple of very mild cases of diarrhoea all treatable with fluids.

3.3 Miscellaneous

One team member suffered from stiff joints and chose to use a traditional medical practitioner. This involved small cuts being made at all joints. Consequently these became infected and a course of antibiotics had to be given to stop the infection.

3.4 Sanitation

A toilet pit was dug at approximately 20metres from each camp site, behind a cover of vegetation and with the main wind stream blowing away from camp. This was filled in and another built about every two weeks. A wash area was also constructed about 20metres from camp and well out of sight.

Food waste was burnt in a rubbish pit daily to prevent attracting flies or rodents, which would in turn attract snakes.

4 Safety

4.1 Large animals

Lions, elephants and buffalo were all present in the area around the villages we were staying. However as our camp site was located sufficiently near to the villages we came into contact with none.

4.2 Snakes

Snakes were the major concern of the team members. None were sited in Mtua or Chimbendenga although in Garibovu their presence was much more obvious and particular precaution was necessary. Everyone was advised to wear proper footwear and cover their legs when walking between camp and the village. One team member was attacked by a black mamba but fortunately the bite did not penetrate his trousers and the snake was subsequently killed. A puff adder was also killed. Diesel was spread round camp to discourage them.

4.3 Ants and Scorpions

Ants were prevalent in the area. They proved to be particularly problematic in Chimbendenga where they managed to bite holes in our tents and severely reduce comfort. It became necessary to take all the tents down and pour diesel over the entire area. This was successful in discouraging them and prevented further problems.

Scorpions were also found at the campsite, but precautions such as shaking out boots and bags prevented any stings. Any spotted were killed using machete.

Part IV :

Appendices

Appendix I : Farming Activities

Based on discussions with both gender groups in Mtua and Chimbendenga villages.

1 *Monthly Farming Activities*

Month	Activity
September	Bush clearance
October	Tree cutting for new shamba
November	Digging
December	Seed planting
January to February	1 st weeding
March	2 nd weeding
April to May	Maize harvesting
June	Sesame harvesting
July	Millet harvesting
August to September	Cassava harvesting
September	Cashew harvesting

2 *Daily Farming Activities, by gender*

Women	
0600 – 0700 hours	Wake, clean house and surroundings, fetch water
0700 – 1200 hours	Work on shamba
1200 – 1400 hours	Cook, eat and rest
1400 – 1500 hours	Fetch water
1500 – 1800 hours	Pound rice, millet, prepare dinner
1800 – 2000 hours	Eat, rest, sleep

Men	
0600 – 0700 hours	Wake, eat breakfast
0700 – 1200 hours	Work on shamba
1300 – 1500 hours	Eat and rest
1500 – 1900 hours	Work on shamba
1900 – 2000 hours	Eat, rest, sleep

Note: working hours are approximate, however times given reflect the common consensus gained from discussions. The shamba is the smallholding.

Appendix II : Tree Species List

This list includes all tree species referred to in the report. Latin names are given if we were able to make a certain translation, based upon previous research from the 1996 and 1998 field expeditions, and from Greenway (1987). The vernacular names are mostly given in Makua, Mwera and Swahili.

Vernacular name	Latin name	Notes
mbalamwezi		Important Timber hardwood, ropes
mbambakofi	<i>Azelia quanzensis</i>	Valuable timber
mchejea		Used for charcoal
mchenga, mtondo	<i>Julbernardia globiflora</i>	Favoured for charcoal, medicinal
mchiimbiti		Popular hardwood, e.g. building, firewood
mjelejele		Popular hardwood, especially for building
mjembe		Used for making hoes, and by blacksmiths
mkolobonjo		Popular hardwood
mkorosho, cashew	<i>Anacardium occidentale</i>	Cultivated, major cash crop, medicinal, fruit used for alcohol
mnemela		Medicinal
mninga, mtumbati, bloodwood	<i>Pterocarpus angolensis</i>	important commercial timber
mpingo	<i>Dalbergia melanoxylon</i>	Popular hardwood, medicinal
mpinji	<i>Ximenia americana</i>	edible fruit, medicinal
msolo	<i>Pseudolachnostylis mapronuneifolia</i>	Used for building and firewood
mtomoni , mtogo	<i>Diplorhynchus mossambicensis</i>	
mtumbati bonde, mninga maji	<i>Pterocarpus stolzii</i>	commercial timber
mwanga	<i>Pericopsis angolensis</i>	Used for charcoal
mwarobaini, neem		Medicinal, 'tree of forty uses', e.g. against malaria
mwembe, mango	<i>Mangifera indica</i>	Cultivated, edible fruit
ng'windi		Popular hardwood, especially building

Appendix III : Script for RRA Groups

The questions used in Rapid Rural Appraisal discussions between the villagers of Chimbendenga and Mtua and the researchers. Translations in Kiswahili and English.

Instructions to facilitator: record every question. Try to start a debate amongst the group – we would like them to discuss issues. Be patient for their answers.

Kiswahili

Sisi tunatoka chuo kikuu cha Dar es Salaam na chuo kikuu cha Cambridge, Uingereza na lengo hilo: kujadili na kutambua shughuli zote za maendeleo hasa matumizi ya msitu, yaani faida na hasara za msitu. Tungependa kutofautisha baina ya matumizi ya msitu wa siku hizi na ya zamani. Sisi ni watafiti tu na hivyo hakuna sababu ya kuficha maoni yenu, tungependa kujadili tu.

1. Kwanzia, kuna watu wangapi kijijini na kitongojini?
 - (i) Wasiofanyakazi wangapi? (wazee, watoto, viwete)
 - (ii) Wanaoweza kufanya kazi wangapi?
 - (iii) Kaya ngapi kitongojini?
 - (iv) Watu wangapi kaya moja?
2. Je, kuna shughuli gani za maendeleo hapa kitongojini na hapa kijijini
3. Mnatumia mazao gani ya vyakula?
 - (i) Mnatumia kiasi gani cha fedha kwa ajili ya chakula kwa kila mwezi?
4. Mnatumia mazao gani ya biashara?
 - (i) Mnatumia kiasi cha fedha gani kwa ajili ya: Ajira, vitu vya pembejeo, vyombo vya kuchukua mazao mjini, kilo ngapi ya petroli au/na sulfa na kadhalika.
 - (ii) Mnatumia kiasi gani cha fedha kwa kila mwezi kwa ajili ya kaya moja?
 - (iii) Mnauza kila mazao kwa bei gani kwa kilo ngapi kwa kila mwezi na kila kaya?
 - (iv) Mnabaki na fedha ngapi?
5. Mnaweza kupata fedha kutokana na shughuli gani nyingine?
 - (i) Mnapata fedha ngapi kwa kila shughuli kwa kaya moja, kwa kila mwezi?
 - (ii) Je, kuna watu wasiofanyakazi kwa sababu ya ukosefu wa kazi? Wangapi?
6. Kuna matumizi gani mnayo ya kutumia msitu?
7. Kuhusu Kuni
 - (i) Nani anaokota kuni? Wanaume au wanawake?
 - (ii) Wakati gani?
 - (iii) Sehemu gani?
 - (iv) Umbali gani?
 - (v) Mnatafutatafuta miti maalum au miti yote?
 - (vi) Mnapenda kutumia miti gani zaidi?
8. Kuhusu Mkaa
 - (i) Kwa ajili ya mtu binafsi nyumbani au biashara?
 - (ii) Mara ngapi kwa siku/mwezi kuchoma mkaa?
 - (iii) Nani anachukua mkaa? Wanawake/wanaume?
 - (iv) Mkaa unapatikana wapi? Wakati gani?
 - (v) Ukiuza mkaa unapata fedha ngapi kwa kilo kwa mwezi?
 - (vi) Mti gani inatumika? Mti gani bora?
9. Kuhusu Dawa
 - (i) Mnategemea kutembea kwa muda/umbali gani kuchukua dawa maalum?

- (ii) Mnatafuta miti maalum?
 - (iii) Nani anapasua nguzo – wanaume or wanawake?
 - (iv) Mti gani inatumiwa?
10. Kuhusu Ujenzi
- (i) Mnatafuta miti maalum? Umbali gani?
 - (ii) Nani anapasua nguzo – wanaume au wanawake?
 - (iii) Mnapenda kutumia miti gani zaidi?
11. Kuhusu kazi ya fundi
- (i) Je, kuna wachongaji vinyago vya mpingo wangapi?
 - (ii) Wanachukua miti kutoka sehemu gani?
 - (iii) Wanahunua liseni wapi? Watu wa nje au hapa?
 - (iv) Watu wangapi wanatengeneza viombo? Viobo gani?
 - (v) Wanatumia miti gani?
 - (vi) Wanauza viombo hivi au hutumia nyumbani tu?
12. Kuhusu Mbao
- (i) Wafanyakazi wangapi wanaokata mbao?
 - (ii) Ajiri ni kwa wanavijiji au watu wa nje?
 - (iii) Nani anawalipa wakatiji mbao?
 - (iv) Nani anayetoa agizo?
 - (v) Wanakwenda umbali gani kupasua mbao? Mbao gani?
 - (vi) Nani anayesimamia shughuli za miti? Miti gani?
 - (vii) Miti gani kadhaa inayokatwa na panga au shoka na miti gani na mashine?
 - (viii) Miti iliyokatwa inakwenda wapi? Kiwanda gani?
 - (ix) Kwa usafiri gani?
 - (x) Uvunaji mbao/magogo kwa ajili ya mashine unalipiwa na tajiri yupi?
 - (xi) Mashine inapatikana wapi? Kwa tajiri?
 - (xii) Kuna agizo ngapi kwa kila mti kwa kila mwaka?
 - (xiii) Agizo ya magogo/mbao ngapi? Bei gani?
 - (xiv) Mnapenda kutumia miti gani zaidi?
 - (xv) Kwa wastani, mnapata kiasi gani cha fedha kwa mwaka moja kutokana na kupasua mbao kwa mtu moja baada ya kutoa gharama zake za kuishi?
13. Uotaji wa Miti
- (i) Je, mkilinganisha na bainisha baina ya uotaji wa miti wa mbao, mnaona nini? Ime punguza? Imeongezeka?
 - (ii) Kwa jumla aina zipi za miti gani ni rahisi au ngumu zaidi kupatikana siku hizi mkilinganisha na zamani?
 - (iii) Ikiwa mpingo umeisha mtatumia mti gani badala yake?
 - (iv) Ikiwa mtumbati umeisha mtatumia mti gani badala yake?
 - (v) Ikiwa mbambakofi umeisha mtatumia mti gani badala yake?
14. Kuhusu Mpingo peke yake
- (i) Msimu wa uvunaji wa mpingo ni wakati gani?
 - (ii) Je, mpingo unatumika zaidi zamani kuliko leo au zaidi siku hizi kuliko zamani?
 - (iii) Mipingo imekatwa kuwa magogo huko msituni au kule kiwandani?
 - (iv) Gogo moja ni bei gani? Futi ngapi? Urefu gani? Upana gani?
 - (v) Mnaweza kuweka magogo wangapi kwenye gari (wastani)
 - (vi) Mnapasua mpingo gani – yaani, urefu gani, upana gani, miti mwenye kunyooka au kupindapinda?
15. Maoni kwa Jumla
- (i) Nani anapata faida kutoka kwa ukataji au uvunaji mpingo?
 - (ii) Nani ni mkurugenzi kiwandani?
 - (iii) Mipingo inalekea kiwanda gani? Cha nani?
 - (iv) Nani anapata faida juu zaidi kuliko wengine?

- (v) Soko la mpingo liko wapi?
 - (vi) Je, mpingo unatumiwa vipi huko soko lake?
 - (vii) Ukitoweka mpingo mtapoteza fedha za kuishi?
 - (viii) Mngenda kuanzisha au kuona mradi wa kupanda miti asili kwa ajili ya vizazi vya mbele? Miti gani? Vipi?
 - (ix) Msitu wa hifadhi ina faida na hasara gani?
 - (x) Miti gani inahitaji mtu anunue liseni?
 - (xi) Je, mnaona kuna uvunaji mpingo kimagendo huko hifadhi?
 - (xii) Kuna adhabu gani mkikamatwa?
 - (xiii) Mnauhusiano gani na serikali kuu? Na shirika lingine?
16. Matatizo Yalioko Kijijini
- (i) Kuna matatizo gani?
 - (ii) Mngewezaji kutatua matatizo yenu?
 - (iii) Kuhusu moto – kwa mfano uchomaji nyasi n.k. – kwa nini watu wanachoma? Wakati gani? Wapi? Faida na hasara za moto kwa jumla.
17. Ramani (Kuonyesha uotaji wa miti na uvunaji miti yote pamoja na taasisi muhimu kijijini. Kulinganisha na uotaji wa miaka kumi iliyopita, hasa uotaji wa mpingo.)

Asanteni

English

We come from the University of Dar es Salaam and Cambridge University, UK, with this aim: to discuss and uncover matters of development, especially relating to the forest, that is, the uses and disadvantages of the forest. We would like to differentiate between forest usage of today and of old. We are only researchers, and so there is no reason to hide your views – we would just like to discuss them.

1. To begin, how many people live in the village and the sub-village?
 - (i) How many who don't work? (old, children, cripples?)
 - (ii) How many who work?
 - (iii) How many households in the sub-village?
 - (iv) How many people in each household?
2. What development activities go on here in the village and in the ?
3. What food crops do you use?
 - (i) How much money do you spend on food each month?
4. What cash crops do you use?
 - (i) How much money do you spend on labour, fertilizer, transportation for the crops, fuel and sulphur, and so on?
 - (ii) What's your monthly household expenditure?
 - (iii) What prices do your crops fetch – how much do you earn from them per month?
 - (iv) How much are you left with?
5. Can you obtain money from any other sources?
 - (i) What's your monthly household income?
 - (ii) Are there unemployed people in the village? How many?
6. What uses do you have for the forest?
7. Firewood
 - (i) Who gathers firewood? Men or women?
 - (ii) When?
 - (iii) Where?
 - (iv) At what distance?

- (v) Do you use any wood or search for specific ones?
 - (vi) Which wood do you prefer to use?
8. Charcoal
- (i) Do you use it for personal use or to sell?
 - (ii) How many times a month do you burn charcoal?
 - (iii) Who processes charcoal? Men or women?
 - (iv) Where is charcoal obtained, when?
 - (v) If you sell charcoal, what's its price per kilo per month?
 - (vi) Which trees are used? Which ones are the best?
9. Medicine
- (i) How far do you expect to walk/travel to obtain a specific medicine?
 - (ii) Do you look for specific trees?
10. Building
- (i) Who cuts building poles- men or women?
 - (ii) Which trees are used?
 - (iii) Do you search for specific trees? How far do you go to look?
 - (iv) Which woods are the best?
11. Carpentry
- (i) How many mpingo carvers are there here?
 - (ii) Where do they get their wood from?
 - (iii) Where do they buy their licence? From locals or outsiders?
 - (iv) How many persons make pots and vessels? Which types?
 - (v) Which woods do they use?
 - (vi) Do they sell the pots here or are they just for personal use?
12. Timber
- (i) How many workers fell trees?
 - (ii) Are local people or outsiders employed?
 - (iii) Who pays the woodcutters?
 - (iv) Who places the orders?
 - (v) How far do they travel to cut trees? Which types?
 - (vi) Who's the foreman?
 - (vii) Which trees are cut with pangas or axes, and which ones by machine?
 - (viii) Where do the cut logs go?
 - (ix) How far?
 - (x) Who pays the woodcutters who use machines?
 - (xi) Who supplies chainsaws?
 - (xii) How many trees are ordered per year? What's their price?
 - (xiii) Which trees are preferred?
 - (xiv) How much can a person usually earn a year from felling trees, after deducting living costs?
13. Tree distribution
- (i) If you compare and contrast the growth of timber trees, have they increased or decreased?
 - (ii) Which trees are easier and which ones harder to obtain now, compared to in the past?
 - (iii) If mpingo runs out, which wood would you use instead?
 - (iv) If mtumbati runs out, which wood would you use instead?
 - (v) If mbambakofi runs out, which wood would you use instead?
14. Mpingo
- (i) What's the growth period of mpingo?
 - (ii) Was mpingo used more in the past, or is it used more now?
 - (iii) Are mpingo trees cut into logs here, or in the sawmill?

- (iv) What are the dimensions of a log (length, thickness) and what price does one fetch?
 - (v) How many logs can usually fit in a truck?
 - (vi) What types of mpingo do you fell- ie length, thickness, straight or twisted trees?
15. Views in general
- (i) Who benefits from mpingo felling?
 - (ii) Who runs the sawmill?
 - (iii) Whose sawmill do the felled mpingo logs go to?
 - (iv) Who benefits most?
 - (v) Where's the market for mpingo?
 - (vi) How is mpingo used there?
 - (vii) Would your livelihood be threatened without mpingo?
 - (viii) Would you like to start a tree plantation for coming generations? Which trees? Why?
 - (ix) What uses and disadvantages does the forest have?
 - (x) Which trees require a licence to fell?
 - (xi) Is there illegal mpingo felling in the village?
 - (xii) What's the punishment if you get caught?
 - (xiii) What are your contacts with the government? What about other institutions?
16. Problems in the village
- (i) What are your main problems?
 - (ii) What could you do to solve them?
 - (iii) About burning- for example bush clearance- why do people burn? When? Where?
What are the general advantages and disadvantages of using fire.
17. Map (Showing the distribution of trees and tree harvesting, with important village institutions.
Compare to growth areas of ten years ago, especially when it comes to mpingo.)

Thank you.

Appendix IV : Script for Semi-Structured Interviews with Loggers

The questions used in Semi-Structured Interviews with Loggers. Translations in Kiswahili and English.

Instructions to facilitator: write each and every answer.

Kiswahili

1. Jina na kazi yako
2. Umri yako
3. Unaishi wapi? Kitongoji kipi?
4. Ni kwa muda gani umekaa kijijini?
5. Je, kuna watu wangapi katika kaya/nyumba yenu? (jumla)
6. Unamiliki eneo kiasi gani cha pesa katika kaya/nyumba yenu?
7. Unalima mazao ya aina gani? – ya chakula?/ya biashara?
8. Ni nani anayefanya kazi shambani? (familia/wewe/unalipa mwingine?)
9. Unatumia muda gani katika kutunza mazao yako?
10. Unapata faida gani cha pesa katika kuuza mazao? (kila mwaka)
11. Mnatumia kiasi gani cha fedha (gharama za kuishi) kwa kila wiki katika matumizi ya nyumbani? (k.m. chakula)
12. Katika kaya yenu watu wengine wanafanya kazi gani?
13. Hapa kijijini ni watu wangapi wanaofanya kazi ilifanana na yako?
14. Kuna masomo unayohitaji kupata ili ufanye kazi hio?
15. Unahitaji vifaa? (k.m. pembe jeo)
16. Je, inawagarimu kiasi gani kwa kila wiki na kwa kila mwezi?
17. Kw wastani, unapata faida gani ya fedha (kiasi gani) kutoka kwa kazi yako kabla ya kutoa gharama na baada ya kutoa gharama?
18. Wateja wako ni nani? Unauza bidhaa yako hapa kijijini au kule mjini? Mji gani?
19. Unatumia usafiri gani?
20. Unatumia miti gani? (kama mpingo hakuna matumizi mwulize ni kwa nini?)
21. Ni umbali gani unatembea ili kupata miti hiyo?
22. Ni miti gani (wa sisi gani: upana, urefu, unene) unahitaji?
23. Je, ni ngumu kupata miti hii siku hizi?
24. Unayo liseni ya kukata miti?
25. Unapata kutoka wapi liseni na kwa shilingi ngapi kwa idadi gani ya miti?
26. Je, unatumia msitu wa hifadhi? Ina faida gani?
27. Unafikiri ni nzuri au mbaya watukutoka nje kuja na kukata miti vijijini?
28. Je, unafikiri kwa muda wa baadaye itakuwa vigumu kupata miti inayohitaji? Kwa nini?
29. Unapendelea miti gani? Ni faida gani?
30. Ni kwa nini unapenda kupanda miti hiyo? Kwa vipi?
31. Kuna matumizi gani ya mpingo kwenye kaya?
32. Katika mwaka moja ni mwezi gani mpingo uko bize zaidi na kazi?
33. Endepo utasema uotesha, mwulize: Je, unakubaliana unachukua muda mrefu kukomaa?

Asante sana

English

1. Your name
2. Your age
3. Which sub village do you live in?
4. How long have you lived in the village?
5. How many persons in total live in your household?
6. What's the value of the land you own (per household)?
7. What crops do you grow- for personal use or cash crops?
8. Who does the farm work? (The family/yourself/hired labour)
9. How long do you spend tending your crops?
10. How much do you earn from your crops per year?
11. What are your weekly household costs? (e.g. food)
12. Who else in your household works?
13. How many others in the village do work similar to yours?
14. Does your work require education?
15. Does it require special tools? (e.g. a hoe)
16. What does it cost per week/month?
17. How much is usually left over from your work, after outgoings?
18. Who are your clients? Do you sell your wares here or in town? Which town?
19. How do you travel?
20. Which woods do you fell? (If mpingo isn't used, ask why not)
21. How far do you have to travel to obtain those woods?
22. What size trees do you need?
23. Is it difficult to obtain these trees these days?
24. Do you have a license to fell trees?
25. Where do you get your license from? How much does it cost per unit wood?
26. Do you use the forest reserve? What uses does it have?
27. Do you think it's good or bad that outsiders come to the village to fell trees?
28. When do you think it will become difficult to get the woods you need? Why?
29. Which is your favourite tree? What are its benefits?
30. Why do you like that tree?
31. Out of a given year, how many months do you spend working with mpingo?
32. If the respondent plants mpingo, ask: How long does it take for a tree to mature?

Thank you.

Appendix V : Medicinal Uses of Mpingo by Petro Xseri

This appendix presents the results of a semi-structured interview with Petro Xseri, a *mganga wa kienjeji*¹ or medicine man from Chimbendenga village. He was interviewed alongside his young assistant, Shubai Nalengwe, who remained quiet for the majority of the period of the interview.

1 Background

Petro Xseri is a retired Farmer and respected elder, with high social status within the village. He was previously a soldier with active service experience during World War Two and also a teacher. He is also a retired Commander of TANU youth league (thus he has travelled a great deal).

He was born on 11th January 1921 at Liyonga Mneru, Tanzania, the son of a RC missionary school teacher in Mweru. He is of Mwera ethnic group. He went to school in Mweru, then furthered his education at Ndanda secondary school, studying until class eight. In 1939 he was drafted to Mombasa and Nairobi for signal training in the Kings African Rifles. During the war he saw service in Egypt, Ethiopia and Uganda. His father, who was also a *mganga wa kienjeji*, started the Mweru missionary school in 1926 when Mzee Xseri was just a child. He now has three children living in Dar es Salaam and one in Chimbendenga; 18 year old Roja who is learning the secrets of *uganga*.

2 Uganga wa Kienyeji

Mzee Xseri has been a *mganga* since 1966. He was taught the art and traditions of this medicine by his father, coming from a long line of natural healers with specific esoteric knowledge. The knowledge is largely the work of older generations.

People come and see Mzee Xseri for particular cures. He is paid by the sick or by their families. He earns in the region of 10-20,000 shillings per month. For some treatments he charges 3,000 shillings, others 12,000, depending on the problem. He sells certain roots (*ndengu*) that he has collected to the local hospital who refine it.

3 Medicinal Value of Trees

Every medicine has its own individual value. The following are examples:

- For Malaria: Nipepo or Mwarobaini
- For dental problems: Mkuju/Ngweja
- For eyesight problems: Mtamba diffusion
- For stomach disorders: Ng'windi leaves/michango
- For washing before a funeral (those who attend the corpse): Mpinji
- For lining graves: Mianzi/Msolo

4 Medicinal Value of Mpingo

Mpingo has specific and irreplaceable value as a medicine. In a variety of circumstances and has a history of culturally based uses. When a child is born, it is necessary that he or she is bathed in the smoke of burning mpingo, ideally the leaves, as a cleansing process. The birthing room is filled

¹ A *mganga wa kienjeji* is a kind of homeopath or traditional healer, using inherited skills. *Mganga* is kiswahili for doctor, *kienyeji* means local. *Uganga* is the trade.

with this smoke as soon as the child's umbilical cord has been cut. The amount of smoke is carefully controlled, with the result that the baby and the room is cleansed. According to Mzee Xseri, this practise is an intrinsic part of the culture and tradition of the Mwera ethnic group of Nachingwea and Lindi districts, within Lindi region. Similar practises occur within the traditions of neighbouring ethnic groups of this region including the Yao and Makua. Similar uses, (with differing methods) of mpingo during birthing are found in Tunduru, Ruvuma, Songea, Masasi and many areas of Mtwara region. Mpingo used in this way is said to bring good health.

Appendix VI : Accounts

<i>Received</i>	£
Personal Contributions	1,600.00
Cambridge Commonwealth Travel Bursaries	1,800.00
Royal Geographical Society (RTZ fund)	650.00
Fitzwilliam College	200.00
Jesus College	220.00
Belling Charitable Trust	1,500.00
Mary Euphrasia Mosely Trust	400.00
David Richards Travel Scholarship	350.00
Worts Fund	300.00
Barlow International	250.00
Other	600.00
<i>TOTAL</i>	<i>7,770.00</i>

We must also thank BP Tanzania for providing us with free fuel, worth over £200.

<i>Pre-expedition Expenditure</i>	£
Flights	1,786.70
Insurance	420.00
Medical	209.81
Visas	180.00
Research Permits	230.51
Field Equipment	406.25
Administration	171.88
<i>TOTAL</i>	<i>3,405.15</i>

<i>Field Expenditure</i>	£
Equipment	85.60
Accommodation	230.24
Provisions	277.20
Public Transport	84.86
Vehicle Hire & Fuel	532.44
Counterpart Wages	649.75
Medical	92.23
Other	90.43
Currency Exchange Losses	171.47
<i>TOTAL</i>	<i>2,214.22</i>

<i>Post-Expedition</i>	£
Photographic	60.00
Administration	70.00
Report	300.00
<i>TOTAL</i>	<i>430.00</i>
<i>GRAND TOTAL</i>	<i>6,049.37</i>

Appendix VII : Acknowledgements

Our very grateful appreciation for all those who helped in the preparation, research and collation of this study. In particular we would like to thank the following:

- The people of Mtua and Chimbendenga villages who welcomed us and gave up valuable time in order to assist us with our research
- The men of the carving cooperatives of Garibovu and Nangoi villages
- Mr Sefu Ngele, the acting District Natural Resources Officer at Nachingwea, who always received us warmly, and whose support, advice and enthusiasm was invaluable
- Mr Cosmos Mungo, the District Forestry Officer at Nachingwea for his helpfulness, time and support, particularly in collating data on mpingo and timber extraction for our use
- Paul Nnyiti, of the Wildlife Conservation Society of Tanzania, who provided the project with a base and valuable storage space
- Jonas Timothy, James Lesckari, Anette Nicco and James Doubleday who made up a wonderful team, and without whose help and research skills the project would not have been possible
- Paskal Ngonyani, our skilled driver and mechanic
- Litty Eziefula for her invaluable preparations and fundraising
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- Steve Ball for his advice on arranging the expedition

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Appendix IX : Contact Details

Mpingo Conservation Project

The Mpingo Conservation Project exists to assist mpingo conservation initiatives primarily by facilitating long term research and concentrating on obtaining quantitative data on the ecology of the tree and the impact of exploitation. It is committed to a substantial research programme conducted through two principal means: regular student expeditions, and secondly by funding on-going research at other times of the year by Tanzanian students and foresters. *Mpingo 99* was the third expedition from the project, and the first to focus fully on community-based perspectives. . At the time of writing the sixth expedition is preparing to head out in June 2003.

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Fauna & Flora International (FFI)

Fauna & Flora International, founded in 1903, is the world's oldest international conservation charity. Its mission is to safeguard the future of endangered species of animals and plants through action based on sound scientific principles. FFI has members in over 100 countries and its programmes offer creative and innovative solutions to conservation problems. They involve and empower local people, ensuring that conservation gains for threatened species are sustained into the future.

The *Soundwood Programme* was established to promote the conservation of numerous valuable hardwoods about the world which are endangered by high rates of exploitation to supply raw materials for the manufacture of a whole range of musical instruments. Mpingo is just one amongst many species which are threatened in this way.

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