

CRITICAL ECOSYSTEM PARTNERSHIP FUND

Proceedings of a workshop to document lessons learnt from the Critical Ecosystem Partnership Fund's investment in the restoration of forest connectivity in the Eastern Arc Mountains and Coastal Forests of Kenya and Tanzania

Amani Nature Reserve
11th – 12th September 2006



Executive Summary

This report describes the proceedings of a workshop which brought together grantees receiving support from the Critical Ecosystem Partnership Fund (CEPF) to restore and increase connectivity among fragmented forest patches in the hotspot, especially in Lower Tana River Forests; Taita Hills; East Usambaras / Tanga; and Udzungwas and other relevant stakeholders. The aim of the workshop was to share experiences and document lessons learned during the implementation of these projects.

The workshop was held at the Amani Nature Reserve from 11th – 12th September 2006. 18 people participated in the workshop including representatives of: civil society organisations implementing forest connectivity projects financed by CEPF; the Forestry and Beekeeping Division of the Government of Tanzania and CEPF.

The Critical Ecosystem Partnership Fund is currently investing US\$ 7 million in the Eastern Arc and Coastal Forests of Kenya and Tanzania. This investment is guided by five strategic funding directions. The second strategic funding direction is 'to restore and increase connectivity among fragmented forest patches in the hotspot, especially in Lower Tana River Forests; Taita Hills; East Usambaras / Tanga; and Udzungwas. The workshop focused specifically on CEPF's investment in forest connectivity. There are 15 projects being supported under this strategic direction representing an investment of US\$ 688,267.

The workshop was organised by the Tanzania Forest Conservation Group on behalf of the Coordination Unit for CEPF's investment in the Eastern Arc Mountains and Coastal Forests. The workshop contributed to CEPF's commitment to share information about its investment in the region.

During the workshop 15 presentations were made, each presentation was followed by discussions. After all presentations were completed on day two, participants separated into two working groups to brain storm on some of the key lessons learnt on the restoration of forest connectivity and to identify recommendations. Summaries of each of the project and working group presentations are included in this report.

For more information about CEPF's investment in the Eastern Arc Mountain and Coastal forests, please visit www.cepf.net or cepf.tfcg.org or contact the Tanzania Forest Conservation Group, PO Box 23410, Dar es Salaam, Tanzania (tfcg@tfcg.or.tz)

Acknowledgements

We wish to thank all those individuals and institutions who contributed their time and effort to ensuring the success of the workshop.

In particular, we are grateful to CEPF for financing the workshop and in particular to John Watkin for taking the time to travel to Amani Nature Reserve to open and close the meeting and for his valuable insights on linkages with CEPF.

We would also like to thank all those who prepared and gave presentations including John Watkin (CEPF), George Eshiamwata (Birdlife International), Jaclyn Hall (University of Florida), William Newmark (Utah Museum of Natural History), Dr. G. Jambiya (WWF TPO), Eustack Bonifasi (TFCG), Zakiya Aloyce (WWF TPO), Francesco Rovero (Museo Tridentino di Scienze Naturali), Trevor Jones (Anglia Ruskin University), Hamadiel Mgalla (TFCG), Isaac Mallugu (WWF TPO), James Mwang'ombe (EAWLS) and Kathryn Doody (FZS).

We thank the Amani Nature Reserve for providing the facilities and sustenance to keep the meeting going.

We thank Nike Doggart for facilitating the meeting and Freya St. John for recording the proceedings of the workshop.

This workshop report was prepared by Nike Doggart (TFCG) and Freya St. John.

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List of acronyms

CDC	Conservation Development Centre
CEPF	Critical Ecosystem Partnership Fund
CFCU	Coastal Forest Conservation Unit
CI	Conservation International
CR	Critically Endangered
EACF	Eastern Arc and Coastal Forests
EAWLS	East African Wildlife Society
EIA	Environmental Impact Assessment
FBD	Forestry and Beekeeping Division
FZS	Frankfurt Zoological Society
GEF	Global Environment Facility
GoT	Government of Tanzania
ICIPE	International Centre for Insect Physiology and Ecology
IGA	Income Generating Activities
IUCN	World Conservation Union
JGI	Jane Goodall Institute
Lol	Letter of Inquiry
MBG	Missouri Botanical Gardens
METT	Management Effectiveness Tracking Tool
MM	Msitu Mkuu
MMNP	Mahale Mountains National Park
MoU	Memorandum of Understanding
NEMC	National Environmental Management Council
NGO	Non-Governmental Organisation
NRM	Natural Resource Management
PFM	Participatory Forest Management
PFRA	Participatory Forest Resource Assessment
PLUM	Participatory Land Use Management
PRA	Participatory Rural Appraisal
SFD	Strategic Funding Direction
TFCG	Tanzania Forest Conservation Group
TIC	Tanzania Investment Centre
UNDP	United Nations Development Programme
VLF	Village Land Forest
VNRC	Village Natural Resources Committee
WCS	Wildlife Conservation Society
WCST	Wildlife Conservation Society of Tanzania
WD	Wildlife Division – of the GoT
WMA	Wildlife Management Area
WWF	World Wide Fund for Nature

1) Background to the workshop

1.1 Introduction

This report describes a workshop which brought together grantees receiving support from the Critical Ecosystem Partnership Fund for the restoration of forest connectivity in the Eastern Arc and Coastal Forests of Kenya and Tanzania. The aim of the workshop was to share experiences and document lessons learned during the design, planning and implementation of these projects.

The Critical Ecosystem Partnership Fund (CEPF) is a joint initiative of Conservation International, the Global Environment Facility, the Government of Japan, the John D. and Catherine T. MacArthur Foundation and the World Bank. Conservation International administers the fund. CEPF provides strategic assistance to nongovernmental organisations, community groups and other civil society partners to help safeguard Earth's biodiversity hotspots. A fundamental goal is to ensure civil society is engaged in biodiversity conservation. The partnership invests in biodiversity hotspots, Earth's biologically richest and most threatened areas. CEPF focuses on hotspots in the developing world and strategically targets priority areas in the hotspots for maximum impact.

CEPF provides funding and technical assistance to civil society groups. It acts as a catalyst to create strategic working alliances among diverse groups, combining unique capacities and eliminating duplication of efforts for a comprehensive, coordinated approach.

The Critical Ecosystem Partnership Fund is currently investing US\$ 7 million in the Eastern Arc and Coastal Forests of Kenya and Tanzania. This investment is guided by five strategic funding directions:

1. Increase the ability of local populations to benefit from and contribute to biodiversity conservation, especially in and around Lower Tana River Forests; Taita Hills; East Usambaras / Tanga; Udzungwas and Jozani Forest.
2. **Restore and increase connectivity among fragmented forest patches in the hotspot, especially in Lower Tana River Forests; Taita Hills; East Usambaras / Tanga and Udzungwas.**
3. Improve biological knowledge in the hotspot (all 161 sites eligible).
4. Establish a small grants program in the hotspot (all 161 sites eligible) that focuses on critically endangered species and small-scale efforts to increase connectivity of biologically important habitat patches.
5. Develop and support efforts for further fundraising for the hotspot.

Within East Africa, CEPF's investment has been coordinated by four organisations and their partners. These organisations are working together to achieve CEPF's desired outcomes in the region. The four organisations are: BirdLife International - Africa Secretariat (in Kenya the BirdLife Partner is Nature Kenya. In Tanzania the BirdLife Partner is the Wildlife Conservation Society of Tanzania (WCST)); the International Centre for Insect Physiology and Ecology (ICIPE), the Tanzania Forest Conservation Group and WWF - East Africa Regional Programme Office in partnership with WWF – Tanzania Programme Office. The job of the CEPF Coordination Unit is to ensure that an effective, efficient and coordinated approach is applied amongst stakeholders to achieve the CEPF conservation outcomes for the Eastern Arc and Coastal Forests. To achieve this goal, the unit aims to meet four objectives. Each organisation is responsible for taking a lead on one of these objectives.

The objectives are as follows:

Objective 1: 'An Eastern Arc and Coastal Forest coordination unit exists with appropriate mechanisms to facilitate achievement of the investment priorities identified in the CEPF ecosystem profile'. (Led by ICIPE)

Objective 2: 'Stakeholders within civil society and government are aware of the CEPF process, goals and achievements and are sharing experiences'. (Led by TFCG)

Objective 3: 'Civil society stakeholders are supported to design effective conservation projects in line with the CEPF Ecosystem Profile and submit proposals to CEPF'. (Led by WWF)

Objective 4: 'A comprehensive and complementary suite of CEPF projects (within budget) is in place to fully address the strategic directions / investment priorities identified in the ecosystem profile'. (Led by BirdLife)

The workshop described in this report relates to an activity that contributes to objective 2 of the Coordination Unit's work. As part of the work under this objective, the Tanzania Forest Conservation Group (TFCG) developed a communication strategy to guide awareness raising and information sharing activities related to CEPF's investment. Stakeholder meetings were one of the activities identified in this strategy as providing a useful mechanism for communicating results and lessons learned. The meeting described in this report is the second of a series of lessons learned workshops which will focus on each of the strategic funding directions supported by CEPF.

1.2 Workshop aim

The aim of the workshop was to bring together CEPF grantees involved in projects under CEPF Strategic Funding Direction 2 to share experiences on the restoration of forest connectivity and document lessons learnt.

1.3 Expected outputs

- Grantees have an opportunity to share experiences and to learn about other projects being supported by CEPF.
- Grantees have an opportunity to identify areas of potential synergy between projects.
- Relevant stakeholders including government departments can learn about the projects financed by CEPF.
- Participants will identify some of the key lessons that have been learned through the implementation of the CEPF projects.
- CEPF representatives and grantees have an opportunity to meet and discuss the progress of their projects.
- A report documenting the progress and lessons learned from projects supported by CEPF under Strategic Funding Direction 2.
- Recommendations on ways to strengthen restoration of forest connectivity in the hotspot.

1.4 Participants

The lead contacts under all projects supported through CEPF's strategic funding direction 2 were invited to the workshop. Of the 15 forest connectivity projects supported by CEPF, representatives of 10 projects were able to attend. In addition, we had participation from the Forestry and Beekeeping Division, the Mahale Mountains National Park and Amani Nature Reserve. A total of 18 people participated in the workshop. The full list of participants is included as Appendix 3.

1.5 Workshop structure and organisation

The workshop continued over two days from 11th – 12th September 2006 at the Headquarters of Amani Nature Reserve. The workshop was organised by the Tanzania Forest Conservation Group on behalf of the CEPF Coordination Unit for the Eastern Arc Mountain and Coastal Forests. During the first day and the morning of the second day, grantees gave presentations on their projects. The presentations focused on the aims, methods, results and lessons learned from the projects. After each presentation, participants had an opportunity to ask questions and discuss the project. Having completed all presentations the remainder of day two was spent in working groups. The aim of the working groups was to identify specific lessons learned on restoration of forest connectivity based on guidelines provided by the workshop organisers Appendix 1. Each group had a Chair and Rapporteur. The rapporteurs presented the findings of their group to the plenary as power point presentations.

1.6 Report structure

This report includes summaries of each of the presentations made during the workshop. The text for each presentation is based on the power point files prepared by the presenters. Additional information outlined verbally by the presenter is documented as foot notes. At the end of each section, there is a summary of the discussions that took place after each presentation. The project presentations are followed by a summary of the findings of the two working groups. The workshop timetable, instructions for the working groups and a list of participants are provided as appendices.

Many of the presentations included attractive and illustrative photographs and graphics however many of these have had to be removed in order to keep the size of the PDF file small enough to be able to share this document electronically.

2) Presentations

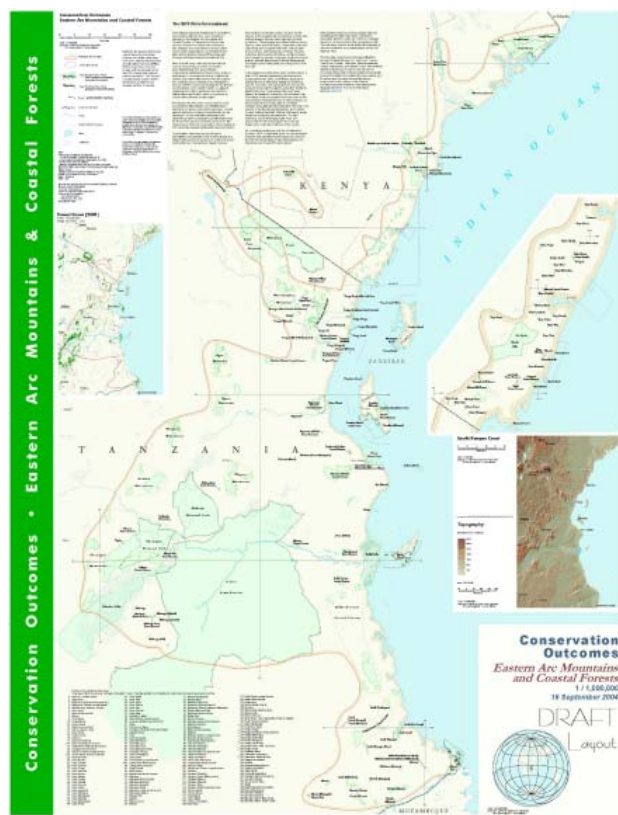
2.1 Opening remarks and participant introductions

The workshop was officially opened by John Watkin who began by welcoming participants and explaining that the aim of the workshop was to provide participants with an opportunity to find out what each of the projects have been working on as well as to identify lessons learned that can strengthen CEPF's investment here and elsewhere.

Participants then introduced themselves.

2.2 Critical Ecosystem Partnership Fund (CEPF) Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya

Presented by John Watkin



A Partnership Approach ¹

Timeline

- Ecosystem Profile developed in early 2003
- Donor Council approval in November 2003
- Investment launched in 2004

Conservation Outcomes

- Extinctions avoided: 333 Threatened species
- Areas Protected: 160 sites – 5 “priority” sites
- Landscape: Increasing connectivity, 4 priority sites

Priority Sites

- Lower Tana Forests
- Taita Hills
- East Usambara Mountains
- Jozani Forest, Zanzibar
- Udzungwa Mountains

Background

- Significant conservation history in East Africa
- Extensive civil society sector
- Established Government and Parastatal sector
- Many qualified and competent national scientists and conservationists
- History of competition between non government organisations

CEPF's Niche

- Conserving global species and site imperatives for biodiversity conservation
- Monitoring the survival of these species in the long-term
- Increase community involvement in conservation

¹ CEPF works through a partnership approach, promoting partnerships between stakeholders. Funds have been allocated according to the strategic funding directions and investment priorities identified in the Ecosystem Profile.

The selection of projects started in 2004. CEPF aimed to encourage projects to adopt complementary methods and to contribute data to the Tanzania National Databases at UDSM and to the databases held by the National Museums of Kenya as well as to the CEPF Conservation Outcome Database. CEPF are now evaluating the flow of collected data.

The biodiversity hotspot concept is an idea that was developed in 1988 by Norman Myers and later adopted by Conservation International as a basis for prioritising conservation investment.

Five Strategic Directions

- 326 applications total

Strategic Direction	Funds allocated	Funds remaining	Number of projects
1: Community Livelihoods	\$ 2,831,484	\$181,016	Total number = 24 Mean = \$ 118,000 Median = \$ 20,000
2: Increase connectivity	\$ 688,267	\$ 409,233	Total Number = 15 Mean = \$ 46,000 Median = \$ 20,000
3: Improve Biological Knowledge	\$1,959,709	\$ -34,709	Total Number = 24 Mean = \$ 82,000 Median = \$ 47,000
4: Small Grants Program	\$164,377	\$ 375,623	Total number = 8 Mean = \$ 20,000 Median = \$ 20,000
5: Long-term financing	0	\$425,000	Total Number = 0 Mean = \$ 0 Median = \$ 0
Totals	\$ 5,643,837	\$ 1,356,163	71 projects supported thus far. 25 projects in development totaling US \$1,062,562

Approach to Grant Making

Succession of Strategic Directions:

Biological knowledge =>
=>Increasing connectivity =>
=>Community Livelihoods =>
=>Small Grants =>
=>Long-term Financing=>

Investment planning workshops

Udzungwa Mountains – summary published in Oryx
Taita Hills Stakeholders Workshop – available online²

Layering of projects

Pilot projects => Scientific input => Community action => Community Micro Grants³.

Highlights of FY 06

SD 1: Community Livelihoods

- Coordination Unit
- Hotspot Wide Monitoring Program (BirdLife and CABS)
- Alternative Nature-based Livelihoods⁴
- Environmental Awareness (including 1 BBC documentary with a forecasted audience of 550 million)⁵
- Community Micro Grants

² http://www.cepf.net/xp/cepf/recent_grants/grantsbyregion.xml?region=Eastern+Arc+%26+Coastal+Forests&year=2005

³ The aim of this pilot project is to explore the potential for achieving conservation and development using a combination of improved scientific and socio-economic knowledge. The microgrants are managed by WWF in Kenya and Tanzania in partnership with TFCG, WCST, Nature Kenya and CFCU and include alternative fuel, better marketing of crops, eco-guides/rangers, and participatory forest management.

⁴ Taita / Tana & East Usambaras e.g. honey, resin, essential oils.

⁵ This documentary will be produced by TFCG for broadcast on BBC World.

SD 2: Increasing Connectivity

- Taita Hills model including community involvement⁶
- Tana Delta Irrigation Project Environmental Assessment
- East Usambara Mountains Derema Corridor: Global Conservation Fund grant leveraging Finnish Government and World Bank contributions to the compensation scheme
- Udzungwa Mountains: Assessment of opportunities to increase connectivity that resulted in 3 keystone projects

SD 3: Improving Biological knowledge

- Surveys of lesser known sites
- Red Listing of Plants workshop
- Journal of East African Natural History⁷
- National Biodiversity Database (Tanzania)
- Forest Health
- Insect Diversity

SD 4: Small Grants

- Several key small grants that fill site and species gaps in the overall portfolio e.g. Survey of Microchiropteran bats complementing a grant from CI Madagascar and builds on the BP Conservation Programme Award studying Seychelles Sheath-tailed bat

SD 5: Long term financing

- Terms of Reference for the consultancy developed in conjunction with CI
- Priority for FY 07

Coordination Unit

International Centre for Insect Physiology and Ecology

Overall management, administration and accounting of the Unit

Tanzania Forest Conservation Group

Establish a network of raising awareness of CEPF goals and objectives

World Wide Fund for Nature EARPO and TPO

Interface with civil society especially CBOs

BirdLife International in conjunction with their national partner organisations NatureKenya and Wildlife Conservation Society of Tanzania Coordinating the review process and ensuring a complementary suite of projects

Co-opted members of the CU are Tom Butynski and Neil Burgess

Success through Partnerships

GEF-UNDP Conservation and Management of the Eastern Arc Mountain Forests Project

GEF Medium Sized Project for the Kwale District

USAID Arabuko Sokoke project and Visitors Centre at Fort Jesus, Mombasa

Signing the Memorandum of Understanding between Conservation International and the Government of Tanzania

Conservation Outcomes

- The Ecosystem Profile and Conservation Outcomes have guided the investment.
- 49 of the 160 sites identified in the Ecosystem Profile have CEPF projects
- 310 of the 333 species outcomes have been encompassed in the portfolio
- Site and species gaps to be filled as best as possible in FY 07

⁶ The Taita Hills are one of the most threatened and fragmented sites in the region.

⁷ The support given to the Journal of East African Natural History enables grantees to publish their findings. All papers published since 1910 are available on the East African Natural History Society's website.

Up coming years activities

Community Livelihoods

TRAFFIC: Forest Product Extraction and Rural Livelihoods

WCS: Aerial mapping of the forests

Increasing Connectivity

WWF TPO: Conserving of the Forests of Matumbi Hills

Improving the Conservation of Magombera Forest

Biological knowledge

Meeting of grantees

Small Grants Program

Small Grants Programme for Building Research Capacity among Tanzanian and Kenyan Students.

Long-term financing

- Review of applications for a consultancy on opportunities for long-term financing
- Building upon the recommendations from the consultancy to secure funding opportunities including payments for ecosystem services, carbon sequestration and trust funds

Concluding remarks

The CEPF EACF portfolio has demonstrated how - by playing to the respective strengths of civil society, engaging all stakeholders in the Ecosystem Profile process and implementation of the full investment - significant strides can be made in achieving conservation outcomes.

By emphasizing partnerships and using CI's expertise where it was deficient locally, CI has gained significant credibility in the region.

Discussion

Q. CEPF identified 160 sites and 5 priority sites, what criteria were used in selecting the 5 priority sites? On issue of connectivity people were concentrated in northern parts, in FY06 there were no researchers in Matumbi.

A. The priority sites were identified during the planning process. The sites were chosen as a result of a technical review of available information. There is common consensus that the 5 sites chosen are the key sites for example the Taita Hills area is experiencing strong human population growth, forest conservation & livelihoods needs to be addressed as a matter of urgency.

A. As more data become available for the Udzungwa Mountains it further highlights the importance of the area.

A. The CEPF investment in the Matumbi Hills is aiding existing work being carried out by WWF-TPO.

Q. The CEPF Grant Writer programme can be complicated to use.

A. It was designed to be as simple as possible.

Q. Can you let us know more about what is happening with the community grants project and is there a possibility for groups to apply in Swahili?

A. The community microgrants programme represents a source of funds that will be implemented at a more appropriate scale for local conservation action. Community groups can apply for the funds using a simplified application procedure. The application forms have been developed and the first round of applications is under review. Applications can be in English or Swahili.

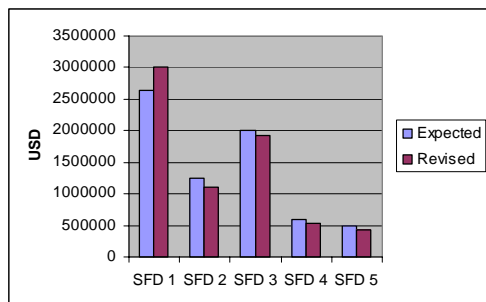
2.3 Overview of CEPF'd investment in the Eastern Arc Mountain and Coastal Forests

Presented by George Eshiamwata, BirdLife International

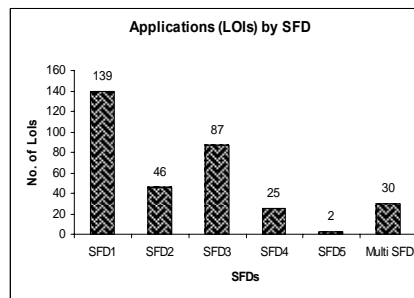
Strategic Funding Directions (SFDs) in the EACF ⁸

- Increase ability of local populations to benefit from and contribute to biodiversity conservation
- Restore & increase connectivity among fragmented forest patches
- Improve biological knowledge
- Establish small grants program focusing on CR species and small-scale efforts to increase connectivity
- Develop and support efforts for further fundraising

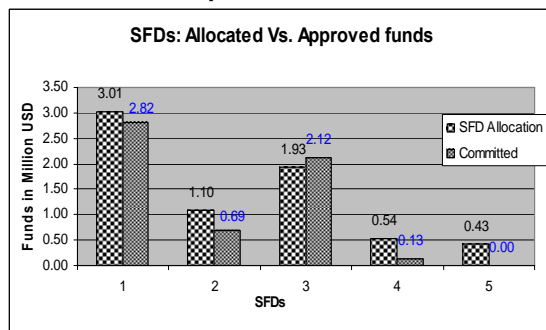
Fund allocation in EACF = USD 7,000,000 ⁹



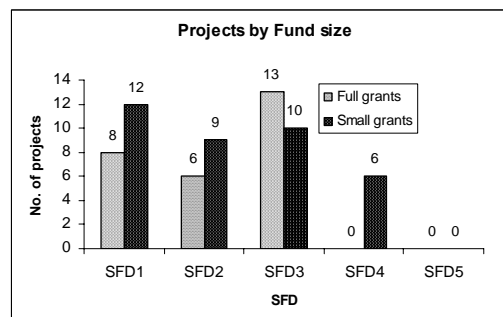
Analysis of the Project Portfolio (Feb'06)



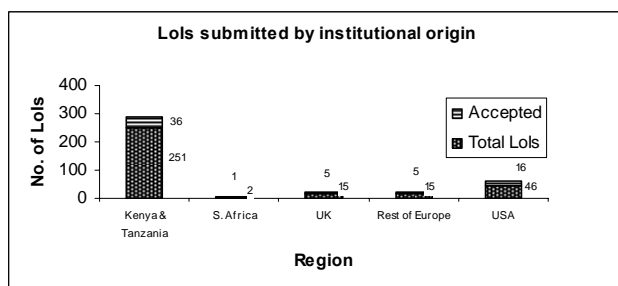
Committed funds per SFD



Nature of funded projects



Origin of Submissions



Site coverage

Eastern Arc & Coastal Forests region hosts 333 species outcomes at 161 sites

Interest expressed by applicants for work at 84 outcome sites

Funds committed at 49 sites where activities may benefit 311 of the 333 outcome species ¹⁰

⁸ The annual analysis of the project portfolio for 2005 is available on the website.

⁹ The number of applications to CEPF was very high, indicating a high level of interest toward the conservation of the EACF hotspot. A large proportion has been allocated to civil society through small grants.

¹⁰ Funded initiatives tackle the conservation of outcome species through an indirect approach, i.e. by protecting their habitat sites.

Sites & no. of projects in place ¹¹

- Udzungwas (7), Tana River Forests (6)
- Arabuko Sokoke Forests, Uluguru Mts, Entire Hotspot, Tz (5)
- North Pare Mts, Rubeho Mts (4)
- Boni Forest, Coastal Forests Tanzania, Dodori Forests, Jozani Forest Reserve, Lindi District Coastal Forests, Mt. Kasigau, Nguru Mts, Tanga (3)
- Nguu Mts, Pemba Island, Rufiji District Coastal Forests, Udzungwa Mountains, Ukaguru Mts (2)
- Chale Island, Chuna forest, Kaya Gonja, Kaya Kinondo, Kaya Miungoni, Kaya Muhaka, Kaya Rabai, Kaya Sega, Kilombero Valley, Kilwa District Coastal Forests, Kisarawe District C Forests (Pugu Hills), Lindi, Lungwi, Mafia Island, Mahenge, Mikumi National Park, Mrima Hill, Mtwara Coastal Forests, Tana River Delta, Tumbatu Island, Uvidunda Mts, West Usambara, Witu, Zanzibar (Kituani), Zanzibar (Muyuni), Zanzibar Island-East Coast, Zanzibar Island-South Coast (1)

Gaps in site Coverage

- South Pare Mts (33 outcomes species) among critical sites yet to be captured
- 77 sites have no ongoing projects

Species coverage

- Mammals: primates, small mammals
- Insects: butterflies, army ants, ground-dwelling ants / beetles
- Birds: Threatened birds (E. Usambara)
- Amphibians: Assessment of amphibians in Taita Hills, frogs (chytrid distribution & pathogenicity)
- Plants: Plant conservation assessment
- Reptiles: Three biodiversity survey projects
- Fish: No project in the hotspot looking at fish

Discussion

CEPF funds have mostly been allocated but this does not mean that it has all been spent for example once a project has been approved money is paid in instalments.

Q. SFD 5 has no projects. This is an important SFD as potentially after FY08 the portfolio will be closed due to lack of funding. Why has CEPF not promoted this SFD more to ensure an exit strategy?

A. An SFD 5 study is due to be carried out looking at long term funding opportunities e.g. carbon sequestration. A ToR for the study was issued but was extremely detailed with a limited budget as such there were no tenders. The ToR has been redeveloped and the tender will be advertised in the East African.

Q. There is yet to be any project implemented in South Pare. What will CEPF do about this?

A. CEPF will look at how student and small grants can cover gaps remaining in the CEPF site profile, however, CEPF has to acknowledge that perhaps not every site can be covered. Realistic aims have to be set so that results can be realised.

¹¹ Some projects cover the whole hotspot. Some sites are benefited by one or two projects.

2.4 Instituting a standardised sustainable biodiversity monitoring system in the Eastern Arc and Coastal Forests

Presented by George Eshiamwata, BirdLife International

Purpose

- Sustainable monitoring system involving all key stakeholders in the EACF
- Information is made widely available and accessible.

Objectives/Outcomes

- Standardised protocols for monitoring agreed with all stakeholders and instituted¹²
- The status of key taxa, key sites and the ecosystem processes maintaining biodiversity are monitored
- Co-ordinated storage, handling and sharing of conservation data

Achievements against outputs:

Output 1: A baseline of monitoring knowledge, data and practitioners in the EACF and the current main gaps and needs established.

- Comprehensive review of approaches used for biodiversity monitoring, actors, methods, coverage (sites / species) in the EACF done, report availed
- Main actors implementing biodiversity monitoring in the EACF identified, database initiated and continually updated
- Gaps in monitoring data discussed (workshop), baseline review report availed

Output 2: Protocols for biodiversity monitoring developed, agreed, standardised and implemented by all key stakeholders across the EACF hotspot.

- Workshop: 30 May -1 June 2005, 85 participants - Task Force to develop monitoring approaches
- Agreed common indicators and methodologies for species, sites and habitat monitoring
- Two communications to stakeholders on agreed indicators and tools, how to contribute monitoring information
- Templates for Memorandum of Understanding (MoU) among the key partners agreed upon¹³
- Case-by-case analysis of MOU needs for sharing data

Output 3: The trends in conservation status and threats to selected species, sites and habitats in the EACF hotspot after four years of CEPF investment assessed and documented

- Model demonstration sites / species selected (at least Arabuko Sokoke; Dakatcha; Uluguru; Lindi / Sokoke Scops-owl; Clarke's Weaver; Uluguru Bush-shrike; Spotted Ground Thrush)¹⁴
- Equipment need assessment etc, systematic data collection
- Dissemination of information of biodiversity status – annual biodiversity trend & status report; feedback to stakeholders

Output 4: A comprehensive database developed and maintained where information on the Conservation Outcomes of EACF hotspot is stored and from where such information is readily available and regularly distributed

- Outcomes database continues to be populated – in process to be uploaded on TFCG CEPF website¹⁵
- Consultation ongoing with CABs to make database useful for monitoring
- Monitoring data being captured in simple spreadsheet¹⁶

Output 5: A forest cover and change detection map (1990-2000) for the coastal forest areas of the Eastern Arc Mountains has been produced and distributed widely within the region

- CI - CABS

¹² Initially BirdLife decided to have a protocol for the flow of data from the start. However, an ongoing consultative approach was eventually selected as being more effective.

¹³ Some institutions have long working relationships so MoUs may not be relevant.

¹⁴ These sites represent a minimum set for which commitment has been made for systematic data collection.

¹⁵ Consultation as to whether or not the database should go on-line or not is still underway.

¹⁶ At the moment this is a simple spreadsheet that captures the information received from various organisations. It indicates what indicators were recorded and when they were last assessed. Birdlife also developed a spreadsheet where people can advise how to improve the gathering of information.

Some lessons

- Need to set aside enough time for stakeholder consultations (share expertise, reduce duplication) – otherwise major delays may occur.
- Coming up with agreeable methods of aggregating different forms of information for monitoring purposes can be challenging.
- Two-way benefits necessary for successful data sharing.
- Though necessary, agreements on information sharing may not always be based on MoUs.
- Keep it simple!

Discussion

Q. Is there a data collection form available?

A. A draft species data collection form is available. The draft was distributed in hard copy to the meeting for attendees to comment on. The final version of this data collection form will be circulated electronically.

Q. The Carnivore Atlas based in Arusha is doing similar work, collating data from various sources into a central database. In the future is there likely to be exchange of information between databases?

A. Currently the focus of this database is only the EACF region. However future collaborations may happen as other parties have already shown an interest in the Outcomes Database and the procedures used to set it up.

Q. Have indicators of socio-economic aspects been linked to the biodiversity monitoring data and captured on the database?

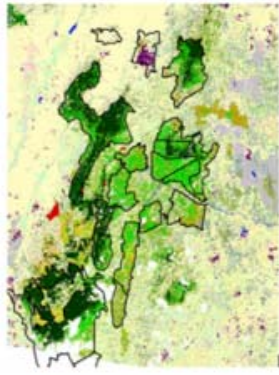
A. Currently no, however there is still the possibility to add such information, perhaps people can provide information on tools that can be used for measuring socio-economics pressures? A Continuous Assessment Tool has been developed by a Birdlife partner but this looks at the impacts of CBOs on an area, not the impacts of the whole socio-economic profile of the community at large.

Comment: At the SFD 3 Lessons Learnt Workshop William Cross & David Knox gave a presentation 'CEPF's conservation outcomes definition, monitoring and data networks'. This presentation showed how CEPF funding has changed the profile of hotspots. The broader analysis undertaken can extract socio-economic data from national surveys. The biological information is tough to manage alone, without adding the socioeconomic aspects.

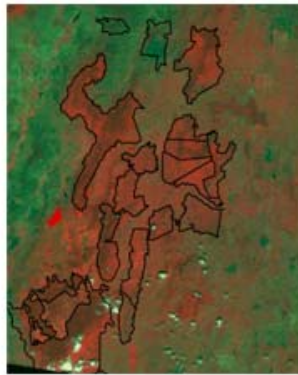
2.5 Satellite analysis of within-forest heterogeneity: ecological change in the East Usambaras

Presented by: Jaclyn Hall, University of Florida

East Usambaras



Land Cover



This research project explores the meso-scale level (the forest structure), which is the intermediate level between the species level (the tree) and the landscape level (the forest patches).

General goal: how to use the information contained in satellite images to aid conservation efforts. What at the ground level can be identified from satellite images? It is evident that satellite images provide an indication of forest structure and cover rather than biodiversity. The researcher would like to develop a system that enables the study of

a forest through satellite imagery without further need for field verification. In this way forest change could be monitored directly from satellite imagery.

Method of analysis

Ask the right questions!

- How much deforestation has occurred in the East Usambaras?
- What is the extent of forest degradation in the East Usambaras?

Choose the right method of analysis!

Threats to the Eastern Arc Forests –

There are many threats to the forest. Many of these degrade the forest, only a few cause complete deforestation – Logging and some forms of agricultural expansion. But most forms of human activity in forest does not result directly in deforestation. For example, some forms of agricultural expansion occur beneath the forest canopy-cardamom.

Overarching Research Question

1. How has the forested landscape of the East Usambaras been altered over the past 30 years?

Specific Research Questions

1. What is the relationship between spectral reflectance as measured by satellites and species level biophysical characteristics of a landscape?
2. Are biophysical characteristics of humid and semi-humid forests correlated more strongly with mid-infrared and thermal signals than to red and near-infrared signals?¹⁷
3. What is the relation between classes of species richness and landscape characteristics in the Eastern Arc Mountains of Tanzania?

Part 1- Floristic Surveys

30+ Gentry transects to be conducted, 10 transects in a set, each 50 m long, 2 m wide, 10 m apart.

Richness categories:¹⁸

- Total richness – total number of species at each plot.
- Obligates – number of species obligate to forests.
- Endemic – number of species endemic to the EACF.
- Rarity - number of species rare in EU.

Topographical categories:

Elevation, Slope, Aspect, Latitude

¹⁷ Ground-truthed data is needed to verify the inferred relationship between spectrum band and forest structure and levels of deforestation. In order to use field data for this purpose, good GPS data should always accompany such data.

¹⁸ Our thoughts about diversity can differ when looking at different richness categories

Part 2 – Forest Parameter Index

What is the relationship between spectral reflectance as measured by satellites and species level biophysical characteristics of a landscape?

Methods

Index development for each richness category and for each forest structure parameter of interest

- Percent canopy coverage, Number of stems, Basal area, Canopy height, Canopy texture, Ordination axis

Analysis

1. Correlation – for reduction of redundancy
2. Principle Components Analysis – determining explanatory variables that best explain the forest parameter
3. Ordination – finding patterns in the data
4. Regression - Polynomial Multiple Logistic– building the best model

Goal of Regression

- Intensity Map of each forest parameter
- Probability response variable being high

PART 3- CHANGE DETECTION

2006 ASTER	2000 Landsat 7	1987 Landsat 5	1975 MSS
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- Rerun regression for each sensor
- Standardise the range of index values across sensors
- Create intensity maps for each satellite image
- Subtract intensity values to identify change
- Examine degree and pattern of change with landscape variables

Results Testing

2007 – East Usambaras and Nguru Mountains

Timeline

Floristic Collection in the East Usambaras

Feb – Nov 2006

Statistical Analyses, Index Development

Dec – Jan 2006

Results Testing

- forest parameter estimates
- change results

East Usambaras Jan - Feb 2007

Ngurus April – May 2006

Lessons learned

All data collected, social or biological, should be spatially explicit.

But hand held GPS's are not as accurate as we would like them to be, and in my opinion, the Magellan GPS's that I have seen many people with around the country are not to be used for anything but fun.

I use a Garmin 76CS, but a 76C is just as good. What is important for all of us working in forests, is to get a GPS that allows for the attachment of an antenna.

Discussion

Q. CBH is used to measure trees, what is CBH?

A. CBH is circumference at breast height, circumference is being measured rather than diameter at breast height (DBH) to simplify methodology and to eliminate need for DBH tapes that may be damaged or lost.

Q. Both MSS and Aster satellite images have been used in this study – do they use the same parameters?

A. The parameters of these two systems are not the same. However as data are available from both systems it should be understood how to analyse data from both.

2.6 Land use management guidelines for enhancing ecological connectivity in the Eastern Arc Mountains

Presented by William D. Newmark, Utah Museum of Natural History, University of Utah

Long-term research site
Usambara Mountains

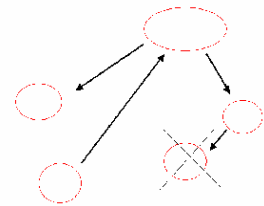
Central Question

What are the long-term impacts of forest fragmentation and disturbance on understory bird species and communities in the Usambara Mountains?

Research Objectives

1. Examine the metapopulation dynamics of understory bird species.¹⁹
2. Examine the impact of forest disturbance upon understory bird species and communities.²⁰
3. Examine factors influencing the distribution of bird species along forest edge to interior gradients.
4. Examine the long-term population dynamics of understory bird species.²¹

Metapopulation Dynamics

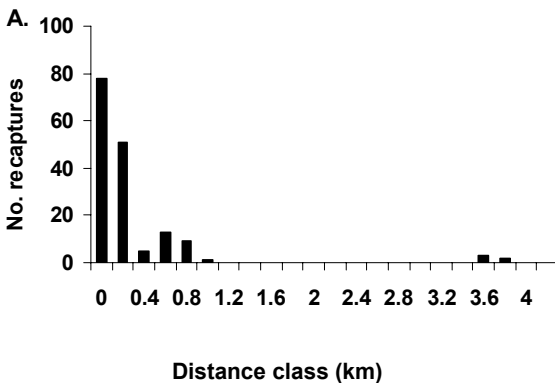


Background

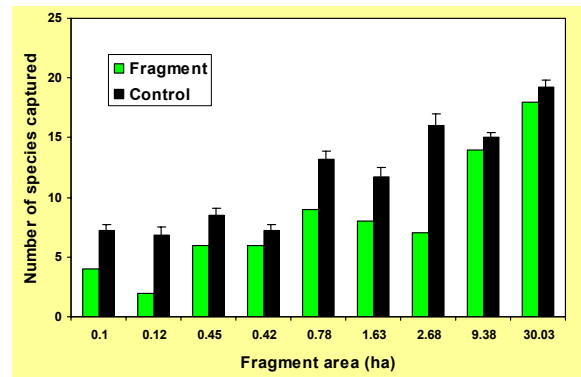
Forest fragmentation threatens biodiversity in the Eastern Arc Mountains through:

1. Isolation of populations.²²
2. Reduction in population size.
3. Modification of habitat structure and microclimate.²³
4. Alteration in rates of predation, pollination, seed dispersal, and parasitism.

Frequency of Distance Birds Move between Forest Fragments



Loss of Understory Bird Species in Forest Fragments in the East Usambara Mountains



Critical Considerations in the Design of Wildlife Corridors

While wildlife corridors are widely recognized as landscape features that enhance ecological connectivity, ensuring that wildlife corridors in the Eastern Arc Mountains are truly effective is highly dependent upon patterns of movement and survivorship of wildlife within corridors.²⁴

¹⁹ Most existing work has been done on invertebrates.

²⁰ Slight disturbance does affect bird communities.

²¹ Mist netting provides biometric and movement data

²² Most birds move less than 100m. When forests are fragmented populations are isolated. Radio telemetry has confirmed in one instance that a bird would not cross a non-canopy gap – this method continues to be implemented to gain further data.

²³ There is not only forest reduction affecting habitat composition but forest disturbance too.

²⁴ Movement and survivorship are key to designing wildlife corridors – there is no point connecting forests if the connection area is a place where target species can not survive.

Proposed Wildlife Corridors in the East Usambara Mountains²⁵

Determinants of Movement and Survivorship

Corridor Width²⁶

Habitat structure²⁷

- In the Eastern Arc Mountains, land use practices are the dominant factor that defines forest habitat structure.²⁸

Project Objectives

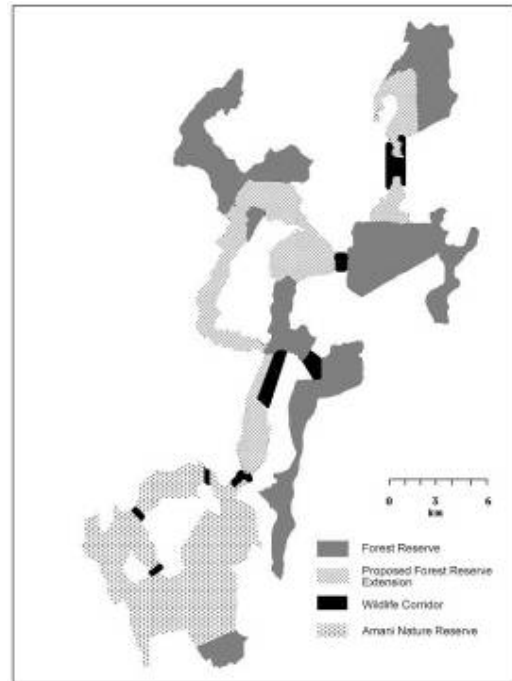
Examine the influence of forest structure and disturbance upon understory bird species movement, survivorship, and natality for purposes of enhancing connectivity between forest patches in the East Usambara Mountains.

Methodology

Building upon 20 years of continuous field data, understory bird movement, survivorship and natality shall be assessed across various forest seral stages and disturbance gradients in the East Usambara Mountains through a combination of radio-telemetry, mark-recapture analysis, and focal nest observations.

Expected Outputs

- Bird species movement, survivorship, and natality across forest seral stages in the East and West Usambara Mountains assessed and summarized.
- A field training programme for Tanzanian ornithology graduate students in assessing bird species movement, survivorship, and natality across forest seral stages developed and implemented.
- Land use management guidelines for wildlife corridors in the Eastern Arc Mountains designed and delivered



Conclusions Related to Land Use

- Impact of ecological perturbations is often only detectable over long time periods.
- Forest disturbance results in increased temporal variability in species richness with highest levels in slightly disturbed forest.
- More than one-half of all guilds are affected by forest disturbance.
- Recovery time from forest disturbance for many bird species is at best very long.²⁹

Management Implications

- Extreme care needs to be taken in interpreting short-term assessments of human disturbance on biological communities in tropical forests.
- Even very limited harvesting and utilization of resources have very long-term impacts on bird communities in the Usambara Mountains.
- Maintaining and protecting primary forest in the Eastern Arc Mountains is critical for the conservation of many species.

²⁵ Conservationist need to think about other areas in need of connection in the East Usambaras beyond Derema Corridor as options for connecting forests will only be reduced over time.

²⁶ Corridor width determines predation pressure for understory birds. Corridor width of 1km is adequate for understory bird species.

²⁷ Currently it is unknown how habitat structure affects bird movements – this is the purpose of the CEPF funding.

²⁸ Forest disturbance decreases bird community stability. This pattern is only picked up by long-term studies.

²⁹ Most alarming concluding aspect to date: most bird populations have declined by 30 – 40% since the start of this study.

Discussion

Q. Please could you clarify the reasons for local extinctions of some bird species

A. Most likely we are observing a lag affect – when a system is disturbed it takes time to respond. The affects of hundreds of years of forest disturbance are only being seen now. Why these specific species? In addition to the pressures of forest fragmentation and disturbance each of the species were restricted to primary forest, they were on the edge of their range, and existing in small population sizes.

Q. The suggested 1km corridor width. How does this scale up for other fauna / flora?

A. Some primates are reluctant to come to the ground but they do not show the edge effect as observed in understory bird communities, primates often come to the edge of forests thus corridor width is probably of less importance to primates than birds.

Home range size should be know and combined with possible movement patterns of future bird generations when planning corridor dimensions. For example canopy bird species generally have no problems crossing gaps. However, birds are not likely to travel 3 – 4 km as this would generally be exceeding their home range. Such a long movement would take a number of generations to achieve.

Q. In your opinion where in the East Usambaras should connectivity be achieved next?

A. Nilo

2.7 Facilitating payment of compensation for the Derema Corridor

Presented by George Jambiya, WWF TPO

Procedure is hugely delayed due to many reasons. The situation is not desirable and is now at a critical stage

Background

- The Derema corridor is one of the 5 priority sites identified in the CEPF Ecosystem Profile and a main corridor for the protected forest blocks.
- Increasing land uses in the area have raised concern on continued degradation and a threat to maintenance of values and functions of the entire ecosystem.
- Recognizing the dependence of communities in the area, number of alternative income-generating and micro-enterprises have also been considered and facilitated to reduce pressure on the natural forest resources.

Objectives

- A 3-year project with funding from Conservation International under the CEPF has been approved to be managed by WWF TPO with the aim of ensuring that the Derema Forest Reserve is gazetted to enhance connectivity between existing government reserves in the East Usambara Mountains.
- The intention is to secure this viable forest corridor between the forests in the south of this mountain block and those further north. The forest will be managed by the Tanga Catchment Forest Office, and with a Joint Forest Management Agreement with the communities.

Partners

The project involves other partners including:

- the Tanzania Forest Conservation Group (TFCG),
- Forestry and Beekeeping Division (FBD),
- Amani Nature Reserve,
- Tanga Catchment Office and
- Muheza District Council³⁰

Outputs³¹

1. Process of making payments (compensation) to communities completed
2. Forest adjacent communities benefit from the compensation scheme
3. Derema proposed forest reserve gazetted as a central government forest reserve
4. Joint Forest Management agreement between adjacent communities and the government operational
5. Mechanism for long term monitoring developed and in use

Objectives of the Social Impact Study³²

- Hold stakeholders meetings to discuss on compensation modalities
- Monitor the compensation process
- Conduct a baseline study i.e. village field surveys,
- Update the Social Impact Assessment and
- Monitor socio-economic changes

Compensation and Settlement

- Under the Tanzania Forest Conservation and Management Project, which is implemented through a World Bank Credit, a Resettlement Action Plan for Derema Corridor has been conducted.
- The study looked into the processes of the compensation including guidelines for compensation (entitlement, rationale & formula for compensating asset losses), identification of institutional responsibilities for implementing, supervising & monitoring the compensations - covering also grievance channel & a plan for consultation & investment of such finances, putting in place indicators to monitor impacts (both the immediate & long term).
- The study therefore complements this process & provides synergy & checks and balance.

³⁰ And forest adjacent communities

³¹ The government started paying compensation to some people in October 2005. In December 2005 local MPs put pressure on the gov't due to general election and the situation became highly political, WWF as such were asked to stay away.

³² As part of the Derema Corridor compensation process it was necessary to conduct a Social Impact Study. This study will be repeated and is one form of monitoring.

Funding sources for compensation

Government of Tanzania

- 100 million T Shillings for compensation (not loan)
- 500 million T Shillings for compensation (loan from MNRT)
- Government of Finland
- 14,000 EURO (provided and for compensation)
- 60,000 EURO (promised, but not provided. Apparently tied to the release of the Global Conservation Fund money from CI).
- Global Conservation Fund
- 350,000 USD. Released when the contract is signed and critical questions answered (see below).
- World Bank
- Requested to provide 400,000 USD within TFCMP IDA credit to GoT (requires further steps in order to achieve this goal)

The Compensation Process³³

- Due to political pressure leading towards the last general elections, government raised some 600 million to pay for half the compensation
- This amount is to be recovered and reimbursed when the expected / promised money becomes available.
- The elections were in December 2005 & the payments were made in October 2005
- Only half of the payments were made... to date the remainder is yet to be paid
- Partners who committed themselves to make payments have created considerable delays
- The compensation process itself was fraught with problems (hiccups) in the beginning but generally went well in the end.
- 600 million TSh was paid to people from 5 villages - Kisiwani, Kwezitu, IBC Msasa, Kambai and Kwemdimu
- The communities are not satisfied with the compensation formula
- Some payments were ludicrous - 120/= !!!
- There is some frustration with the compensation & gazettement process on all sides

The Consequences³⁴

- There have been undue delays:
- The Participatory Forest Management (PFM) process is stalled, because communities have yet to be paid compensation and until this happens they are not ready to take part.
- The Gazettement Process is now also stalled
- There is anxiety & concern among the affect communities as well as implementers of the gazettement of Derema.

Lessons Learnt

- Despite some good preparatory work, there have been some errors and omissions that complicate the compensation process.³⁵
- There are different interpretations of re-settlement (WB, GoT, NGOs etc.)
- Compensation is a costly exercise & therefore requires solid commitments
- It is important that funds are made available on time and payments also made on time
- Compensation requires very careful planning & implementation
- Provision of timely and reliable information to the affected communities is also important³⁶
- Sound compensation has the potential to improve people's lives & improve conservation
- Bad compensation has the opposite effect
- Lot of the preparation was on the crop survey and boundaries
- Less so on the side of the communities
- Preoccupied with conservation objectives Vs community benefits/interests

³³ Facilitation of payment was further encumbered by the need for every individual to have an identity card – this is unusual for residents of rural communities. Some compensation cheques were for as little as 1,600 TSh, less than it costs to travel to a bank to cash it!

³⁴ As proved eloquently by Newmark earlier in this workshop, the longer there is delay the greater the situation worsens in respect to conservation.

³⁵ Including: The Land Act was used to form compensation scheme but this implies that the person owned the land. This Act should not have been used, more appropriate would have been the Agriculture & Crops policy.

³⁶ Communities are now aware that all information will be channeled through the District Commissioner.

- 1st Compensation from the boundary crop have been wisely used (despite lack of preparation for the communities)
- Setting some interesting precedents...

Derema Gazettement at the cross-roads

- Awaiting the response from the World Bank - October deadline
- Revisit the compensation formula to cater for interest and rid it of anomalies
- Implement the resettlement proposals - Misozwe
- Inviting other income generating CSOs / institutions to the affected areas.

Discussion

Q. How many people will be compensated in the Derema corridor?

A. 1,256

Q. How many are women

A. Approximately 30% but this figure should be confirmed.

Q. What is your opinion on other corridors?

A. We should start now before the situation worsens. We should develop a step wise process based on what has been learnt during the Derema compensation process. As the World Bank were willing to fund the Derema Corridor then one may make the assumption that they would fund further connectivity initiatives in the area – this is however an assumption.

Q. Were any social surveys conducted to see what people wanted?

A. The Social Impact Survey was conducted by WWF TPO. It was suggested that several measures be put in place before the compensation process was started – including issues concerning livelihoods, the elderly and idle land. Many mitigation measures were recommended including how funds should be paid during the compensation process i.e. how should people receive their cash. Many people were robbed / frauded at payment centres when payments were made in cash resulting in the recommendation that payment should be made through a bank.

Comment: strongly hopes that the Derema process is properly documented.

2.8 East Usambara forest landscape restoration project

By Eustack Bonifasi, Tanzania Forest Conservation Group

Background

“Conserving forests and improving livelihoods in a multifunctional landscape in the East Usambara Mountains of north-east Tanzania”

- **Time frame for 1st phase:** Three years (2004 / 05 – 2006 / 07)
- **Implementers:** Tanzania Forest Conservation Group and WWF-Tanzania Programme Office with technical input from WWF Finland and WWF International.
- **Partners:** Tanga Catchment Forest Office, Muheza District Council, private sector stakeholders

Why East Usambaras Landscape:

- East Usambaras are important for biodiversity conservation
- Home to communities who utilise natural resources to survive
- Ideal for testing community based forest management approaches and integrated land use practices at the scale of a landscape
- 15 government forest reserves, 10+ village forest reserves, 28 villages in three divisions
- Total population 135,000

Objectives

Goal:

...prevent the loss of globally important biodiversity values, improve the livelihoodsand restore and maintain the multiple functions of the forests in the East Usambara Mountains.

Approach:

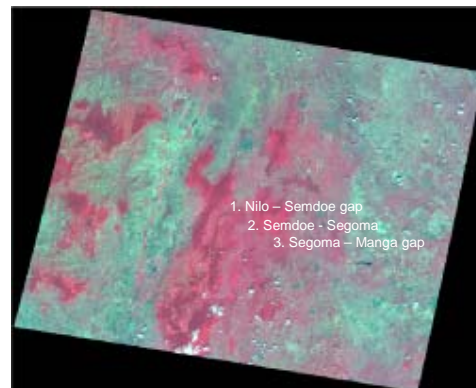
³⁷Testing community based forest management and integrated land use approaches at the scale of a landscape within the East Usambaras.

Priority areas for restoring connectivity

- The project is supporting participatory forest management at various sites throughout the landscape with a particular focus on restoring connectivity in the centre of the East Usambara landscape between Nilo-Semdoe-Segoma and Manga.

Approaches to the restoration of forest connectivity in the East Usambaras

- Establishing new protected areas (village forest reserves) to conserve patches of natural forest in corridor areas.
- Supporting improved forest management through community-based and joint forest management.
- Planting indigenous species in deforested corridor areas.
- Agroforestry.
- Awareness raising.
- Community development.



Progress: establishing new protected areas

- Four new village forest reserves have been established including election and training of village natural resource committees; marking and mapping of reserve boundaries; preparation and approval of management plans and by laws.
- Six additional village forest reserves are in the process of being established.
- Village land use planning and mapping of village land due to start by end of 2006.

Progress: Supporting improved forest management through community-based and joint forest management

- Providing support to 18 villages involved in participatory forest management.
- Support includes training and some equipment for e.g. patrols.

³⁷ Spot image of East Usambara landscape

Progress: Planting indigenous species in deforested corridor areas³⁸

- Have been promoting *Allanblackia stuhlmannii* and *Dalbergia melanoxylon*.
- At least 6000 *Allanblackia* planted especially in the corridor area between Nilo and Semdoe.
- Planning to start promoting *Ocotea usambarensis*.

Progress: agroforestry

- 9 primary schools, 27 groups and 60 individuals have established tree nurseries and more than 30,000 tree seedlings have been transplanted.
- Establishing two demonstration tree planting plots in each of the villages in the forest corridor areas.

Progress: awareness raising

The project has been raising awareness on forest values, threats and conservation options through:

- Organising world environment day events;
- Training for teachers and local government in environmental education;
- Provision of environmental education materials;
- Community networking.
- School tree nurseries.

Progress: community development

We have been supporting various income generating activities including:

- fish farming (28 fish ponds)
- beekeeping (20 bee hives) and *Ocimum* sp. in collaboration with the CEPF-financed 'Sustainable livelihoods project' led by ICIPE.
- butterfly farming (through the Amani Butterfly Project) earns approx US\$ 45,000 per year for communities.
- sale of *Allanblackia stuhlmannii* nuts (through the Novella project). Sold 270 tonnes this season.
- Fuel efficient stoves (150 stoves)
- Tree planting

Next steps

- Continued support for participatory forest management, tree planting and village land use plans.
- Continued support for community development and awareness raising activities.
- Working with stakeholders to tackle some of the direct threats such as commercial collection of fuel wood, fire and mining.

Challenges

- Tackling some of the direct threats including mining, fire and commercial collection of fuel wood.
- Ensuring that by-laws are approved by the District.
- Sustaining the income generating activities.
- Monitoring the project's impact.

Lessons learnt – forest management

- PFM requires a strong commitment from the government to share benefits (as well as costs).
- In order to tackle some of the direct threats to forests e.g. mining, commercial collection of fuel wood there needs to be strong 'buy-in' from local government backed up by a capacity to enforce laws relating to forest management. Such actions need to be complemented by longer term solutions e.g. alternative livelihoods.
- Restoring forest connectivity requires a long term commitment from civil society organisations to work with local stakeholders. Strong local partnerships are essential.

Lessons learnt – community development

- Increasing direct benefits from forest-related income generating activities such as butterfly farming can create a motivated 'constituency' within the communities who will be proactive in conserving forests.
- Care needs to be taken when selecting species to be used in agroforestry. There is growing evidence that some species e.g. *Cedrella odorata* pose a considerable threat to the forest by spreading from farms to natural forest.

Lessons learnt - planning

³⁸ TFCG asked the communities what tree species were important to them – the species selected for planting reflects community requirements.

- Remote sensing is a useful tool in identifying priority areas for the restoration of forest connectivity but requires considerable technical expertise which can be difficult to obtain.
- Involving a wide range of local stakeholders in connectivity planning is essential for the success of restoration activities.

Discussion

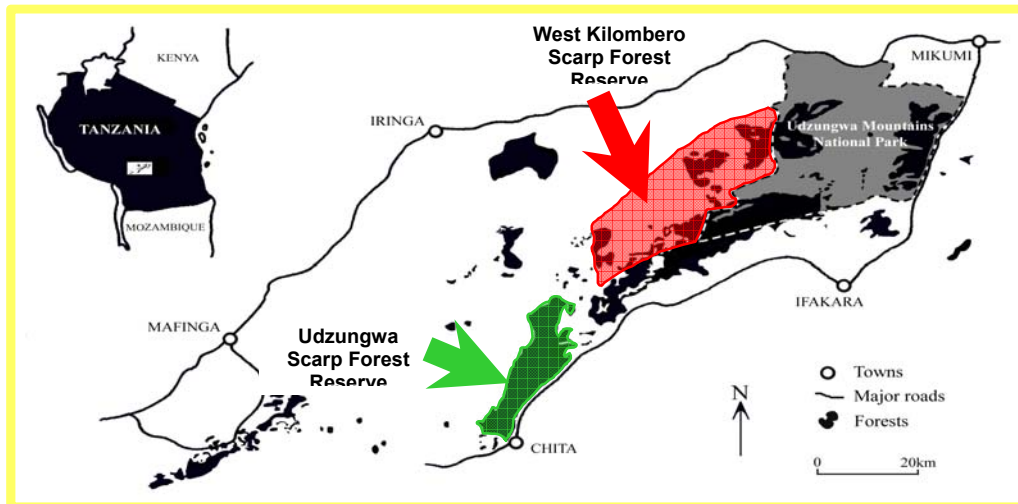
Q. Which areas is this TFCG project working in?

- A. The East Usambara Forest Landscape Restoration Project is working in 18 villages. Of these villages there are three that are directly relevant for forest connectivity; Kizerui Village where there is a gap between Nilo and Semdoe FRs; Segoma Village where there is a gap between Segoma and Manga FRs; and lastly Kuzekibago Village where there is a gap between Segoma and Semdoe FRs.

2.9 Facilitating the process of Designing CEPF / GCF Connectivity Interventions in the Udzungwa Mountains Area

By Zakiya Aloyce, WWF TPO

Map of Udzungwa Mountains



Aim

Enhancing connectivity among fragmented forest patches in the hotspot in and around Udzungwa.

Objectives: to organise a stakeholders' workshop to:

- Identify the conservation values of the Udzungwa Mountains
- Identify potential conservation projects
- Identify potential conservation leaders in the region who could apply for funding

Geographical Location

Udzungwa Mountains National Park and the surrounding areas – Eastern Arc Mountains

Methods

- Presentations
- Group discussions
- Plenary discussions
- Information and knowledge sharing
- Joint deliberations

Achievements

- The workshop was held between 15th – 17th December 2004
- Report produced and distributed to stakeholders
- A number of projects developed as a result of the workshop e.g. Magombera, socio-economic survey, assessment of the potential for restoring connectivity and improved management.

Lessons

- Collaboration between stakeholders is very important
- Great opportunities are available in the conservation of the Udzungwa ecosystem
- The ecosystem is very rich in terms of biodiversity but more research is needed
- Stakeholders have a common vision but coordination is lacking
- Local communities are knowledgeable on the existence of the biodiversity but not the value of it.

2.10 Improving Conservation of Magombera Forest

Presented by Zakiya Aloyce, WWF TPO

Magombera Forest (1955 – 15.1 km²:10 km²)



Aim

Restore and increase connectivity among fragmented forest patches in the Udzungwa Mountains

Objectives

Halt the degradation of Magombera forest through legal annexation to the Selous Game Reserve³⁹

Geographical location

Udzungwa area – Eastern Arc Mountains, close to the Selous Game Reserve

Methods⁴⁰

- Research
- Consultations
- Lobbying
- PRAs

Achievements

- Proposal prepared and submitted to CEPF
- Project implementation starts in November 2006

Lessons

- Communication and information sharing are useful
- Solidarity in advocacy and lobbying
- Involvement of key stakeholders is inevitable⁴¹
- A strong selling point needs to be developed

Discussion

Q. In 2001 the GoT wanted to relocate red colobus monkeys from Magombera forest to the UMNP – did this happen and what was the background to the proposed relocation?

A. In 2001 the GoT wanted to relocate some people from the Illovo Sugar Estate to an area in Magombera forest. This activity would have involved clearing some of the forest, thus it was proposed that the red colobus of Magombera forest be relocated to the UMNP. Through lobbying of the GoT this process was stopped.

Q. Does Magombera join the Selous Game Reserve or is corridor required between the two?

A. There is no corridor between the two, they neighbour each other.

Q. What type of forest is Magombera?

A. Magombera forest is a ground water forest, probably the only one left in the Kilombero Valley.

Comment: NEMC should be involved in Magombera / Selous annexation issue.

³⁹ Currently Magombera forest is under the jurisdiction of FBD whilst the Selous Game Reserve is under the jurisdiction of the WD. If Magombera forest is annexed to be within the Selous it will thus be under the jurisdiction of the WD not FBD.

⁴⁰ To be started in November 2006 for a duration of one year and to include consultation with the commercial sector – namely Illovo Sugar Company.

⁴¹ All discussions / meetings / agreements must be documented so a record exists that can be referred to if required.

2.11 Socio-economic study of Udzungwa Scarp area: A potential wildlife corridor

Presented by Zakiya Aloyce, WWF TPO

Aims

- Increase the ability of local populations to benefit from, and contribute to biodiversity conservation
- Enhancing connectivity among fragmented forest patches in the hotspot in and around Udzungwa.

Objectives

- Generate socio-economic information
- Assess the current status of communities
- Assess communities capacity, willingness and readiness

Geographic location

Southern Udzungwa Mountains

- Udzungwa Scarp
- Iyondo, Matundu
- Nyanganje
- Ihang
- Iwonde Forest Reserves

Methods

- Literature review
- Household surveys
- Qualitative livelihood research
- PRAs
- Stakeholders consultations⁴²

Achievements

- Socio-economic study report produced

Lessons learnt

- The area is big⁴³
- Heavy dependence by communities⁴⁴
- Unblocking wildlife corridors is expensive
- Communities are ready to participate if there would be a degree of utilization⁴⁵
- Development of alternative livelihoods is inevitable
- Adaptive collaborative management is needed⁴⁶

Discussion

Q. A draft socio-economic report has been distributed by email to a number of persons. If there are comments on this draft report can they be incorporated into the final version?

A. Yes. Feedback on the draft report is very much appreciated and comments will be incorporated into the final report.

⁴² Stakeholders were consulted regarding the possibility of annexing forests into the UMNP and / or connecting the forests.

⁴³ Some villages exist where corridors are likely to be proposed so it is highly likely that the development of corridors will involve the paying of compensation.

⁴⁴ in spite of the legal status of FRs people still rely on them for fuel wood and forest products

⁴⁵ The stakeholders consulted during this study do not want an increased area like the UMNP they want to be involved in the management of the forests.

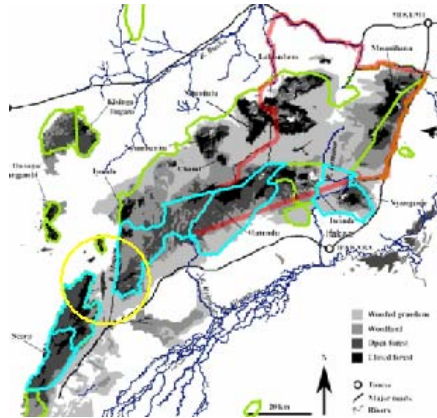
⁴⁶ Adaptive collaborative management means doing the research involving the local stakeholders, learning from their knowledge and then developing a management plan together.

2.12 Two complementary connectivity projects in the Udzungwa Mountains

- 2.12.1 Assessing the potential for restoring connectivity and evaluating options for improved management of the Udzungwa Scarp, Iyondo, Matundu and Nyanganje Forest Reserves in the Udzungwa Mountains
- 2.12.2 Biodiversity Corridors in the Udzungwa Mountains

Presented by Francesco Rovero and Trevor Jones

PART 1



Background: restoring connectivity and improving protection of southern FRs, (especially Udzungwa Scarp) is a recommended priority.

Funded by CEPF, implemented by Trento Museum in partnership with Tom Struhsaker (Duke University). WWF-TZ carried out socio-economic assessment as separate project.

Udzungwa Workshop, December 2004

Participants included: Local communities (village chiefs and environment officers, councillors, politicians), Wildlife / Land Use Officials, Private sector, Conservation NGOs, Researchers / conservationists, Donors.

Setting of intervention priorities heavily influenced by key local stakeholders, e.g. FBD officials, politicians, community representatives (including vetos).

Economic Values: Water – source of Kihansi hydroelectric. Agriculture (sugar, rice, maize, banana, and cassava). Fisheries and livestock. Soil erosion prevention (reduced siltation). Domestic water supply to over 90,000 people. Eco-tourism potential.

Biological importance:

Restricted range species per 100 km² in the Eastern Arc = 4.5.
Udzungwa Scarp = **33.8!**

Udzungwa Scarp FR IS A UNIQUE CENTRE OF ENDEMISM

Forest-dependent large mammals

- Sanje mangabey (Udzungwa endemic)⁴⁷
- Udzungwa red colobus (Udzungwa endemic)
- Abbott's duiker (Tanzanian endemic)

Taxa	EA endemic & n.e.	Udzungwa Scarp FR endemic & n.e.
Amphibians	24	7
Reptiles	18	1
Birds	22	0
Small mammals	3	1
Large mammals	3	0
	70	9

Large mammals (landscape species) in potential corridor areas

- Elephant, buffalo (Matundu, Iyondo, Nyanganje)
- Sable antelope (Matundu)
- Rhino (?) individuals dispersing from Selous

Overall goal of the projects:

Contribute to long-term protection and population viability through improved management of existing PA in the Udzungwa and restored connectivity between Udzungwa and adjacent ecosystems (Selous, Mikumi, Ruaha)

Aims and objectives of project 1 (within-Udzungwa):

The habitat status, ecosystem integrity (especially endangered and endemic species) and human impacts are assessed in and near the areas of interest. Potential corridors are identified and mapped.

Purpose: Protected area authorities, central and local government authorities, conservation organisations and other relevant stakeholders have accepted the strategies been proposed through an action plan for improved conservation of the study area.

⁴⁷ The Sanje mangabey is only found at Mwanihana (inside UMNP) and USFR.

Methods applied by both projects:

- review of available information (maps and GIS data, previous biodiversity reports, social survey reports, minutes of previous meetings)
- stakeholder’s consultation: TANAPA, FBD, District Officers, Ward and Village authorities, villagers, other organisations involved (WWF-TZ, TFCG, KVTC)
- aerial and field data collection:
 - 1) preliminary over-flights to identify areas for detailed mapping
 - 2) over-flights (detailed vegetation mosaic maps: WCS CEPF-funded project)
 - 3) forest and village surveys (to collect data on wildlife presence, forest disturbance, potential corridors, land use and crop-raiding)

Field methods	Data collected
Broad zoological and forest assessment surveys in each forest reserve	Species list, habitat status, encroachment (tree-cutting, hunting, etc.)
Disturbance and wildlife sign (dung) transects 500 x 5 m in length ⁴⁸ (at least 20 in each FR and key corridor area, recording all stems above 5 cm DBH)	No of dead and alive stems, no of stems cut, large mammal signs, human signs
Land use mapping (including habitat boundary-truthing)	GPS records attributed to standard land use categories
Corridor assessment transect (mainly outside FRs)	Map a land strip and regularly record gross habitat type, wildlife and human signs
Village interviews (mainly targeting households adjacent to FRs and along corridor area)	Human-wildlife conflicts, people’s knowledge of FR borders, PFM schemes, land ownership

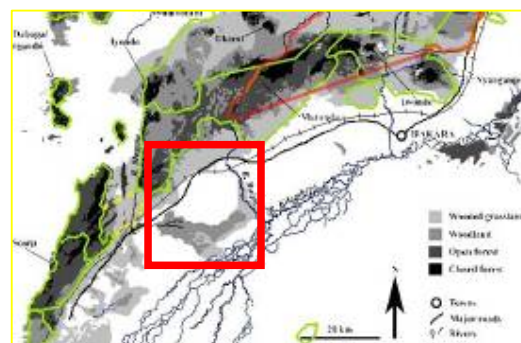
Achievements so far: assessment of Forest Reserve status

- Uzungwa Scarp, Iyondo and Matundu are high biodiversity forests, comparable to the National Park
- High human encroachment that increases near the villages
- Needs for boundary demarcation and awareness raising on permitted and not-permitted activities

Achievements so far: assessment of key connectivity areas within-Udzungwa: the “Idete corridor” (Iyondo to Uzungwa Scarp) or better yet, the “Mngeta-Mkangawalo corridor”⁴⁹

Expected outputs and future project activities:

1. Summarize quantitative biodiversity value of FRs and compare to the NP (e.g. species lists, endemic and key-stone species)
2. Threat status (quantified disturbance) of FRs in comparison to the NP (Mwanihana forest)
3. The above will make the rationale for the urgent need of greater protection of the FRs targeted (calls for National Park expansion reinforced by our preliminary assessment)
4. Detailed proposal for creating the Uzungwa Scarp-Iyondo corridor
5. A stakeholder’s workshop in collaboration with WWF (currently planned for March 07) to present the results and facilitate stakeholders’ agreement for implementation.



Lessons learnt:

- Importance of ground-truthing information
- Importance of planning and coordination among NGOs (e.g. with WWF and TFCG)

Issues for discussion:

- Best way forward for creating the Uzungwa Scarp-Iyondo corridor (legal steps for annexing village and PFM lands to FRs)
- Best approach towards National Park expansion (stakeholders’ engagement)

⁴⁸ Some transects were longer to facilitate better observation of animal movements in order to assess current existence of corridors.

⁴⁹ Width of proposed corridor is 4 – 7 km. There are no settlements in the proposed corridor.

PART 2

Background to the study: Preliminary observations (2003 – 4)

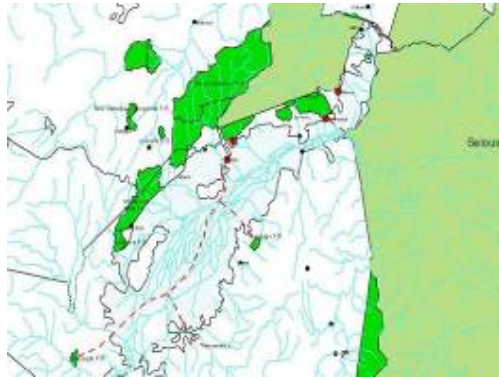
- Movement of large mammals (including elephants, lions) to and from the Udzungwas and Selous GR / Kilombero GCA
- Critical situation: rapid human immigration, population expansion and land use changes cutting off traditional migration routes
- Only two remaining possible corridors: Nyanganje FR area and Ruipa river area⁵⁰

Stakeholder Engagement: From the outset:

Starting with: 'Conservation of the Udzungwa Mountains' Stakeholders Workshop – Dec 2004'.

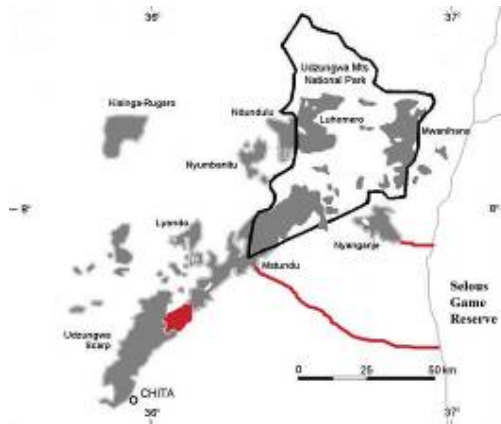
Aim: "To identify priorities for intervention in the Udzungwa Mountains"

- Intervention proposals researcher-led
- Nevertheless, outcomes of meeting strongly influenced by local stakeholders



External Corridors Working Group⁵¹: TASK 8 (December 2004)
Develop two or three potential project ideas that would improve conservation of your area.

- 1) Identify, survey and map viable wildlife corridors in the area
- 2) Awareness raising on issues (including anti-fire campaigns) and capacity building
- 3) Wildlife Corridor restoration project
 - Land use plans
 - PFM: CBFM & JFM
 - CBC > WMAs
 - Support improved farming systems



CI's corridor learning initiative

Overview of proposed corridors

1. Udzungwa Scarp – Iyondo Corridor
2. Udzungwa – Selous Corridor

Statement of problem: Consequences of protecting and enclosing an area: UMNP since 1992

Evidence from other sites:

- protected populations recover and expand rapidly (numbers and distribution)
- crop-raiding and other human-wildlife conflict increases
- increased destruction of forest habitat when large mammal populations enclosed

Specific statement of problem

- Udzungwas area too small for landscape species e.g. elephants and wild dogs, known to move between PAs
- Rapid human immigration and land use changes cutting off all animal routes between Udzungwas and neighbouring PAs, confining elephants and other species.

Consequences:

1. Increasing human-wildlife conflict: crop loss, human deaths ⇒ increased poaching
2. Destruction of species-rich forest habitat by elephants ⇒ biodiversity loss

Proposed solution:

Corridors linking Udzungwas with *Selous Game Reserve*, *Mikumi National Park*, *Ruaha National Park*

URGENT PRIORITY: UDZUNGWA-SELOUS CORRIDOR

⁵⁰ The movement of large mammals discussed here is between two different ecosystems. As per Newmark's observations in the north, if action to make corridors is not taken now, there will be no desirable habitat left to make into a corridor.

⁵¹ This project is a result of the External Corridors Working Group from the Udzungwa Workshop Dec 2004.

Comparison of two corridor types

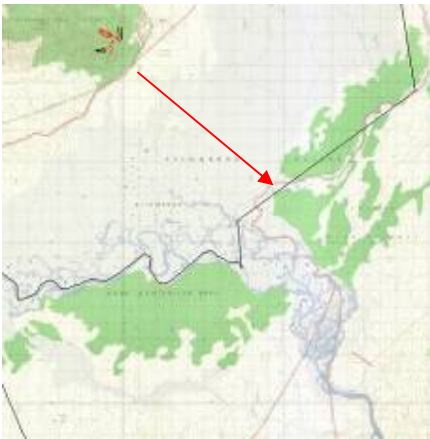
	Mngeta-Mkangawalo	Udzungwa-Selous⁵²
Objectives	Connectivity of populations (gene flow) Unified PA	Connectivity of populations (gene flow) Animal movements between PAs avoiding conflict
Indicators of success	Quantitative (e.g. species-based targets)	Qualitative (ecosystem / process / people-based targets)
Target species	Forest-dependent	Landscape
Habitat type	Inflexible parameter ⁵³	Flexible parameter ⁵⁴
Shape of corridor	Non-linear, short (increased habitat)	Linear, narrow

Methodology: standardised with Udzungwa Scarp Feasibility Study

- **Aerial surveys** }
- **Ground-truthing:** }
 - Boundary mapping (land use, habitat types) } → GIS-based recommendations
 - Disturbance transects } → Recommendations
 - Dung transects }
 - Questionnaires: wildlife movements, human-wildlife conflict, attitudes }
- **Background research:** legal and cultural status of land }

Preliminary Results

1. 'Nyanganje Corridor'



1. **Too late:** CORRIDOR CLOSED – shambas blocking animal movements

2. Ruipa Corridor



2. CORRIDOR STILL IN USE

BUT severe current threats: cattle grazing and timber harvesting⁵⁵

Next steps

- 1) Explore ways to halt habitat destruction immediately.
- 2) Continue Feasibility study: Select, design and map most feasible Corridors (considering potential conflicts and alternative management objectives).
- 3) Disseminate recommendations: Stakeholders' Workshop.
- 4) Highly political consultation and implementation process begins.

Lessons learnt:

- Benefits of tapping into local knowledge at every stage of the project
- Huge amount of disinformation circulating regarding land use boundaries this highlights the importance of aerial surveys and ground-truthing.
- Need for vigilance of potential corridors; speed with which they can disappear and urgency of further feasibility studies in critical areas.

⁵² Corridor between different ecosystems

⁵³ the fact that it is forest habitat is critical

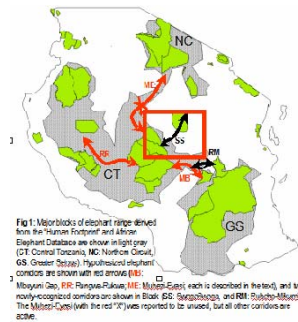
⁵⁴ habitat types can differ

⁵⁵ direct evidence collected August 2006

Issue for discussion:

- How to immediately prevent imminent destruction of important woodland with no current protective status

CiTIZEN: Central Tanzania Elephant Network. Nascent network of ecologists and other stakeholders assessing movement of elephants between protected areas in Tanzania



Discussion

Q. What do you see the future steps to be?

A: A project report, including information on how and where to develop corridors in the area and the legal status of the land, will be circulated to stakeholders in the local communities, FBD, Wildlife Division and others depending upon the areas recommended as corridors. Expert advice regarding the legal status of the land will be sought.

Q. What would be the best case scenario?

A: Some kind of community-based conservation. However the project is currently collecting ecological evidence, after that it should be possible to assess the management options – what may be better? Expanding existing FRs to get them included in the UMNP or to develop PFM? These are questions yet to be answered.

Q. What is the current legal status of land?

A: Unknown.

Comment: Given the importance and urgency of the area needing protection it was suggested that the researchers looking for a private benefactor to secure the land rather than searching for another organisation.

Comment: There is an issue with this approach, a private benefactor would not be able to buy up the land as in Tanzania expatriates are not allowed to own land (unless they have a business approved by the Tanzania Investment Centre) in addition there is no Free Hold, only Lease Hold although this can be for 99 years. In addition, securing large areas of land, particularly in the Udzungwa area is getting harder and is now a sensitive political issue.

Q. How much collaboration has there been with the Wildlife Division?

A: The study was supported by the Wildlife Division but no one at the senior level has been involved.

Comment: Participatory Land Use Management (PLUM) could be a useful tool for this project to investigate. Through the PLUM process villages are facilitated by District staff to draw up a land use plan, establish appropriate byelaws and are given the title to the village land. This is beneficial for the village as it strengthens their land ownership and gives the village the right to lease out small areas of land (e.g. to investors) and be paid land rent directly. Another key aspect of PLUM is the establishment of Village Forest Reserves or Wildlife Management Areas - in collaboration with concerned villages it would be possible to include corridor areas within such land use plans, this could help realise the community based management of corridors however the PLUM process can be expensive (approximately 10,000,000 Tsh per village). PLUM is an initiative of the Planning ministry.

Q. Was the original proposed area of UMNP larger than the area that is now the existing UMNP?

A: Yes, the proposed area of UMNP covered a larger area than was gazetted. At the time of gazettement a smaller area than proposed was chosen since a smaller area was considered more manageable. Unfortunately at that time the biodiversity values of the area were not considered key criteria to defining the perimeters of the UMNP.

2.13 Restoring forest connectivity in the Udzungwa Mountains: a project of the Tanzania Forest Conservation Group

Presented by Hamadiel Mgalla, Tanzania Forest Conservation Group

TFCG's conservation activities in the Udzungwa Mountains

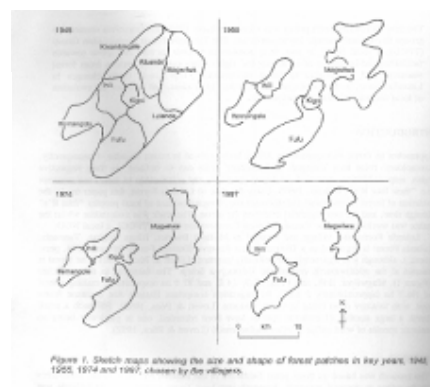
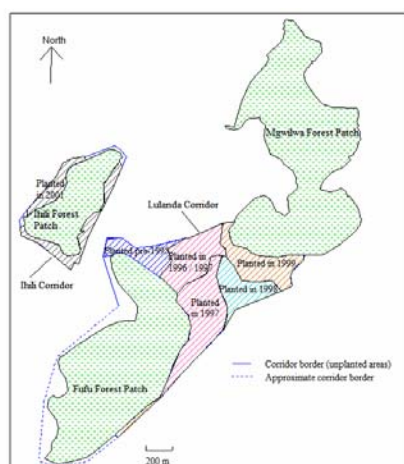
TFCG started working in the Southern Udzungwa forests of Mufindi District in 1993. The objective of the project in Mufindi District has been *to protect the biodiversity of the forests of the Southern Udzungwas through sustainable forest management, increased awareness and improved livelihood security for forest adjacent communities.*

CEPF's support for forest connectivity in Mufindi

CEPF support for the project started in August 2006. Previously TFCG's work in Mufindi was supported by the African Rainforest Conservancy and the IUCN. CEPF's support has enabled TFCG to scale up activities in Mufindi District

Status of PFM activities

Joint management established for Lugoda-Lutali and Lulanda FRs. Both forests were formerly continuous areas of forest which have been fragmented over the last 100 years (Lugoda-Lutali has 6 fragments, Lulanda has 3 fragments). Management committees have been established in five villages; plans and by-laws have been prepared and approved by the District. Boundaries have been cleared and planted. Levels of disturbance are now very low.



Fragmentation of Lulanda between 1945 and 1997

TFCG have supported the planting of two forest corridors at Lulanda and Lugoda-Lutali using indigenous species. Total area planted = 61 ha

Status of community development activities

TFCG trained and supported communities to establish income generating activities including beekeeping, fish farming, tree planting and horticulture.

In order to reduce pressure on the forests, TFCG promoted fuel efficient stoves. More than 57% of households in the project area now use improved stoves.

TFCG assisted the communities to establish saving and credit societies. These have helped people with: building modern houses, payment of school fees and establishing different income-generating activities.

Status of awareness raising: The project has:

Provided training in primary schools; supported study tours⁵⁶; developed a documentary about Lulanda as a learning tool.

Research

TFCG in partnership with the Trento Natural History Museum have conducted biodiversity and resource use surveys in several of the Mufindi Forests, helping in identifying the priority sites. Kigogo and Lulanda appear to be the most important forests biologically. TFCG have also conducted research on PFM and the planting of corridors.

⁵⁶ For members of Village Environmental Committees

Restoring Forest Connectivity in the Udzungwas: Project purpose and indicators

Project Purpose: *Local government, private sector, civil society organisations and communities in Mufindi District are working together to restore and increase Eastern Arc forest connectivity.*

Purpose indicators

- Forest connectivity restoration is under way in at least five sites in the Udzungwa Mountains of Mufindi District.
- There is increased active participation from local government, communities and private sector in forest connectivity restoration activities.

Three project outputs

- Strategy for restoration of forest connectivity in the Udzungwa Mountains of Mufindi District is developed and agreed upon by stakeholders.
- Restoration of forest connectivity supported at strategic sites in the Udzungwa Mountains of Mufindi District to the benefit of the forest adjacent communities.
- Strategy developed to sustain forest connectivity initiatives in the Udzungwa Mountains of Mufindi District.

Project progress

- Stakeholder workshop held in August. 34 participants including representatives from villages and wards close to Mufindi forests, Mufindi District Government, Iringa Regional Catchment Forest Office, Unilever, MUET and TFCG.
- During workshop stakeholders agreed a **goal** for forest connectivity in Mufindi, prioritised sites and developed action plans.
 - **Goal of forest connectivity in Mufindi District:** *To involve people in the community in protecting and restoring the natural resources of the forests in order to improve biodiversity and benefits for the community.*
- Stakeholders selected 12 sites for restoration of connectivity and developed action plans for each site.

Criteria for site selection: Stakeholders agreed on eight criteria for site selection:

1. the forest is important
2. an area which is suitable to be restored as a forest
3. the present use and ownership of the area
4. it is an area which was previously forest
5. it is an area which is degraded forest
6. the length of time since fragmentation/degradation occurred
7. the willingness of the people near to the area for the forest to be restored
8. availability of data about the area

Ways of restoring forest connectivity

- 1) *Protecting existing forests in areas critical for maintaining forest connectivity*
- 2) *Replanting natural forest*
- 3) *Creating areas with a tree-dominated land use*

Next steps

- In consultation with stakeholders the project needs to identify which sites TFCG will support with funding from CEPF and which sites will be supported by other stakeholders e.g. District Government through the PFM programme and Unilever.
- Share and revise the plans involving more people in each of the communities.

Lessons learnt: general

- Bringing local stakeholders together to participate in project planning encourages later participation and a sense of ownership for the activities.
- Important that both women and men are involved in discussions and information shared widely in the communities.
- Factors relating to land use and tenure are as important as biological data in identifying sites for connectivity.

Lessons learnt - reforestation

- Fire is biggest direct threat to forest corridors, particularly in early stages. Maintaining fire lines and providing training on how to avoid fires are ways to prevent fires.
- Important to take care in selecting indigenous species for use in corridors. If species are appropriate and seedlings are well-tended, survivorship can exceed 50%. Weeding significantly increases growth rates but labour-intensive.
- It takes time and a long-term commitment to reforest an area.

Lessons learnt – community development

- Providing support for community development activities alongside conservation activities motivates people and helps to ensure local 'buy-in'.

Discussion

Q. Have TFCG developed guidelines on how to plant the trees? E.g. how deep should they be planted; Is fertilizer necessary?

A. In the nursery area the project is using soil from the forest to plant the seedlings. After about eight months the young trees are planted in the corridor areas. The distance between lines is 2 m and the depth of the spot is 45cm. During transplanting the spot is filled with top soil only. Other species like *Aphloeia* and *Bridelea* are raised in the nursery but pre-sowing treatment is done before sowing the seeds.

Q. How did you persuade the community at Lulanda to set aside the land for inclusion in a corridor?⁵⁷

Comment: At the outset of the project in the early 1990s, the village were asked what their development priorities were. It transpired that there was no maize mill within a convenient distance. As such TFCG funded the opening of a maize mill that is managed by a local womens group. In return the village agreed to set aside the corridor area.

Q. With regards to the energy saving stove, how does TFCG measure that the stove reduces pressure on the forests?

A. There are now several wood lots but prior to having energy efficient stoves women still had to collect fuel wood from FRs. Now households can go for 2 – 3 days without having to collect wood at all and when they do need to collect fuel wood adequate supplies can be found outside of the FRs.

⁵⁷ Site selection criteria agreed upon in the stakeholder workshop is listed in full in the presentation summary above – see point 1 – 8.

2.14 Forest Conservation in the Matumbi Hill, Rufiji & Kilwa Districts

Presented by Isaac Malugu, WWF TPO

Forest Reserves of the Matumbi Kichi Landscape – geographic location

- Rufiji District: Kiwengoma, Namakutwa-Nyamuete and Kichi Hills FRs
- Kilwa District: Tong'omba FR

Currently working in 11 villages

- Rufiji District: Nyamwage, Mbwara, Nambunju, Tawi, Ngarambe and Tapika villages
- Kilwa District: Hanga, Pungutini, Mtende, Mwengei and Kibata villages

Matumbi and Kichi Hills Landscape Project Funding

- WWF networks – FY 06
- CEPF – FY07
- GEF – FY 07

Project goal

To ensure that coastal forests and woodlands are managed in collaboration with local communities in a sustainable way for the benefits of people living adjacent to target forests and the overall national economy.

Project objective

To empower local government and communities around Matumbi and Kichi Hills forests to implement the Forest Policy, Forest Act and Guidelines through Participatory Forest Management Systems.

Project outputs

1. Improved collaborative and integrated resource use planning which promotes both sustainable development and forest conservation in the landscape.
2. Community livelihoods improved through better access to micro-credit and market information, and demand-led capacity building in entrepreneurship, financial management and technical skills to diversify income sources.
3. Improved protection of key habitats and species from destructive impacts resulting from improved management effectiveness of coastal forests.
4. Stakeholder capacity to sustainably manage coastal forests improved.
5. Awareness about and management of coastal forests is increased through improved collection, management and dissemination of key information and best practices.

Methods and achievements⁵⁸

- Community sensitization and involvement through Community Based Forest Management (CBFM)
- Initiated the establishment of 11 Village Natural Resources Committees (VNRCs).
- Survey and demarcation of village forest reserve, (ca. 6,521 ha of coastal forest)
- Training of VNRCs on roles and responsibilities
- Conducting Participatory Forest Resource Assessment (PFRA)
- The PFRA teams continue to work on resource assessments
- Drafting of management plans, harvesting plans and bylaws
- Planning seminars to the District councillors and PFM teams
- Awareness seminar on forest certification⁵⁹ at various levels
- Study tour to Good Wood projects for awareness and mainstreaming forest certification process in Tanzania
- Forest certification documentation for Village Forest Reserves (VFRs) in Kilwa in collaboration with the Mpingo Conservation Project (MCP).
- Economic potentials assessment was conducted for Income Generation Activities (IGAs). Beekeeping is highly ranked
- Training of trainers' course for IGAs
- Sensitization meetings for establishment of alternative IGAs
- Establishment of school tree nursery⁶⁰
- Signboards carrying conservation messages
- Several village planning and awareness meetings are conducted in the project areas.

⁵⁸ There has been little research on the subject but it appears that elephants are moving through these areas of coastal forest

⁵⁹ Good Woods promoted by WWF in Kenya.

⁶⁰ Teak is the most highly demanded and thus the most frequently planted tree species growing in the school nurseries.

- Capacity building for district staff attended natural resources management courses
- Planning meetings with District harvesting teams on developing harvesting plans.

Challenges

- Charcoal production⁶¹
- Illegal tree harvesting and logging
- Shifting cultivation
- Grazing
- Fire
- Hunting
- Human settlement

Lessons learnt

- Illegal harvesting of timber is driven by external markets⁶²
- Communities being 'used' by medium & larger business men
- Anti-PFM sentiments⁶³
- Hungry for alternative income sources after 'log ban'.
- Land use planning is urgently needed (livestock & investments)⁶⁴
- General wake on realization of NR management and ownership (boundary conflicts)

Discussion

Q. Teak is being grown in the school tree nurseries. Therefore is the purpose of the school tree nurseries solely to produce useful timber? Are there plans to plant forest trees? Is it possible to grow mpingo?

A. The communities are requesting teak, it is very popular. The communities request the type of seedlings that they want and the project provides them. The species choice is left to the community. The project is unsure of demand for mpingo or the need for replanting it, even the Mpingo Conservation Project is not promoting mpingo nurseries as there are mpingo trees everywhere within the Matumbi Kitchi Hills landscape.

Q. Is the trade in bush meat in the area at a commercial level?

A. Bush meat is sold within the region. There are big markets in the towns of Masasi and Mtwara. Elephants are also poached for their ivory to supply an international market.

Q. Is the project promoting the growing of teak?

No, not as such. The planting of teak is demand driven. WWF are promoting indigenous tree planting – perhaps we should discourage the planting of teak?

Comment: In the Udzungwa area the invasive properties of teak have been noted.

Comment: It takes 50 – 60 years for teak trees to complete an economic rotation, people are interested in this tree species not because it is fast growing but because when thinning is conducted the thinnings can be sold and / or utilized.

Comment: When tree planting levels increase perhaps the project could set a percentage limit of commercial tree species vs indigenous species.

Comment: It depends why the project is encouraging people to plant trees – is it to discourage communities from using forest resources by giving them an alternative, or if the project is encouraging the planting of trees for reforestation.

Q. Have the TIC been into the area to meet with the communities and investors?

A. When potential investors visited the area the Land Officer informed the project of the visit.

⁶¹ Charcoal is now transported from as far away as beyond the Mkapa bridge – more than 200 km.

⁶² Recipients of illegal timber are China and Arabic countries. Shipment is channeled through Zanzibar.

⁶³ The logging ban created negative feelings towards the authorities and the idea of PFM.

⁶⁴ A forested area found by an investor to be suitable for the planting of medicinal trees had fortunately already been demarcated as a VFR, as the village had already completed the land use planning process. If that had not have been the case the investor could have cleared the forest. Land use planning has only occurred in a limited number of places.

Comment: The TIC are only facilitators for investors, decisions regarding land allocation come from the Lands Department.

Comment: In the past the Lands Department allocated land in the area to Chinese investors wishing to build a saw mill, the Forest Officer stopped the investors from logging – this case highlighted the limited communication between government departments. The investors left the area.

Q. Does the Mkapa Bridge open up opportunities for tourism?

A. Yes, there are many potential tourism sites including good forests, hot springs, large caves and the site of a dinosaur discovery however, the infrastructure for tourism is currently lacking.

Comment: The opening of the Mkapa Bridge has improved access to the south. Unfortunately a negative impact of this is the ease with which illegal products can be transported from the area. Charcoal can indeed come from as far away as Tabora. With recent controls over charcoal production the price has increased. Perhaps charcoal production should be looked at as an income generation initiative for communities as gas or another fuel source is not about to be adopted in a large scale in the near future. Unfortunately the recent ban on charcoal production has driven the business underground which means that data on production are harder to record.

2.15 Restoration and increase of connectivity among fragmented forest patches in the Taita Hills, South-east Kenya

Presented by James Mwang'ombe, The East African Wild Life Society

Implementors of forest connectivity in the Taita Hills

The East African Wild Life Society

University of Ghent, Belgium

University of Antwerp

The Forest Department

CBOs (Chawia Community Environment Committee and Sigha Sigha Support Group)

Background

The overriding conservation problem in the Taita Hills is loss, fragmentation and degradation of the indigenous forest cover. Indigenous cloud forest in the Taita Hills currently covers an area of about 430 ha, reflecting 98% forest reduction over the last 200 years, mainly due to clearance for agricultural purposes. Although forest clearance is less widespread at present, past clearance led to increased isolation of the remaining patches, edge effects, soil erosion and negative hydrological effects. Yet, despite the small size of the 12 remaining indigenous forest fragments (range 1-179 ha, 9 fragments < 10 ha), they are of global conservation importance, holding numerous rare and endemic plants and animals. Because many of these species persist in small and highly isolated subpopulations, a high proportion is highly threatened and is of immediate conservation concern (demographically, genetically, or both). Currently, 34 Taita animal and plant species are classified under some category of threat according to the IUCN Red List (www.iucnredlist.org, accessed in May 2005).

In a desire to chart a unified way forward, the Critical Ecosystems Partnership Fund (CEPF) funded a stakeholders' workshop (organised by EAWLS) in February 2005 to discuss the conservation and management of the Taita Hills forests. Participants included community representatives from various parts of Taita Hills, NGOs working in the region (both local and international), relevant Government departments and institutions conducting research in Taita Hills. The workshop's main purpose was to give stakeholders an opportunity to discuss key threats and challenges, as well as identify the best options for restoration and connectivity enhancement among the Taita Hills forests fragments. Two key resolutions from the workshop were to: (i) increase indigenous forest area and reduce degradation of remnant indigenous patches (i.e., safeguard biodiversity habitats and population processes); and (ii) increase forested area in the surrounding matrix and convert plantations of exotic trees with indigenous ones (provide for human needs and increase overall connectivity of the landscape).

During the stakeholders' workshop, conversion of existing exotic forest plantations into indigenous forests was identified as a key target for habitat restoration. This was to be done in three stages;

Stage I: (i) Mapping of the location and boundaries of all plantation fragments by combination of fieldwork and interpretation of high-resolution aerial photographs; (ii) Scoring of each plantation fragment according to its suitability for habitat restoration, based on biotic and abiotic properties such as existing tree species composition, quality of the indigenous seed bank, age and history of the fragment, slope and altitude; and (iii) inquiries into possible legal or socio-economic constraints for conservation action.

Stage II: Least-cost modelling for connectivity

Least-cost modelling is a planner's tool used to predict and evaluate the effects of land management and habitat restoration projects. It involves integrating detailed geographical information as well as behavioural aspects in connectivity analyses. By using three GIS layers—a source layer⁶⁵, a friction / resistance layer⁶⁶ and a target cell – it estimates the effective distance, which represents the least cost for moving between any two cells within a landscape map. The output is a 'cost' layer around the indicated source, with a cost value in every other cell within the landscape representing the distance to the source. This is the distance that represents the lowest effort (least cost) in moving from the source to the particular cell over the pre-defined resistance layer. The effective distance, therefore, is the distance in metres, but adjusted for the resistance of the landscape.

There are four important pre-requisites for least-cost modelling. First, species selection: the species are selected under the premise that enough is known about them to provide accurate evaluation of their potential movement needs and patterns. It is often safest to model a range of species falling into broad ecotypes in order to capture the needs of most biodiversity within a region. Second, process selection: it is important to explicitly indicate the process which is considered in the model e.g., dispersal, home ranging etc. because different processes may call for different resistance values even for the same species. Third, setting resistance sets: construction of resistance

⁶⁵ Representing forest patches

⁶⁶ E.g a forest specific fauna

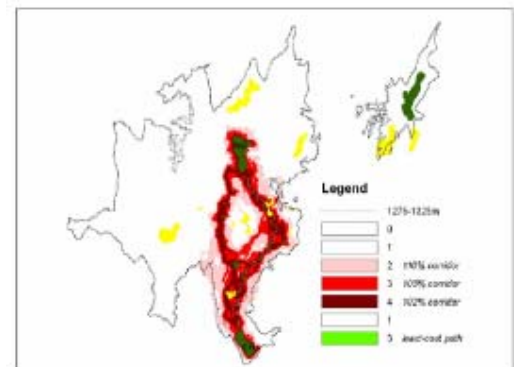
sets for every land use for each of the target species and process. Given the fundamental importance of the resistance values associated with the movement through cells in this analysis, these should be based on as much data as possible. Fourth, good quality maps are required to provide realistic solutions. For a given species (or ecotype), process and resistance set for the landscape, the *least-cost path* represents the series of cells which result in the lowest cost for movement between the source and target cells. In other words, it is a measure of the overall landscape resistance of the total trajectory between two cells in the landscape, or the effort an individual has to exert to move between patches. Ideally, thus, the least-cost path should offer an organism the greatest probability of survival when traversing between a source and target patch.

Stage III: Habitat restoration.

Rehabilitating the forest patches to good quality indigenous forest cover through various means such as silvicultural treatments that would encourage indigenous tree growth, systematic cutting of exotic trees and re-planting with indigenous trees or both depending on the situation.

Activities

- Mapping of the location and boundaries of all plantation fragments using GPS.
- Least-cost modelling in the Taita hills (see an example of the output map on the right)
 - In this case, we included 6 ecotypes in addition to the Euclidean distance.
 - Ø **R0**: Euclidean distance: Resistance values for all land cover classes is equal (R=1). This is the null-model.
 - Ø **R1**: Very sensitive interior forest eco-type (Taita thrush, Cabanis's greenbul, yellow-throated woodland warbler). Most sensitive species, only living in, and moving through, high quality forest, and with marked negative edge effects. The cost leaving interior forest and moving through other landscape elements is high. Even for other types of wooded vegetation resistance is 20 times higher than for forest habitat. Non-wooded land cover (open areas) have high resistance values (R=100).
 - Ø **R2**: Interior forest eco-type (white starred robin). Comparable with R1 as to the increase in cost for non-indigenous forest, but difference between wooded vegetation and open areas (R=50) is smaller
 - Ø **R3**: More generalist forest species eco-type (olive sunbird). Resistance set comparable to R2, but the cost of moving through wooded vegetation is relatively lower (R=5), whereas the cost of moving through open area remains the same relative to habitat (R=50)
 - Ø **R4**: Mobile species eco-type (Taita white-eye). Resistance set as in R3, but maximum resistance value (open areas) limited to R=25. Species moving through open areas relatively easily and at limited cost.
 - Ø **R5**: Interior forest only butterfly eco-type
 - Ø **R6**: Interior forest butterfly eco-type, no strong habitat limitation during dispersal.



Habitat restoration

- I) Systematic planting of indigenous tree species in and around current indigenous FRs to improve habitat quality and increase the size of indigenous forest habitat. Ongoing in Chawia and Mbololo⁶⁷ forests.
- II) Planting of fast-growing and farming-friendly (indigenous or exotic) trees around homesteads to increase wooded habitat within the matrix, besides providing extra sources of firewood for the community and fodder for livestock
- III) Systematically cutting down of exotic trees in plantations straddling indigenous forest fragments and replacing them with indigenous saplings, as a short-term firewood source to reduce pressure on the indigenous FRs, and a long-term biodiversity gain by both increasing amount of habitat and increasing connectedness of the landscape.

Conclusions

It is expected that, the recommendations from the *least-cost modelling* and the September 2006 workshop will form the basis for future investments on habitat restoration and biodiversity conservation in the Taita Hills.

Discussion

⁶⁷ Mwambirwa is next to Mbololo forest.

Q. It is very positive that there are such good bird data sets that can be used for modelling. Is the modelling being innovated by the project or has it been used elsewhere – if so are there publications available?

A. Such modelling has been used in planning processes before but the outcomes have not necessarily been applied in the field, as such the project is innovating the approach.

Q. Parameters in relation to birds are being fed into the modelling process, but are other factors such as land use also being incorporated?

A. Yes – land use and other taxa e.g. butterflies are built into the model as is socio economic data.

Q. When planting indigenous trees TFCG has experienced that fire can be a problem, destroying trees. Is fire a problem in the Taita Hills where planting of indigenous trees is practiced?

A. The Presidential ban on harvesting of non-indigenous trees has created some conflict, however, the FRs in the area are very well protected if you are in the vicinity of the FRs you will be stopped and asked what you are doing there as such fire has not been a problem to date.

Comment: A draft report for this project is available. The final report will incorporate the results of the upcoming workshop (September 2006).

2.16 Mahale Ecosystem Management Project

Presented by Kathryn Doody, Frankfurt Zoological Society

Mahale Mountains: geographic location

The Mahale Mountains form a peninsula jutting out into lake Tanganyika – clearly visible on satellite images.

Mahale Ecosystem's Global Significance

- Part of the Conservation International "Eastern Afrotropical Hotspot"
- One of 34 areas with the highest endemism and biodiversity in the world

Conservation value

- An extremely rich pocket of biodiversity within Albertine Rift
 - Contains the world's largest population of the 'eastern' subspecies of chimpanzee, *Pan troglodytes schweinfurthii* (600 / 700 – 1000)
 - Contains 9 primate species, among the highest of any conservation area in Tanzania
 - The area contains at least 337 avian species, many of which are rare or endemic to the Albertine Rift
- Mahale Mountains National Park extends 1.6 km into the lake, protecting breeding grounds for more than half of Lake Tanganyika's 250 fish species, 96% of which are endemic
 - MMNP is a 1613 km² road-free wilderness



Mahale is connected with unprotected chimpanzee populations across the wider ecosystem – recent surveys (WCS) suggest that there are more chimps outside protected areas in Tanzania than within them.

The Ecosystem is also critical for community livelihoods

- Approximately 40,000 people live in villages adjacent to the park
- Important ecosystem functions (e.g. fish breeding grounds, water supply)
- Source of fuel wood, timber, food and traditional medicines
- Culturally important sacred mountains and forest areas

Overall Goal: *Conservation of the Mahale Ecosystem improved and livelihoods and environmental security of Ecosystem communities mutually strengthened.*⁶⁸

Project results

1. Park Community dialogue co-operation
2. Ecosystem planning and monitoring
3. MMNP General Management Plan – submitted to TANAPA awaiting approval by board
4. MMNP resource protection and administration and ecotourism
5. Community based systems and institutions for sustainable development and NRM
6. Conservation compatible income generating activities and rural enterprises – *has exceeded all expectations*

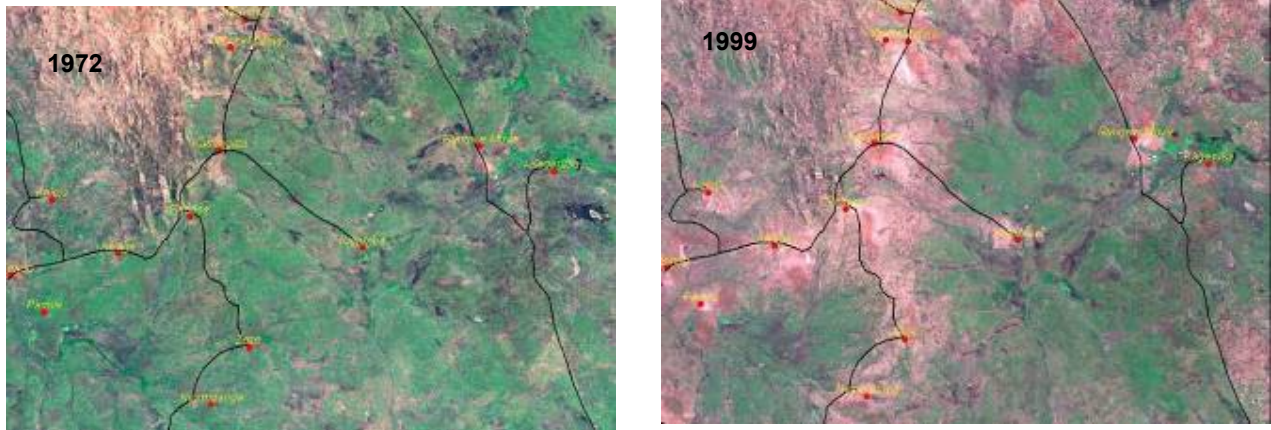
Pressures to the Mahale Ecosystem

- High local population growth 4.8% (compared to 2.8 national average - Kigoma has the highest rate in the country)
- Planned road developments likely to increase settlement in previously inaccessible areas
- Possible future mining developments may increase immigration into the area⁶⁹

⁶⁸ This is an integrated conservation and development project

⁶⁹ Associated in-migration & subsequent increase in settlements is of concern, perhaps more so than mining activities. 75% of people recently interviewed moved to the area within the last 5 years – migration to this area rich in natural resources is occurring.

- Habitat loss as a result of agricultural expansion – uncontrolled burning and clearance of riverine areas and wetlands⁷⁰



(Images by Lilian Pintea, Jane Goodall Institute)

Location of proposed road running behind MMNP

A recent proposal to build a road to villages south of Mahale Mountains National Park could have a major impact on the presently intact area East of the park. Based on evidence shown in images above, 5km either side of the road is the expected zone of settlements / clearings. Currently there are no large settlements on the proposed road route. As this road is funded locally not by external donors there are no funds for an EIA or feasibility study. One idea to decrease the impact on the park is to move the road further from the park boundary, however this will lengthen the road considerably not only making it a longer journey for people in the southern villages but also increasing the potential area of habitat affected.

The Nature Conservancy's Conservation Action Planning can be used to prioritise ecosystem biological components and processes, and the human impacts on these values. The process;

- Identify Conservation Targets
- Key Ecological Attributes of each conservation target
- Identify the stresses and source of stress (pressures) to those key ecological attributes
- Identify mitigation measures
- Action planning

Mahale Ecosystem Conservation Targets

1. River systems
2. Lake Tanganyika shallows
3. Evergreen forest
4. Bamboo forest
5. Montane vegetation
6. Chimpanzees
7. Elephants

⁷⁰ 1972 and 1999 satellite images show the reduction in forest cover associated with settlements and roads. A 5km strip either side of the road has been cleared – clearance follows the roads. If they put a road behind the park the concern is that the same thing will happen.

Achievements Regarding the Wider Mahale Ecosystem

Planning and assessment underway:

- Planned work will involve 3 key stages – assessment, analysis and application
- Biological assessment has begun, involving experts from WCS, JGI, CDC and FZS
- Key ecological features and key ecosystem threats have been identified, allowing preliminary identification of areas of chief conservation concern
- Socio-economic assessment has begun recently involving a wide range of stakeholders



Green = park boundaries

Red = area of largely intact natural habitat, known to contain chimp populations

Yellow = areas of conservation priority – areas of connectivity with MMNP currently under threat

Next steps – studies 2006 to 2007

- Carry out sustainable livelihoods analysis and specific threat assessment in priority areas.
- Carry out biological assessment to identify distribution and status of conservation targets in priority areas including large mammal migration.
- Carry out economic analysis to determine distribution of costs and benefits from the use of ecosystem service.
- Carry out a strategic environmental assessment of impacts of plans and policies operating in the ecosystem on conservation targets, threats and livelihoods.
- Develop conceptual models of conservation-livelihoods linkages for priority area
- Carry out analyses to identify priority biodiversity conservation areas and key conservation-livelihood conflict area

Challenges / Questions

- Lack of information about a large complex mosaic of habitats in the ecosystem – need to have good information to justify impacts on / limits to development initiatives.
- How to value / incorporate wilderness value
- Who will coordinate / implement the ecosystem plan⁷¹
- Cart before the horse – need to respond to certain issues now⁷²

Discussion

Suggestion: regarding the design of the road has FZS tried using a GIS planning tool based on multi-criteria analysis? Dr Jambiya can provide contacts of people who can do this.

Q. Regarding the forest areas that you want to link up, has the project considered assisting communities in applying for WMA status for these areas?

A. WMAs are still in their pilot stage and are not operating in Kigoma yet. As the project is only due to run until 2008 it was not considered appropriate to wait for the WD to start operating WMAs in the area, instead VLFRs have been opted for. In addition having hunting within WMAs containing chimps may not be the most appropriate conservation approach.

Comment: Non-consumptive WMAs are also an option and have been shown to make more money than consumptive WMAs.

Q. Regarding training in laws and policy – has the project contacted the Tanzania Laws and Policy Forum? Try also Haki Kazi Catalyst.

A. Haki Kazi Catalyst has some reports on their web site.

⁷¹ MMNP spans two districts in two different regions so there is no immediately obvious administrative body.

⁷² E.g. the proposed road recommendations are needed now, yet all the information to guide the process is not available.

- The Project should not be anti-development. People living south of Mahale need the road.
- Villages going through the PLUM process gain the Land Tenure, this gives them power which is a positive step however, the Land Tenure processes are poorly known at the community level

Q. What tourism is there in the Mahale area?

A. There are three tourism operators in the area. Nomad are pro-community involvement, others are less so. The viability of community based ecotourism has been assessed but it was considered that there are too few tourists, the infrastructure is too poor and guests would be disappointed so community based ecotourism is very much a project for the future at this stage.

3) Working groups

The task of the working groups was to conduct a SWOT analysis (strengths and weaknesses / opportunities and threats) that would lead groups to formulate lessons learned and recommendations on a way forward to improve and strengthen the restoration of forest connectivity.

3.1 Working group one

This section summarises the findings of working group one based on the guidelines outlined in Appendix I. Both working groups received the same guidelines.

Members of group one were: Francesco Rovero, Kathryn Doody, Hamadiel Mgalla, John Watkin, James Mwang'ombe, Nike Daggart, Iddi Mwanyoka

Strengths	Weaknesses
Establishing partnerships improves the quality of the projects and brings in varied skills, collective experience and a range of expertise (scientific, socio-economic etc)	Sustainability. 5 year stochastic event. Lack of clarity about replenishment
The participatory manner with which project development has been approached especially the community involvement	Little sense of ownership of the natural resources and feeling of lack of benefits from the forests by communities
Involving many stakeholders in decision making.	Little awareness of the values and importance of the forests in the face of threats such as mining
Stakeholders' workshops e.g. those held for Udzungwa and Taita connectivity projects provided an opportunity for joint stakeholder planning and prioritisation.	Need to assess the true potential of income generating activities against the alternatives
Avoiding duplication and learning from other people's mistakes	Not addressing the root causes of population increase and increasing threats
CEPF has provided additional support for ongoing initiatives. This has meant that the project can build upon existing investments and thereby avoid duplication.	Have not communicated enough with government departments about impacts of policy decisions
Through the initial planning workshop and the 'lessons learned' workshops, grantees are aware that they are part of a larger suite of projects	The turn around time on grants has been quite slow
Ecosystem profile stating strategic directions and investment priorities has made the focus of the investment clear.	Unclear established standardised scientific methods to assess improved connectivity
The first planning workshop provided an opportunity for broad participation in planning the investment.	Disparity between donor funding cycle (<5 years) and realities of re-establishing connectivity
The investment has contributed to capacity building for communities, local government and nongovernmental organisations and CEPF itself.	Methods of re-establishment poorly known (species planting regimes, density, weeding, fertilizers, agroforestry, watering)
CEPF grant directors create a dynamic relationship between CEPF and the grantees	Communication of the lessons learned poor
Flexibility of civil society as opposed to government structure allows cross sectoral approaches	Include indigenous knowledge and traditional rights in conservation approaches
Civil society acts as an "honest broker" working objectively between communities and government and also between government departments	Need to address tenure of all resources
Collective approach by civil society can effect change in government.	Reinventing the wheel/not learning from other places in Africa or abroad
Hotspot-wide monitoring programme has potential to provide resources to partners.	Re Derema: Communities expectations have been raised and the compensation is late in being paid
CEPF has provided a linkage with local, national and international processes.	Timing of the contributions by the various donors to the Derema compensation scheme has caused delays and a sense of frustration in the recipients
The coordination unit has enabled CEPF to build on the experience of well-established local organisations.	There has been a lot of attention to the technical aspects of the Derema corridor project but little attention to the implementation of the compensation scheme

Continued from previous page

Strengths	Weaknesses
Assured funding from CEPF assisted in the success of stakeholders workshops	Limited experience by nongovernmental organisations with regard to compensation and relocation schemes.
Leveraged additional funding and encouraged other donors to see opportunities	
Put connectivity more firmly on the conservation map	
Conservation decisions based on the latest scientific findings and focussing interventions	
Catalyst for civil society to approach donors (CDTF)	

Opportunities

1. Sharing experiences
2. Looking at a broader scale
3. Realising that there are other areas within Tanzania and Kenya that need connectivity interventions
4. Build on government's willingness to support such interventions
5. Opportunity to refine scientific approaches to increasing connectivity
6. Realise how complex connectivity interventions are
7. Providing feedback
8. Donor funding available for connectivity interventions
9. Opportunity to leverage funds from other donors to support implementation of connectivity interventions
10. There is often a limited window of opportunity requiring that action is taken sooner rather than later
11. Opportunity to use the lessons learned from the hotspot in the rest of Tanzania and Kenya
12. Support for environmental activities from politicians
13. Links with national incentives and private sector initiatives
14. Opportunity to link with participatory forest management initiatives
15. Link with schemes for payments for environmental services (WWF / CARE project)

Threats

1. Little awareness of how policies should be applied⁷³
2. Different land use practices especially pastoralism
3. Community hostility
4. Political manipulation
5. Conservation initiatives can threaten livelihoods e.g. by resulting in an increase in human-wildlife conflict.
6. Poor communication and awareness
7. Corruption in the system of compensation
8. Expense of compensation schemes
9. Finding economic alternatives which are more profitable than extractive practices is difficult
10. Conflicting policies between sectors
11. Population growth and increasing pressure on land from investors
12. Poor agricultural productivity
13. Lack of services

Lessons learnt

Partnerships

Establishing partnerships improves the quality of projects by bringing in varied skills and allows for the sharing of collective experience and expertise (scientific, socio-economic). Partnerships between civil society organisations can also effect change in government policies and actions.

Participatory planning

CEPF has supported a series of participatory planning workshops at hotspot and site level. These have provided an opportunity for stakeholders to plan jointly thereby avoiding duplication of effort and allowing for learning from previous experiences whilst allowing grantees to be aware that they are part of a larger suite of projects. The meetings also introduced a quality control mechanism for proposed projects.

⁷³ E.g. Derema Corridor compensation process – claims were processed under the Lands Act instead of through the Agricultural compensation act.

Ecosystem profile

The ecosystem profile and the planning processes behind it have significantly strengthened CEPF's investment by providing clear direction based on the experiences and priorities of a wide range of stakeholders allowing for CEPF's investment to build on existing initiatives.

Civil society organisations

CEPF's focus on civil society organisations has not only built the capacity of NGOs and CBOs but has also strengthened local and central government partners. This has been enhanced by the dynamic relationship between grantees and CEPF through regular visits by the Grant Director. This has also provided an opportunity for CEPF to improve via feedback from grantees. However the slow turn around time on grants and weak linkages with initiatives outside of the hotspot remain areas for improvement.

Monitoring

The hotspot-wide monitoring programme that CEPF has supported provides an important resource for stakeholders working on forest connectivity issues and allows for a broader assessment of progress on the restoration of forest connectivity.

Methods for forest connectivity

Although lessons have been learnt about identifying suitable sites for the restoration of connectivity and about how to restore connectivity there is still a need for clearer guidelines on best practices taking into consideration local factors.

Connectivity approaches

There is still a need for more innovative and effective approaches to be developed that can offer alternative livelihood practices which are more beneficial to communities than destructive IGAs; can address human-wildlife conflicts and some of the underlying threats to forest connectivity including population growth, governance and issues of land and natural resource tenure.

Indigenous knowledge

Forest connectivity is strengthened through the inclusion of indigenous knowledge and traditional rights in conservation approaches.

Derema

The case study of the Derema corridor has raised many issues of which future compensation processes should learn including the importance of managing communities expectations very carefully and providing them with investment advice; good communication between those involved in the process especially the communities; the need to be realistic about the length of time it takes to raise funds to cover the costs of compensation. Civil society organisations can play a valuable role in facilitating communication but need to ensure that they have appropriate skills to take this on board. Guidelines for a compensation scheme are needed.

Funding

CEPF's funding has assured that the actions agreed upon at the stakeholder workshops have been realised and that strong linkages were incorporated in project planning between action in the field and the latest scientific findings.

Prioritising forest connectivity

CEPF's prioritisation of the restoration of connectivity has put the issue of connectivity firmly on the conservation agenda and has enabled organisations to leverage additional funding.

Recommendations

1. Do not underestimate the importance of stakeholders' meetings that lead to action
2. Combine a broad ecosystem approach with communities' development aspirations
3. Prioritise areas and develop an implementation plan and communication strategy; identify donors for the compensation before instigating activities on the ground
4. Secure local government support
5. Develop appropriate responses to conflicts
6. Need to act now while realising connectivity is a long-term intervention
7. Publicise success and lessons learnt
8. Be realistic and able to compromise
9. Make use of technology to increase productivity
10. Nongovernmental sector should assist the government to formulate policies
11. Be aware of international initiatives

3.2 Working group two

This section summarises the findings of working group two.

Members of group two were: Trevor Jones, Jaclyn Hall, Isaac Mallugu, Eustack Bonifasi, George Eshiamwata, Freya St. John, Lazaro Mbuya

Strengths	Weaknesses
Institutional collaborations created	Positive collaborations may end when CEPF projects close
Collaborations have increased strength for securing funding	Potential for nongovernmental organisations to be influenced by government – potential loss of autonomy
Nongovernmental and government collaborations created	Not all projects invest the significant time required to build good community relationships / trust
Partnerships with communities created	CEPF did not invest directly in FBD capacity to protect forests
New partnerships created e.g. CEPF & CMEAMF	Nongovernmental organisations don't have the authority to affect legal protection of forests. Though they can have an effective lobbying voice
Communities generally have greater trust for NGOs than the government due to the historical way in which they have been treated	Once forest connection has been achieved, monitoring the effectiveness is time consuming and potentially expensive
Civil society organisations can be more accountable, they are motivated and generally have greater capacity than the governments	Information collected by independent researchers can be slow to reach decision makers
Civil society organisations tend to use a bottom up approach – the opposite approach generally taken by the government	The use of independent researchers is not a reliable / sustainable way to plan a monitoring programme
Independent researchers can contribute significantly to monitoring	What rewards do communities get for monitoring? What incentives are there?
	There are no standardised ways of monitoring the effectiveness of forest connectivity
	Funding is needed for connectivity projects – particularly if re-settlement involving payment of compensation is necessary

Opportunities

1. Many NGOs are now working hand in hand with government officials and this is visible to communities e.g. going to the field together with a forest officer. However, the NGO staff are still seen as NGO staff, and are accepted by the communities.
2. Acceptance of a project in an area can depend on the level of exposure to previous development projects this can be positive or negative.
3. Land Use Planning, working with the Lands Department to get village plans made.
4. Provision of financial incentives. Communities could be rewarded if e.g. there is no fire inside FRs. Financial incentive schemes may be appropriate in areas such as Amani Nature Reserve where funds are being raised from for example visitors, but what about forests that have no direct cash income?
5. How do you put value on the forests in order to generate funds that can sustain monitoring / protection? Payment for ecological services could provide a solution. How such funds would reach communities needs to be addressed.
6. NGOs often assuming the role as mediator between the community and the government, is this good or bad?

Threats

1. Communities have high expectations so it is important to state from the beginning what the NGO is there to do, then the NGO must do it!
2. Very few villages have a land use plan. Many villages are not even sure of the village boundaries, this can cause conflict.
3. Community awareness of the Village Land Act is low, many villages are not aware that they can claim rights to the village land.
4. Fire is a problem when dealing with forest connectivity – potential to lose entire forest.

5. Using fire to clear the land for planting is a cultural activity that has been happening for generations thus is hard to stop. Uncontrolled fires threaten forests.
6. Some FRs do not have clear boundaries.
7. Maintenance of FR boundaries that also double as fire breaks, are labour intensive to maintain.
8. There is an urgent need to raise the awareness of the values of forests.
9. Forest ecosystems compared with savannah, are harder to develop big income generating initiatives for. This raises issues for sustainability of alternative livelihood initiatives, community or government monitoring and forest protection.

Lessons learnt

1. Involving stakeholders at all levels is critical to the success of projects.
2. Income generating activities are important they can reduce negative pressure on forests and help people value the forest.

Recommendations

1. Any monitoring system developed needs to be sustainable and simple. Training of communities to conduct monitoring can help them realise ownership of the forest. If the communities conduct the monitoring they will see directly what is happening in their forest, they can then plan to change bye-laws, plan new planting etc. as they deem appropriate.
2. Income generating activities e.g. butterfly farming, honey production etc. could provide the necessary incentives to communities to be involved in the monitoring of their forests.
3. Train forest officers to investigate fire ignition so those responsible can be held accountable.
4. Preserve areas BEFORE they become fragmented!

4) Conclusions

Participants to the workshop found the event extremely informative and helpful increasing their knowledge and specifically:

1. The workshop provided a valuable learning forum both through the presentations made and through conversing with workshop participants, it is invaluable to have the opportunity to learn of different strategies that have been implemented in the area of forest connectivity. The workshop has provided an insight into future steps that the Udzungwa project (Rovero & Jones) will have to take.
2. It was fascinating to hear the challenges of establishing forest connectivity and extremely valuable to hear about the different methods being implemented by CEPF funded projects, for example Taita Hills compared to the Udzungwa projects. The workshop has further highlighted the urgency with which the issue of establishing forest connectivity needs to be addressed.
3. The workshop has highlighted that the field of forest connectivity needs a lot of work for example standardisation of methodologies. Every case is different and it is valuable to learn from other projects.
4. From a conservationist point of view it was easy to believe that achieving forest connectivity could only have positive outcomes. The workshop has provided a deeper understanding of the implications of forest connectivity to communities and how connectivity can be perceived in a negative light.
5. The workshop provided a good learning experience and this knowledge can be passed onto colleagues and others in the region. Putting faces to names is also valuable and will help with good communication in the future.
6. There are many challenges in the field of forest connectivity but working as a large team, sharing experiences brings the target of achieving forest connectivity closer to hand. It was extremely valuable to hear about the Derema corridor compensation process, providing useful information for future situations that may occur on other projects.
7. It was extremely valuable and topical to hear of peoples' experiences in the field of forest connectivity particularly as Nilo is soon to become a Nature Reserve with the ultimate target of connecting the forest with Amani Nature Reserve as such the project is likely to come across some of these connectivity issues.
8. It was a fantastic opportunity to attend the workshop and meet other people working in the same field, it is positive to know that you are not working alone on the issue of achieving forest connectivity.
9. It is amazing to see that the CEPF funding, launched only in 2004 has concrete activities happening on the ground. The workshop provided valuable knowledge on the subject of planning corridors and achieving forest connectivity.
10. Please can such workshops be held more frequently? For future workshops it would be beneficial to have a representative of the WD present so that they learn from the projects being implemented and hear the recommendations made.
11. From the Grant Director, who works for us all! John is over the moon to see that so much has been achieved by the portfolio of CEPF projects working on forest connectivity. Without the links established between NGOs, research institutions, independent researchers, governments and other stakeholders this would not have been possible – please keep it up and please publicise this connectivity workshop.

Please contribute data to the outcomes database!

Appendix 1 Guidelines for working groups

Your task is to write down some of the key lessons that have been learnt based on your experiences and on the discussions that have come up during the workshop and document some recommendations.

A first step to identifying some lessons learned and recommendations would be to conduct a 'SWOT' analysis. As a group, think through some of the strengths and weaknesses / opportunities and threats. The strengths and weaknesses can guide you in formulating 'lessons learned'. While the opportunities and threats can help in formulating recommendations on a way forward to improve and strengthen the restoration of forest connectivity.

Some themes that you might want to think about include:

Partnership

Capacity building

Pros and cons of civil society organisations (relative to e.g. government)

Monitoring

Linkages with local, national and international processes

Funding

Conservation impact

Sustainability

Please also list any other more general lessons learnt and recommendations regarding CEPF's investment.

Please prepare your findings as a power point presentation and select someone from your group to present the findings to the other participants. The presentation should include a list of the strengths / weaknesses / opportunities and threats that helped in guiding you to formulate the lessons learnt and recommendations. It should also include the lessons learnt and recommendations that you have formulated. The lessons learnt can be written as paragraphs while the recommendations should aim at a 'bullet point' style.

Appendix 2 Timetable for the CEPF Strategic Funding Direction 3 Meeting

Workshop to document lessons learnt from the Critical Ecosystem Partnership Fund's investment in the restoration of forest connectivity in the Eastern Arc Mountains and Coastal Forests of Kenya and Tanzania

Timetable

Dates: 11th – 12th September 2006

Venue: Amani Nature Reserve Headquarters

Time	Project	Presenter	Organisation
Sunday, 10 th September: Arrive Amani Nature Reserve			
Monday, 11 th September			
8:00	Registration		
8:30	Opening remarks and introduction to CEPF	John Watkin	CEPF
9:00	Overview of CEPF's investment.	George Eshiamwata	BirdLife International
9:20	Instituting a Standardised Sustainable Biodiversity Monitoring System in the Eastern Arc / Coastal Forests of Tanzania and Kenya	George Eshiamwata	BirdLife International
10:00	TEA BREAK		
10:30	Biodiversity of a landscape: examining forest heterogeneity and ecological change in the East Usambaras since 1975.	Jaclyn Hall	University of Florida
11:10	Conservation Biology of Ecological Indicators to Enhance Connectivity in the East Usambara Mountains, Tanzania (birds)	William Newmark	Utah Natural History Museum
11:50	Facilitating compensation payments for the Derema Forest Reserve, East Usambara Mountains	Peter Sumbi	WWF TPO
12:30	East Usambara Forest Landscape Restoration project	Eustack Bonifasi	Tanzania Forest Conservation Group
13:00	LUNCH		
14:00	Facilitating the process of designing CEPF / GCF connectivity interventions in the Udzungwa Mountains area.	Zakiya Aloyce	WWF TPO
14:20	Improving the conservation of Magombera Forest and community livelihoods	Zakiya Aloyce	WWF TPO
14:40	Socio-economic study of the Udzungwa scarp area: a potential wildlife corridor	Zakiya Aloyce	WWF TPO
15:00	Two complementary connectivity projects in the Udzungwa Mountains: 'Assessing the potential for restoring connectivity and evaluating options for improved management of the Udzungwa Scarp, Iyondo, Matundu and Nyanganje Forest Reserves in the Udzungwa Mountains of Tanzania' and 'Wildlife corridors around the Udzungwa Mountains	Francesco Rovero and Trevor Jones	Museo Tridentino di Scienze Naturali
15:40	Restoring forest connectivity in the Udzungwa Mountains	Hamadiel Mgalla	Tanzania Forest Conservation Group
16:20	END OF DAY 1		

Tuesday 12 th September			
9:00	Forest conservation in the Matumbi Hills, Rufiji District.	Isaac Mallugu	WWF TPO
9:40	Restoration and increase of connectivity among fragmented forest patches in the Taita Hills, south-east Kenya.	James Mwang'ombe	East African Wildlife Society
10:20	Forest connectivity in the Mahale Mountains	Kathryn Doody	Frankfurt Zoological Society
10:40	TEA BREAK		
11:00	Group work	All	
13:00	LUNCH		
14:00	Continuation of Group work	All	
15:00	Presentation of Group work	All	
16:30	Closing remarks	All	
17:00	Close		

Appendix 3 List of participants

Name	Organisation	Postal address	Email	Phone no.
Zakiya Aloyce	WWF TPO	PO Box 63117 Dar es Salaam	ZAloyce@wwftz.org	0744 371 027
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George Eshiamwata	BirdLife International		George@Birdlife.or.ke	+ 254 (0) 723 812 990
Jaclyn Hall	University of Florida		jhall@geog.ufl.edu	0784 934 909
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Trevor Jones	Anglia Ruskin University	PO Box 692 Iringa	tembomkubwa@gmail.com	0786 285 212
Wande Kema	Forestry and Beekeeping Division	PO Box 426 Dar es Salaam	wandekema@yahoo.com	0713 832 506

Name	Organisation	Postal address	Email	Phone no.
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