



**Report for the Rufford Small Grants Conferences on  
'Education and Community Advocacy for Biodiversity  
Conservation in Tanzania'  
Held from 15 - 16<sup>th</sup> February 2017, African Flower  
Hotel, Kilimanjaro Tanzania**



**RSG Conference in Tanzania: Group Photo**

## Introduction

The Rufford Foundation Small Grants (RSG) Conference for grant recipients in Tanzania was co-organized by RSG and Sokoine University of Agriculture Tanzania as a local host. Participating organizers are; Tanzania Wildlife Research Institute (TAWIRI), Tanzania National Parks and University of Dar es Salaam Tanzania. The conference was held from 15-16<sup>th</sup> February 2017 in Kilimanjaro Tanzania. The conference was organized in the time when Tanzania biodiversity resources are at high risk of extinction caused by environmental pollution, habitat degradation, introduction of species and climate change. The sustainability of these resources requires proper management strategies. In view of supporting biodiversity conservation, the Rufford Foundation has funded 71 biodiversity conservation projects in Tanzania. The projects outputs have been reported to the Foundation as per contract and foundation guidelines. However, in the view of supporting sustainable biodiversity conservation through management oriented researches, it has been noted that, the information gathered through this funding is scattered and likely unavailable to biodiversity management authorities in Tanzania. Thus the need to gather, share and disseminate these findings for biodiversity management is of great concern. Therefore, this conference was geared towards knowledge sharing and dissemination of information to the wider and broader stakeholders. The forum will provide a room for exchange of knowledge and experiences on the management of biodiversity in Tanzania, noting that the nations biodiversity contribute significantly to socio-economic development.

## Objectives of the RSG Conference in Tanzania

*State briefly what the RSG Conference aimed to achieve.*

The main theme of the Conference was '**Education and Community Advocacy for Biodiversity Conservation in Tanzania**'. Presented papers were from three subthemes as indicated below:

- ❖ Biodiversity conservation and human-wildlife conflicts.
- ❖ Up-scaling research for biodiversity conservation.
- ❖ Environmental education and improved rural livelihood for biodiversity conservation.

**The conference objectives were:**

- ❖ Sharing of experiences and best practices in biodiversity conservation education and community advocacy.
- ❖ Promoting communication and networking, education and community advocacy and strengthening research capacity for biodiversity conservation.
- ❖ Promoting the role of community livelihood improvement for biodiversity conservation.

The presented findings of the conference has been submitted to the Ministry of Natural Resources and Tourism Tanzania so that they can be integrated and used to assist the current management strategies of the government in attaining the sustainable use and conservation of biodiversity. This conference has resulted into a forum on which the project executants can communicate among themselves and with Authorities and community at large. While using the best available information from the projects, participants had an opportunity to advice the government on the necessary policy actions and transformations for the conservation and protection of endangered wild species and their habitat in a holistic manner. In addition, the conference participants highlighted the challenges, successes and lessons learned from each project in view to extrapolate and communicate them to the places outside the project areas.

## Policy Agenda Relevant to the Conference from the Guest of Honour

The guest of honour, *Hon. Jumanne Maghembe (MP)* was represented by the Chief Park Warden of the Kilimanjaro National Park Tanzania. The speech highlighted important aspect in the conservation of biodiversity in Tanzania and financial support of Rufford Foundation in the same. Few highlighted sentence include: <sup>1</sup>'I have observed that this conference has attracted various specialists including conservationists, scientists and researchers from different parts of the Tanzania and Africa to share the ongoing activities regarding biodiversity management that will lead to potential long term conservation'. <sup>2</sup>'This conference addresses issues related to biodiversity conservation, sustainable use of ecosystems, and ecosystem degradation. I am informed that areas to be covered in this conference include human-wildlife conflicts, up-scaling research for biodiversity conservation, education and advocacy, and biodiversity conservation for improved livelihood. This information are important on biodiversity and especially on wildlife conservation and sustainable tourism'. <sup>3</sup>'In Tanzania as in other parts of the world, loss of biodiversity have increased more rapidly due to overexploitation, habitat loss, habitat fragmentation, introduced species/invasive species, pollution, diseases and climate change. Hence we indeed need and seek the application of science and research to inform management decision, but it is also perhaps beyond time that Tanzania further strengthens its own capacity in this important area so as to improve our ecosystem health and socio-economic development to our Nation. I wish to assure you all participants and the Rufford Foundation administration that the Government of Tanzania is fully committed to implement and support all efforts directed to biodiversity conservation in Tanzania. We will work to implement and enforce policies that facilitate and promote natural resources conservation and management'.

## Synopsis of the Various Sessions Theme

### *15-02-2017 – Session 1: Key Note Presentations*

1A: Understanding Biodiversity Conservation and Human-wildlife Conflicts- **Dr. C. Nahonyo**

1B: Understanding the Role of Environmental Education and improved Rural Livelihood  
for Biodiversity Conservation-**Dr. F. Kilahama.**

1C: Up-scaling Research for Biodiversity Conservation-**H. Taylor.**

1D: Questions and Discussion- **Key Note Speakers**

1E: Poster Presentations.

### *15-02-2017 – Session 1: Participants Presentations*

2A: Biodiversity Conservation through Beekeeping in Lake Jipe Ecosystem.

2B: Promoting Beekeeping as an Innovative Mechanism for Biodiversity Conservation and Community Livelihoods Improvement in the East Usambara Mountains, Tanzania.

2C: Enhancing Community Involvement in Six Villages Adjacent to Mikumi National Park on Participatory Conservation of African Elephants' Habitat- Tanzania.

2D: Understanding grassroots conservation efforts: A case of Enguserosambu Community Forest.

2E: The Role of Community Conservation of *Oxystigma msoo* in Rau Forest Reserve, Tanzania.

2F: Environmental Education and Community Involvement in the Conservation of Endangered Lake Kitangiri Ecosystem in Tanzania.

2G: Influence of Human Induced Habitat on Avifauna Diversity and Distribution around Wetland (Case Study of Lake Jipe).

### **16 - 02 - 2017 - Session 1: Participants Presentations**

- 3A: Community Participation in the Conservation of Jipe Tilapia.
- 3B: Enhancing Conservation of Magombera Forest through Adapting Beekeeping.
- 3C: Conservation of Large Carnivore Biodiversity in the Masai Steppe, Northern Tanzania.
- 3D: Ecogeographic Distribution of Terrestrial Edible Orchid in Tanzania: Implication for Setting Priorities on Insitu Conservation of Plant Genetic Resources.
- 3E: The Conservation Values and Status of Threatened Kimboza Forest Reserve.
- 3F: Ecology and Role of Land Use on Abundance, Diversity and Distribution of Small Mammalian Carnivores in Ruaha Ecosystem.

### **16-02-2017 - Session 2: Participants Presentations**

- 4A: Botanic Garden an Important Approach to Plant Conservation: Case of Arusha Botanic Garden Tanzania.
- 4B: Achievements and lessons learnt from a long-term programme for standardizing biodiversity research and monitoring in the Udzungwa Mountains.
- 4C: Bat Biodiversity, Ecology and Conservation in Zambia.
- 4D: General Discussion and Recommendations:

*Sessions focused on challenges, governance and management of biodiversity, their use and the related policy, economic and political implications from local, regional as well as international scales. The session focused on the impact of human-wildlife conflicts to biodiversity conservation in Tanzania and the effort undertaken to mitigate it for sustainable management of the resources. Scientific research covering large geographical areas of the species occurrences were highlighted as key for the management of biodiversity. Issues of public participation in Biodiversity Management from both a holistic point of view where all stakeholders are included; to a group or community focused approach, including aspects such as gender, youth, education and awareness building in participatory in biodiversity management were addressed. Participants provided experiences and lessons learned in the several projects that have been carried out throughout the country, including the role of international organizations (i.e. Rufford Foundation) and NGO's in Biodiversity Management. It also emphasized lakes as water sources for African cities and as important transportation media. Poverty is both a cause and result of degradation of biodiversity and habitats. Community involvement play key role in the sustainable management of the biodiversity. The session dealt with poverty reduction as a means to enhancing environmentally sustainable livelihoods, particularly in areas where the population is largely dependent on biodiversity. Beekeeping found programs financed by Rufford Foundation was reported among the successful alternative livelihood activities for poverty reduction in the areas where biodiversity are in greatest threat. The session addressed natural, socioeconomic, health, development and political factors that might enhance or mitigate biodiversity loss through improving livelihood of the rural communities in Tanzania. Research findings featured as important tool to be considered in the decision regarding management and conservation of biodiversity. The general discussion examined critically the emerging threats to biodiversity as a consequence of human activities and climate change. In a wider sense the session explored issues related to emerging risks and vulnerability, and the new paradigms in Biodiversity Management and research that need to be considered and affected in view of these emerging changes.*

## **The Impact of the RSG Conference**

***Were there examples of where Rufford Funding has enabled disproportionately large and tangible conservation impacts to be delivered?***

There were several examples where there is large and tangible conservation impacts following Rufford Funding:

- ❖ Improved protection and management of the ***African Elephants'*** and its habitat in six villages around Mikumi National Park Tanzania. The impacts were achieved through

effective participation of villagers through carrying out alternative livelihoods (*i.e.* beekeeping) which reduced destruction actions to the park area.

- ❖ Formation of Village Guard Security (VGS) leading to effective measures to guard and report any incidence effecting elephants' welfare.
- ❖ Decline in the degradation of Enguserosambu Community Forest through community participation in awareness programs.
- ❖ Report on the ecology and role of land use on abundance, diversity and distribution of small mammalian carnivores in Ruaha Ecosystems, Tanzania.
- ❖ Improved livelihood of people around Lake Jipe ecosystem Tanzania through development of improved beekeeping and local chicken keeping.
- ❖ 134 people trained on the best land use practices, soil conservation and development of a demo farm on agro-forestry in areas around Lake Jipe ecosystem Tanzania.
- ❖ Four nursery trees developed and 8500 trees planted in areas around Lake Jipe ecosystem Tanzania.
- ❖ 89% of indigenous trees planted for restoring in the degraded area of the forest survived and only 11% of trees planted could not survive for various reasons.
- ❖ Improved conservation of the remaining part of Magombera forest by involving the adjacent community in the restoration initiatives and bee keeping as alternative way of livelihoods.
- ❖ Improved capacity of local people and increased conservation awareness that lead to the community participation in the conservation, reforestation programmes, monitoring and protection of the Kimboza forest reserve Tanzania.
- ❖ Formation of three school environmental clubs leading to effective participation of secondary and primary school students in the conservation of Lake Jipe Ecosystem.

### *Were there examples of locally developed approaches to biodiversity management?*

- ❖ Formation of youth and student clubs to support reforestation in Kimboza forest.
- ❖ Established beekeepers and local chicken associations for supporting Lake Jipe catchment conservation.
- ❖ Establishment of 'Locally Managed Reserve Areas' in Lake Jipe ecosystem.
- ❖ Established Botanic Garden (3000 square meters) in Arusha City Tanzania for promotion sustainable use of Nature.

### *Were there examples of how has Rufford support helped early career conservationists achieve their goals?*

- ❖ **Mr. A. Runji:** The Rufford Foundation has been supporting my conservation work and have improved knowledge as conservation leader.
- ❖ **Ms. Tausi Ally:** This was my first research grant from Rufford and for the past one year in the field in Lake Kitangiri I have learnt so much to work with the society in the biodiversity conservation.
- ❖ **Mr. Mtui:** With my supervisor, Mr. Rovero, Rufford has been providing financial support to our work in Udzungwa National Park. I have gained a lot of knowledge both in the management of the resources but also the way to interact with the society.
- ❖ **Dr. Jason.** Support from Rufford improved my understanding on the threat facing Tanzania wetlands and how poverty alleviation to the surrounding society may help biodiversity management.

- ❖ **Dr. Nahonyo.** Rufford is one of the best donor to be honoured for supporting young generation initiatives in biodiversity conservation. The government should seek the best way to implement the recommendation resulting from Rufford Foundation Projects in Tanzania.

***Were there examples of how Rufford funding has helped support work on species and ecosystems that are traditionally difficult to fundraise for?***

**Dr. Johnson** reported that conservation of Lake Jipe Tilapia in Lake Jipe ecosystem was difficult to be funded in the past due to its small size and hence received little attention from the responsible authorities. Also much of the donor funds are directed to large water bodies in the country like Lake Victoria and Lake Tanganyika. However, through following funds from Rufford support, the conservation work and the importance of the lake biodiversity have become known and attracted more donors like The Mohammed bin Zayed Species Conservation Funds.

**Ms. Tausi Ally** reported that in her initiative to conserve Lake Kitangiri Tilapia it was difficult to get financial support until when she came to know about Rufford Foundation Small Grants.

***Were there examples of how Rufford grants have provided seed funding to build capacity, identify conservation needs and develop replicable models for future projects?***

- ❖ Rufford provided seed funding for conservation of endangered Lake Kitangiri Tilapia, *Oreochromis amphimelas*.
- ❖ Rufford provided seed funding for the conservation of threatened terrestrial Edible Orchid in Tanzania.
- ❖ Rufford provided seed funding for conservation of critically endangered Jipe Tilapia and its ecosystem. Currently, the species conservation is co-financed by Rufford and The Mohammed bin Zayed Species Conservation Fund.
- ❖ Rufford provided seed funding for the conservation of *Oxystigma msoo* plant in Rau Forest Reserve, Tanzania.

***Were there examples of how Rufford funding has helped train a future generation of conservationists?***

- ❖ Workshop training of youth living around Lake Jipe ecosystem for the conservation of the underlined species through improved beekeeping and local chicken keeping.
- ❖ Workshop training to the villagers and school students on best environmental practices for the conservation of Kimboza forest reserve.
- ❖ Building the capacity building for local people and to increase conservation awareness by conducting seminars to villagers particularly village conservation committees and village leaders for community reforestation programmes, monitoring and protection of the Kimboza forest reserve.
- ❖ Training of the youth around Kimboza forest reserve to establish bee keeping as alternative source of income.

## *Were there examples of where Rufford grantees have published important biodiversity information?*

Many grantees reported final reports of their projects submitted to Rufford Foundation.

## **Issues raised and any recommendations made**

*Were there any other issues specifically raised by attendees? Also, were there any recommendations that arose as a result of the conference?*

There are several questions raised but few were selected due to its relevance to the current Tanzania Biodiversity Management Strategy:

### **1: Questions to Dr. Nahonyo presentations**

**Q. Dr. Kisingo:** *Do you think ecosystem approach is relevant for species conservation under the current human-wildlife conflicts?*

**Ans:** This is the relevant approach since when the system is protected, a species is also protected.

**Q. Dr. Kisingo:** *Why there are several human-wildlife conflicts in Tanzania? Are they affecting biodiversity conservation?*

**Ans:** This is due to the lack of land and resource use plan from village level. They are affecting biodiversity and that is why Tanzania is reported as one of the countries where biodiversity is in high risk of extinction.

**Q. Dr. Johnson:** *What is the feature of biodiversity in Tanzania under the current human-wildlife conflicts?*

**Ans:** Continued loss of habitat and more species extinct from the wild.

### **2: Questions to Helen Taylor**

**Q. Mr. Msigwa:** *Is there any effort to combat zoonotic diseases from Bats in Zambia?*

**Ans:** There are fewer studies on bat zoonotic diseases especially in Africa. However, Japanese are working with Zambians to explore disease not only in bats but other species in addition to bats. This will include zoonotic diseases across borders.

### **3: Questions to Dr. Kilahama**

**Q. Dr. Jasson:** *For your experience, do you think environmental education and community participation is important in biodiversity conservation in countries like Tanzania?*

**Ans:** This is the key area of biodiversity conservation that needs to be promoted for better management of our resources. In my understanding, environmental education needs to be provided even from primary to University level. People should be aware of the value of biodiversity.

**Q. Dr. Lamtane:** *What would happen until today if there were no any initiatives on environmental education in our country?*

**Ans:** More wild species would have been extirpated and habitat loss beyond the observed situation.

**Q. Dr. Lamtane:** *What is your comment to Rufford toward funding environmental education programs for biodiversity conservation in Tanzania?*

**Ans:** First, I should appreciate the support from this International Organization for supporting our resources conservation. Young scientists have to start more initiatives targeting biodiversity conservation in our country. Generally, further financial support from Rufford is required.

#### **4: Question to Mr. Mtui**

**Dr. Kisingo:** Why Udzungwa Mountain National Park have several conservation challenges?

**Ans:** This is due to several factors including large size and presence of various edible species within the park. Off course, little enforcement capacity from the government.

#### **5: Questions to Dr. Johnson**

**Q. Mr. Mtui:** Why do you think Lake Jipe is ecologically important ecosystems that need to get more funds from International Organization?

**Ans:** Apart from being home of critically endangered Jipe Tilapia *Oreochromis jipe*, the Lake support the life of endangered turtles species, amphibians, reptiles and migratory birds. Hence more conservation effort is required. For example, The Mohammed bin Zayed Species Conservation Fund is currently supporting establishment of fish sanctuaries to improve the population status of Jipe Tilapia and its habitat.

**Q. Dr. Kilahama:** Do you think it is important to involve members from Kenya for the conservation of Lake Jipe?

**Ans:** Yes, however, the challenges have been little amount of funds to cover both parts.

## **Recommendations**

- ❖ Grantees have to submit the final report to Rufford on time and disseminate the information to a wider audience.
- ❖ It was suggested that Rufford should think a special call for young scientist for the conservation projects that will help to build their carrier.
- ❖ Established Forum have to organize a Grant Recipients after every two years for information sharing and disseminate the results to the stakeholders.
- ❖ Established Forum should have a common E-mail that will be used to update members the progress of any challenges or success.
- ❖ Forum members should promote proposals cover large areas of species occurrences.
- ❖ Grantees recommended further support from Rufford since there are several challenges facing biodiversity as observed during the conference.

## **List of participants, conference schedule and abstracts**

*List of participants is attached on separate word document while conference schedule is attached on a separate excel document.*

### **ABSTRACTS**

**Title: Enhancing Community involvement in six villages adjacent to Mikumi National Park on participatory conservation of African Elephants' habitats - Tanzania"**

**By Angelus Runji**

#### **Abstract**

This project intended to address the conservation challenge on deterioration of African Elephants' habitat in Mikumi National Park. The focus was centered on enhancing community involvement in six villages which are found adjacent to Mikumi National park (MNP) in order to ensure that effective measures are participatory taken to address the challenge of deterioration of African Elephants' habitat which accompanied by elephants' poaching. The project employed participatory approach on implementing the project whereby the target participants were involved to form mechanisms that were agreed to be useful to addressing the identified challenge. The participatory approach involved application of participatory and learning and action (PLA) methodologies where discussions, topic presentation and physical actions were applied. The implementation of this project involved conducting meetings for creating public awareness, trainings to selected villagers who formed village game

scout teams and entrepreneurship groups, purchase and supply of the 30 beehives to six villages. The project participants were Local Government Authority's leaders, NGOs and CBOs, Mikumi National Park Authority (MINAPA) and Villagers. The total of 262 participants was directly reached by the project. The findings from project implementation revealed that inadequate regular communication among the stakeholders stimulates destruction of the habitat by various human activities which are carried out adjacent to the park area and continue to be extended encroaching the park area. Also lack of land use management plans to some villagers bordered by park area continues to stimulate the carrying out of destructive activities with poor protection by villagers. The implementation of the project resulted into improving protection and management of the habitat by effective participation of villagers through carrying out alternative livelihoods which reduce destructive actions to the park area, the VGS are taking effective measures to guard and report any incidence affecting elephants' welfare. The project recommends that further efforts are necessary to addressing the protection and management of the elephants' habitat which should include formation of WMAs adjacent to the park area.

**Key words:** African Elephants, management and protection of elephants' habitat, Enhancing conservation capacity, Mikumi National Park, village land use plans.

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### **Title: The potential for carbon capture in secondary forests along a gradient of cultivation intensity: the case of South Nguru Mountains in Morogoro, Tanzania**

Tuyeni Heita MWAMPAMBA<sup>1\*</sup>, Maria J SANTOS<sup>2</sup>, Mark W SCHWARTZ<sup>3</sup>, Johan A SIX<sup>4</sup>

As increasingly more primary forests are converted to other land uses, it has become important to understand the value of the landscapes that replace them for biodiversity conservation and for providing key ecosystem services such as the regulation of carbon flows and stocks and the maintenance of hydrological systems. In places where deforested land is subsequently abandoned and natural regeneration occurs, land use legacies in combination with other biophysical factors have been shown to be critical determinants of such recovery trajectories, with increasing intensity contributing to lower rates of recovery. With an interest to understand the effects of cultivation intensity on carbon stocks and flows in the resultant secondary forests, we conducted a chronosequence study in which we surveyed above and belowground carbon in the vegetation and soils of 127 plots (20m x 50m) having variable ages since abandonment (0 to 54 years), including 13 primary forests. The study was conducted on the eastern slopes of the South Nguru Mountains, Morogoro, along an elevational gradient of 300 - 1800 m.a.s.l. where cultivation practices and cropping regiments (crops cultivated and duration of cultivation period) are highly correlated with distinct vegetation zones (high and low elevation) influenced by climatic factors, (moisture availability). A cultivation intensity gradient was determined, based primarily on the proportion of canopy cover that farmers leave on the plot to provide what are considered ideal conditions for a given cultivated crop. Our results indicate that 30 yrs after abandonment aboveground carbon stock in the resultant secondary forests does not fully recover to that of the original forests that were removed, staying at 50% of the original stock, although soil carbon does seem to recover almost fully. Cultivation intensity, determined by cultivation regiment (increasingly less shade tolerant crops), was a key factor contributing to carbon recovery rates (i.e., carbon sequestration); regiments that included cardamom and yam plantations, which require the maintenance of up to 30% canopy cover, recovered at above-average rates compared to those that consisted of shade intolerant crops such as maize, bean and cassava. Our study emphasizes the importance of maintaining some canopy trees on farm plots to boost forest recovery post abandonment. We use our results to launch into a discussion about the types of crops that should be promoted in the study area and the implications of cultivation regiments on conservation priorities in the Eastern Arc Mountains.

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### **Title: Understanding grassroots conservation efforts: A case of Enguserosambu Community Forest**

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#### **Abstract**

Community managed forests constitute a significant proportion of the world's forests, however, little is known regarding their condition or the details of how they are managed. Documented benefits of community managed forest include poverty alleviation and in some places a decrease in the rate of deforestation. Forests are home to many cultures including the indigenous people. Indigenous communities surrounding forest areas have developed patterns of resource use and management that reflect their intimate knowledge of local environments and ecosystems. However, indigenous knowledge is

rarely documented or incorporated into science based or government run conservation planning. This research aimed to understand the traditional Maasai practices in relation to conservation of forest resources. Specifically, the research aimed to; understand social mechanisms supporting indigenous ecological knowledge generation, accumulation and transmission. Four villages were surveyed. Individual and group semi-structured interviews were conducted with customary elders, village leaders, forest user groups, NGO's, and forest officers. A total of 57 individuals were interviewed, of which 19 were females. Findings revealed that to Enguserosambu communities, culture and forest are intertwined. The relationships communities have with their forest is stronger than sibling's relation. Different mechanisms are used by elders to share traditional knowledge with other society members. Some of the strategies include age group meetings, cultural bomas and traditional celebrations. Traditional law enforcement and land use plans were also mentioned as important means of protecting the forest. It is clear from the research that some of the practices of the daily Maasai lives contribute towards conservation of forest resources. These local traditional practices largely support conservation efforts and need to be documented and integrated into conservation planning.

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## ENHANCING CONSERVATION OF MAGOMBERA FOREST THROUGH ADAPTING BEE KEEPING

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### ABSTRACT

The Magombera forest is a home of endemic, diverse and endangered biological species, for example Udzungwa red colobus monkey (*Procolobusgordonorum*) and the Magombera chameleon (*Kinyongia magomberae*) which are among endangered and endemic species in the area. However the forest is facing high threat of disappearing through the resources extraction pressure from adjacent local communities. The project supported by Rufford Foundation through Rufford Small Grant aimed at improving conservation of remaining part of Magombera forest by involving the adjacent community through restoration initiatives and bee keeping as alternative way of livelihoods. Planned activities were successfully implemented and project objectives met. The modern bee keeping was introduced to the community and successfully adapted. About 89% of indigenous trees planted for restoring in the degraded area of the forest survived, only 11% of trees planted could not survive. After this initial success, it is planned to expand the scale of the project by involving many participants that have showed interest with the initial success and observing from others involved in the initial initiative. There is a growing market for the honey and other bee products in the country. With more people involved in the bee keeping, the forest and the environment in general will be conserved and that is the desired outcome of the project.

**Key words:** Magombera forest, Modern beekeeping, Restoration, Rufford Foundation

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## Engaging local groups in environment-friendly livelihood activities and biodiversity monitoring in Lake Tanganyika basin

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### Abstract

In developing countries where resources are limited and especially in Ramsar sites which are guided by 'wise use' principle, engaging local communities is the best way of managing resources therein. Changes in climate, human population, and dynamism of the society require new measures to sustainably manage the natural resources. Engaging local communities in biodiversity monitoring and in environmentally friendly income generating activities are some of the measures. Local field assistants from the village have been engaged in biodiversity monitoring since 2004 where two threatened birds and water levels are key parameters. From July 2014 to June 2015, a project was implemented in three villages surrounding Malagarasi wetlands, a catchment for Lake Tanganyika, in Uvinza and Kaliua Districts. A pilot project for beekeeping has been established at Kasisi Village (Magwemagwe Group), Uvinza District. Twenty beehives and all necessary accessories for harvesting and processing honey have been provided to the group. Beehives have been hanged in a village forests near the wetland and all colonised. The hanging of beehives were preceded by a beekeeping seminars. Moreover, the project supported representatives from target villages to participate in the first Apimondia Symposium on African Bees and Beekeeping held in November 2014 at Arusha International Conference Centre. The local group (Magwemagwe) expect to earn about 2.4 million Tshs (=USD 1000) per year. Other villages are in the process of establishing similar projects. Apart from income to the groups, the village forests used for beekeeping will be protected from livestock grazing, charcoal burning and frequent fires.

## Title: Conservation of Lake Jipe Tilapia through Improved Livelihood Activities in the Communities Surrounding Lake Jipe Ecosystem, Mwanza Tanzania

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### Abstract

Lake Jipe is a home for endemic but critically endangered Jipe tilapia, *Oreochromis jipe* among other fish species. The lake is located in Tanzania-Kenya border fronting Mkomazi and Tsavo National Parks. In the past fishing contributed 80% of the income of local communities. However, as a result of several anthropogenic and natural factors catch and abundance of fish in the lake declined tremendously such that at present fishing activities contribute only 40% of the resident's income. The major environmental problems affecting Lake Jipe ecosystem include; overfishing, siltation, illegal fishing methods, habitat destruction, deforestation, unsustainable agriculture and livestock keeping practices in the catchment areas. As a result about 5000 families surrounding the lake suffer from lack of animal protein and decreased household income hence calling for intervention. Many approaches for intervention have been recommended. This project concentrated on improved beekeeping and local chicken rearing. The successes of the activities are currently witnessed.

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## The Role of Community Conservation of *Oxystigma msoo* in Rau Forest Reserve, Tanzania

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### Abstract

The study on the role of community conservation of *Oxystigma msoo* was carried out in Rau Forest Reserve and two villages surrounding the reserve in Kilimanjaro, Tanzania. The project aimed at determining the abundance, distribution and laying out community conservation strategies of *O.msoo* in the reserve by using Njoro and Kaloleni villages. Data were collected from ten-concentric plots of 20 m radius which were laid purposively in the reserve where mature *O. msoo* trees were located while conservation strategies were formulated by communities from the two villages. Within the established plots *O. msoo* were counted and measured (Height and diameter at breast height (DBH)). The measured *O.msoo* were classified as mature (DBH > 10 cm), pole (5 < 10 cm DBH), sapling (2<5 cm DBH) and seedlings (< 2 cm DBH or 150 cm Height). Seeds were collected from mature *O. msoo* in the reserve and raised in the nursery for about five months. Seedlings were transplanted to the reserve by communities from both villages. A total of 2950 trees of *O. msoo* were recorded in the reserve with an average of 246, 26, 13 and 10 seedlings, saplings, poles and mature trees per plot respectively. The numbers of seedlings were significantly higher than other size classes of *O. msoo*. A total of 3500 seedlings were transplanted in the reserve. A number of community conservation strategies were formulated. The formulated strategies will help to make policies which will increase chances of trees biodiversity in the reserve. There was a limited recruitment from seedlings to saplings because of over exploitation of saplings which are mainly used as broom supporters.

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## Environmental Education and Community Involvement towards Conservation of Endangered Tilapia *Oreochromis amphimelas* and its Ecosystem in Lake Kitangiri, Tanzania

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### Abstract

The overall aim of the research was to provide environmental education and involve the community in conservation of Lake Kitangiri ecosystem. Logistic meetings were conducted on two primary schools, one secondary school and two major landing sites found in Tulya ward. During provision of environmental education to the youth, fishermen, fish processors and vendors, it was realized that there is high degradation of the Lake ecosystem and no conservational actions take place. Conducted social economic survey showed that fishing is the major economic activity that supports the livelihood of all people living around Lake Kitangiri. Presence of this Lake insures continuous availability of protein sources of food, increases food security, provides employments and improves micro and macro economics of Tanzanians and non Tanzanian people either directly or indirectly. Boat survey comprehended heavy Illegal fishing, clearing of Lake vegetation, introduction of settlements in the Lake Islands and in-breeding sites overfishing. All these result into degradation of the Lake ecosystems and loss of indigenous fish

species including *Oreochromis amphimelas*. A serious heavy siltation, decline in the level and size of the Lake are the results of poor agricultural and livestock keeping practices as well as clearing of near the shore and mountainous vegetations. Environmental education raised awareness of the youth and adult of Lake Kitangiri community and, the actors decided to be involved in environmental conservation and protection processes. The school Eco clubs established to implement strategic work plan on tree nursery production to be planted at school, home and lake boundaries. Since a first visit at the field, the trees planted in the school boundaries were well developing. With exception to the research focus, the stakeholders suggested establishment of beach management units (BMUs) for fisheries management assistance; to protect the remaining natural vegetations; to plant tree on the Lake buffer zone and to enforce agricultural, natural resources and fisheries laws. Under no precautions, *Oreochromis amphimelas* will no longer an endangered fish species, but an extinct species of Lake Kitangiri. And few years to come, the alarming status of the Lake is expected to vanish thousand of organisms. Therefore, present launched conservational activities should be continuously supported in not less than five years to assist further environmental adaptation and mitigation actions.

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## **ECOGEOGRAPHIC DISTRIBUTION OF TERRESTRIAL EDIBLE ORCHID IN TANZANIA; *implications for setting priorities on in situ conservation of plant genetic resources***

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### Abstract

The orchid (*Orchidaceae*) is on the big plant families in the world. The plants in the family are very popular due to their potentials in flower industry especially in Europe and America. In Africa and South East Asia, the tubers have for a long time been used as food and medicine. Due to high pressure on their harvesting, as well as high rate of habitat degradation, all the species in the family are classified in CITES class I and II. In Tanzania, over the recent years there has been high rate of exploitation of the orchid tubers for food and trade. The named trend accompanied by high pressure on land resources has placed a number of orchid species in danger of disappearance. Based on the eco-geographic survey carried out in Tanzania. The most popular wild edible orchids belong to the *Disa*, *Habenaria* and *Satyrium* genus although other genus such as *Europhyla* and *Roechloplean* have also been reported to be collected for food. In Tanzania, The wild edible orchid genera are found throughout the country, but high diversity was recorded in the southern highland area of Tanzania. In this areas too, high rate of exploitation has been reported to extent of threatening the future availability of the species. In Makete due to their potential the government has decided to establish the National Park (Kitulo) to conserve the species, however, due to their potentials there has been high rate of encroachment into the National Park thus creating conflict between the National Park Authority and the communities surrounding the park. In Ruvuma where high rate of environmental degradation and overuse of the orchids is happening, the resources have disappeared to the extent of the communities to import them from nearby areas such as Tunduru, Njome and Makete districts. Furthermore, the communities do close the national border to Mozambique in search for the orchid tubers. Efforts to plant the orchids on farmers fields which is an alternative to wild harvesting has been affected by lack of appropriate technologies for orchid propagation. For the long term sustainability of the orchid species in the area, it has been recommended that a multi strategy approach (ex situ conservation, in *in-situ* conservation through restoration as well as on farm cultivation) considered as long last solution to the future existence of the orchids in the area.

**Keywords:** Orchids, threat, Conservation

## **Budget**

*It is attached in a separate sheet.*