



FIELD REPORT

Marketing title

Mount Mulanje Ecological Monitoring Programme

PI name

David Nangoma

Research site/ region

Mount Mulanje

Country

Malawi

Research site latitude/ longitude

15050' - 16003' S and 35030' - 35049' E

Protected area status

Mulanje Mountain Forest Reserve: A Biosphere Reserve (2000) and soon to become a World Heritage Site

Date Field Report Completed

30 Dec 2009

Period covered by this report.

1 May 2007 - 11 Oct 2009

Report completed by

David Nangoma

Dear Mount Mulanje Watchers,

It is with profound gratitude and happiness that I am accorded this chance to once again chat with you. To begin with, I want you to know that each one of you has left me and my entire research staff team with a lot of memories, good memories of love and belonging, a wider and global family you have created, but above all, a whole lot of intellectual wealth which is not only going to benefit the Mount Mulanje and its managers, but the entire new generations to come. The Mount Mulanje Ecological Monitoring programme owes its success to you, ladies and your gentlemen. You sacrificed your time off your respective duties to come to Mulanje and assist with data collection which today tells a lot of stories about how we are fairing in terms of managing our mountain ecosystem. You offered your intellectual property rights in suggesting alternative ways of how we should protect and manage our unique *Widdringtonia whytei* (the Mulanje cedar) and its associated species through various research ideas you made during those passionate and educative discussions. You offered your technical skills, to bring in what you considered the best thing to do in developing or improving how we manage our data. Wow! You also offered your individual selves by enduring those hardships when we could not help it - you made it to the mountain, defying the forces of gravity; and yet when you made it, you said 'yes, I have made it!' Indeed, left your dear ones back home and exposed yourselves to the wilderness! I thank you all for these wonderful gifts you have made to nature conservation.

As I write you this letter, the Mount Mulanje Ecological Monitoring programme clocks four years since its inauguration. It could not have been possible to achieve what we have achieved today if it were not for the generous financial and material contribution made by the Earthwatch Institute (Europe) for the past three years - 2007 - 2009. We tried it in 2006 by ourselves and the load was too heavy to bear by ourselves. With the Earthwatch support, and with your personal commitments and contributions, ladies and your gentlemen, today we are a winning team!

Allow me to share with you a few highlights of the expeditions.

Capacity Building: One of the key elements of the programme was capacity building from both sides of the equation - yours and ours. I am pleased to inform you that I feel our capacity in within the Mulanje Mountain Conservation Trust has been built because you provided us with some informal training on some aspects. You did not just come in to implement a blue-print but you suggested some changes in the way in which we gathered our data. You went a mile further to suggest new research areas which today we are just about to embark on. You also assisted with the creation and establishment of our computerised data-base system which we are now very much proud of. Our staff have learnt a great deal from you colleagues, sometimes we felt challenged on our own thing. You were good trainers in your own individual rights.

Products from the EMP & Lessons Learnt: Your coming and participating in our programme has contributed to two research papers that are currently being reviewed and will be published in referenced international journals. We have been able to produce a technical report that has been sent to our Research Sub-committee of the Mulanje Mountain Forest Reserve and the Department of Forestry. The technical report shows trends that have taken place over time which require management decision in the way we should manage the forest reserve. The catalogue of research topics you suggested during your visit has received a lot of interest and is included in our Research Plan for the MMFR. The newly created Data-Base is a new product on the block and our Board of Directors are proud of it.

Bonus Benefits: I and my colleagues are proud members of a global family of the mother Earthwatch. I feel honoured because now I can boast of a big family and I am therefore comfortable to travel to every corner of the globe, there I will find my brothers and sisters, aunts and cousins waiting for me at the airport. Perhaps this is one thing that will not diminish in my whole life.

Ladies and your Gentlemen, you were a wonderful lot. Let us build a beautiful and prosperous family of Earthwatch and continue to be a winning team.

I love you all and wish you well in the noble task of protecting biodiversity, nature and the environment.

Sincerely,

David Nangoma

SECTION ONE

Top highlight from the past field season

The creation and establishment of the Mount Mulanje Ecological Monitoring Programme Data-Base is what I would mention as the top-most significant highlight of the fielding season (2009). This was with courtesy of the team from British American Tobacco (BAT) . They started by asking what I felt was an unreasonable question: 'how do you keep your data?'. In response I said 'in Excel spreadsheets'. "How", came another question - this time I started feeling challenged. I explained 'we do not have a proper data-base in place yet, but we are supposed to create one'. A very stupid response, I can say, but as it turned out, these honourable ladies with their gentlemen went and discussed, hatched out a plan and Lo! The following morning they came up with another set of questions and finally a suggestion which I readily accepted. One question I asked myself though was: "how can managers and manageress' create a data-base for a purely ecological research program?" They went ahead, suggested going out and capture more plant specimen pictures and so on and so forth. Every member of the team went berserk doing what they knew best. They kept referring back to me of what I wanted to include in the data-base. The original programme had a task for the mountain but that did not happen. Instead, they opted to go to the mountain just for the experience - of course they enjoyed it fully. By the 12th day of the expedition, they invited me to the demo. Wow! It was fantastic. I am now busy with populating (as the language goes) the data-base.

Non-technical overview of results

Mount Mulanje is an important mountain ecosystem in this part of the world inhabiting more than 70 endemic plant species and hundreds of endemic fauna - birds, reptiles, butterflies, dragonflies, and many others. The ecosystem is under immense anthropogenic pressure through land encroachment, unsustainable resource harvesting and other factors such as wild fires, invasive alien species and of course climate change. Because of the complexity of factors impacting on the health status of the ecosystem and the fact that there appears to be more, we as managers of the reserve, do not as yet know, we believe the implementation of the Ecological Monitoring Programme remains the best option to ensure the integrity of the ecosystem is restored and maintained. From what we have learnt over the past four years,

success stories can be registered if more research is put into the understanding of the soil characteristics and ecology of the *Widdringtonia whytei*. Already, this is coming into effect with the involvement of the Royal Botanical Gardens in a partnership with Mulanje Mountain Conservation Trust (MMCT) to fully research on this very important tree species. There is scope for a much bigger challenge in the protection and restoration of the Miombo Woodlands because of the increased demand for bio-fuel. The results from the research and monitoring have already been used to engage the wider stakeholders in terms of changing a management regime, and a proposal for the implementation of a Private-Public Partnership (PPP) management arrangement is on the table for discussion.

It must be mentioned, the Mount Mulanje is one of the very few remaining prime forests in Malawi and the rarity and endemic nature of the biota in this reserve cannot be left to disappear, hence the reason for its designation as a Biosphere Reserve. It is therefore a global responsibility to champion its protection from the many vices facing it.

Climate change has hit the globe and does not spare any ecosystem and its inhabitants. Mount Mulanje is bound to be affected by the effects of climate change, and yet, we know very little about this phenomenon. Our Research Plan for the Mulanje Mountain Forest Reserve (MMFR) recognizes this fact and we are working towards mainstreaming climate change issues in our monitoring activities -a direction we want to take very seriously.

Acknowledgements

We would like to sincerely thank the Earthwatch Institute for the generous financial, moral and material support which has enabled us to implement this very important programme of monitoring the ecosystem of Mount Mulanje. Through the Earthwatch Institute, we would like to also convey our gratitude to the British American Tobacco (BAT) for financing our cause and even sending us their valuable human resource to come and assist with our data collection. We like to thank all Earthwatch Fellows, each one of them individually for the interest they took to choose the Mount Mulanje Ecological Monitoring project and make their personal contributions during their presence. Sincere thanks also should go to the institutions and their managers who allowed the Fellows to travel to Malawi - we want them to feel they have made a great contribution to this global noble cause. We would be failing our duty if we failed to recognize the individual staff members' contributions from the Earthwatch Institute in Oxford for ably facilitating all the Volunteer recruitments, briefing and travel arrangements and all the communication that went through and for the support they rendered when we fell into trouble. The staff include Ms Debbie Winton, Ms. Emma Sharp, Ms. Jen Alger, Ms. Sarah Staunton Lamb and Ms. Hannah Rooley; there are many others that I could mention here. I would like to thank both my Co-PI's, Prof. Cornell Dudley and Mr. Tembo Chanyenga and the Executive Director for MMCT, Mr Carl Bruessow for standing by my side in all that was happening before, during and after every expedition. Our local staff, Jeffrey Juwawo and Hassam Patel deserve special thanks for being there always with the fellows and for all their kind assistance through and through. The accountant, Mr. Laston Mbemba kept safe our kitty and assisted with all banking requirements to whom are many thanks.

SECTION TWO

1. REPORTING ON RESEARCH OBJECTIVES

Objective 1

To identify and monitor the status of Mt. Mulanje's biodiversity and the health of its ecosystem

Progress report on objective 1

This objective has been adequately fulfilled especially with respect to monitoring the Miombo woodland resource utilization versus their conservation status, the Mulanje cedar (*Widdringtonia whytei*) regeneration, both natural and artificial and the grasslands biodiversity studies. A full technical report is being finalised and this will be made available in due course. In each case of the monitoring components, recommendations for improved management, lessons learnt and impacts as well as research options are highlighted. The coming 2010 brings in more research scientists from the Royal Botanical Gardens (Kew) to team up with Malawian counterparts to carry out a robust study on the Mulanje Cedar (*Widdringtonia whytei*) ecology.

Our monitoring has brought in research expertise from across the globe, courtesy of the Earthwatch Institute. From the interaction we have had with these researchers, we have not only built personal relationships but also institutional collaboration. Locally, we have developed a Research Plan for the Mulanje Mountain Forest Reserve with full involvement and driven by such institutions as the National Herbarium and Botanic Gardens, the Forestry Research Institute of Malawi, The University of Malawi, the National Museums of Malawi, the Catholic University in Malawi, and the World Fish Centre.

Our monitoring is also making input into the State of the Environment Reporting of the district assemblies of Mulanje and Phalombe.

Objective 2

To reduce the respective threats to the range of natural habitat types

Progress report on objective 2

The rapid human population increase and the attendant many needs and wants by the people pose a big challenge to the conservation of Mount Mulanje. Resource harvesting not only forms part of the people's livelihoods but also has become an economic good. Reducing or stopping forest encroachment will ensure some forest habitats are protected. The rapid infestation of invasive alien species needs to be addressed as well. Although these have not been an integral part of the Ecological Monitoring Programme (EMP), programme implementation to address these issues has become a default result of the EMP exercises. For instance, the development and implementation of the Chisongole Watershed Management Project was a direct result of monitoring the ecosystem health of the Chisongole Forest (the mid-altitude forest where an EMP plot is situated). Now communities have become an integral part in the management of this forest patch where in turn, they are able to harvest water for irrigation and fish farming.

We have tried to bring in replanting programmes in invasive species eradicated areas such as the Chambe and Sombani Basins. Whilst our efforts have not paid off on the Sombani Basin, there are good and positive lessons coming from the Chambe Basin. We are now repopulating other areas with the endemic Mulanje Cedar (*Widdringtonia whytei*). This is a positive result emanating from the EMP process.

Monitoring in the Miombo Woodlands has highlighted a greater potential threat especially in view of the unavailability of alternative income generating options to the rural masses. It has also given insights to what needs to be done (best practice) for the management of the reserve. The technical report currently being prepared, coupled with many shared notes to the department of Forestry will assist in the development of an appropriate management structure for the entire forest. Whilst co-management with communities can be an option, this may not entirely be relied upon, hence our proposal to institute Private-Public Partnership type of management.

2. PARTNERSHIPS

The successful implementation of the Mount Mulanje Ecological Monitoring Programme has been made through the generous support of the Earthwatch Institute - this is a given fact. We have said a lot already about this. However, local institutions have greatly supported us.

The Forestry Research Institute of Malawi (FRIM) through Mr. Tembo Chanyenga has contributed very significantly to the project. Besides being Co-PI to the project, he is undertaking a PhD studentship research which is coupling results of our study on Mulanje cedar. He has been instrumental in the compilation of the research papers we are preparing to publish in referenced journals. The need to address some of the findings has led to the establishment of a Research Sub-committee within the Management Board of the MMCT. The Sub-committee has drawn membership from the Forestry Research Institute of Malawi (FRIM); The Centre for Social Research (CSR); the University of Malawi (Biology and Geography Department), the National Research Council of Malawi, the Department of National Parks and Wildlife and the African Parks Majete. This sub-committee is mandated to look after all the affairs of research and monitoring for the MMFR, receives, vets and approves research proposals for funding (from a small research grant within MMCT). In addition, institutional arrangements are under way to go into the research of the *Widdringtonia whytei* and this brings expertise from the Royal Botanic Gardens (Kew) and Instituto-de-Reserch in Mozambique - one such individual was a research fellow on one of our expedition this year.

3. PROJECT DEVELOPMENT

N/A

4. DISSEMINATION

Printed:

Nangoma, D., Chanyenga, T., and Dudley, . (2009) Tree Species Diversity and Structure of the Miombo Woodlands of the Mount Mulanje Forest Reserve (under review)

Nangoma, D., "Trends in the Ecological Monitoring of the Mount Mulanje"

Several other publications are being worked on.

Digital:

The Mount Mulanje Ecological Monitoring Data Base (courtesy of Messrs Wekesi, Obagbemi and Bululu and Ms. Kanchan Kakkar and Irene Jiang). The database is currently being populated and will be uploaded on our website <http://www.mountmulanje.org>

We have highlighted Earthwatch activities in our Sapitwa e-newsletter and Sapitwa Newsletter; and also conducted radio interviews specifically on Earthwatch activities.

5. CAPACITY DEVELOPMENT AND EDUCATION

Two partner organizations employees have benefited from our collaboration with the Earthwatch Institute where two young up-coming scientists have gone for formal training at the Royal Botanic Gardens and to an EarthWatch Expedition in Samburu - Kenya. These two, Steven Mphamba and Ulemu Sitaubi have benefited personally as well as their institutions. Today, their capacities to improve on service delivery have been enhanced.

6.1. CONTRIBUTIONS TO INTERNATIONAL CONVENTIONS, AGENDAS, POLICIES, MANAGEMENT PLANS

We ascribe to the tenets of the Convention on Biological Diversity. More particularly, Identification and Monitoring (Article 7 of the CBD), Research and training (Article 12 of the CBD), Article 10 and 15 on Access and Benefit Sharing (ABS) and Article 8h on Invasive Alien Species (IAS). By implementing our programmes, we are contributing towards the needs and aspirations of the CBD and many other related conventions. Whatever we do in our EMP is going to influence our management interventions and indeed MMFR Management Plan. We are going to advocate implementation of the PPP for the MMFR.

6.2. CONTRIBUTIONS TO LOCAL, NATIONAL AND REGIONAL CONVENTIONS, AGENDAS, POLICIES, MANAGEMENT PLANS

N/A

7. ACTIONS OR ACTIVITIES THAT ENHANCE NATURAL AND SOCIAL CAPITAL

Not done but in pipeline. Largely, it will be to do with Land and water protection and community awareness.

Earthwatch Volunteers have assisted with economic evaluation of some of our programmes, especially the socio-economic programmes. They have assisted communities with the calculation of Profit-Margin analysis and marketing.

8. LONG TERM IMPACT OF PROJECT

Taxa of conservation significance enhanced, restored or maintained

Widdringtonia whytei (commonly known as the Mulanje cedar) is an endemic tree species on Mount Mulanje. It is regarded as Malawi's National Tree designated as such in 1984 by Late Dr. Hastings Kamuzu Banda (Malawi's First President). It is an important tree that produces aromatic, termite attack and mould resistant semi-softwood timber. It is highly sought after because it fetches highly on the international market. Unfortunately, illegal harvesting and aphid attack threaten its survival. It is listed as a Mulanje endemic. Previously, the tree was harvested to provide construction timber to the nearby urban centre of Blantyre, but with increased awareness about its unique qualities, the tree has become highly sought after, posing threat to its very survival and existence. Research has indicated that the tree population has receded over the past forty years from a total 208 ha to current 80ha. This is a great loss to our natural heritage. We have now embarked on massive artificial as well as natural regeneration promotion campaign for the tree right across the mountain. We are also planning to research more on the silviculture and ecological needs of the tree with our collaborators - see above.

Livelihoods enhanced, restored or maintained

The Chisongole Watershed Management Project is one initiative that has been born out of our EMP. Communities are now deriving the benefits of protecting the water catchment through, among other things, irrigation projects, fish farming and general access to potable water in over 800 households in TA Njema in Mulanje District.