

Structural and floristic comparison between the rainforest of the Masoala National Park, Madagascar, and Mt. Kupe region, Cameroon

by Johnny Rabenantoandro who participated in the Cameroon's Rain Forest's Project from 7-21 December 1999.

Separated from Gondwana since the Mesozoic, the island of Madagascar is known as one of the world's biodiversity centres. More than 80% of its fauna and flora are endemics. Located in the north east of the island, Masoala National Park belongs to the humid bioclimatic zone with lowland evergreen rain forest as its principal climax vegetation. Floristically, this region is characterised by the high rate of endemism, as 97% of trees with dbh ≥ 10 cm in plots and 87% of herbaceous species are Malagasy endemics.

West Cameroon is considered the most species diverse area for plants in tropical Africa. The Mt. Kupe region is located in the south west side of Cameroon and has a main climax vegetation of lowland evergreen rain forest. Since 1995, the Royal Botanical Gardens, Kew, in conjunction with the National Herbarium of Cameroon has been undertaking detailed botanical inventories of the area.

In December 1999, I assisted in a botanical inventory of the Mt. Kupe region as a member of an Earthwatch African Fellowship team. This provided me with an opportunity to compare the structure and flora of the forest at this site with that of Masoala where I had previously worked as field botanist with Missouri Botanical Garden.

Both Masoala and the Mt Kupe region are characterised by low abundance of really big trees (i.e with dbh ≥ 50 cm) and high

abundance of trees with smaller trunks. This probably relates to the topography at both sites which is dominated by steep slopes that prevent the development of a deep soil. This hypothesis is supported by the abundance at both sites of trees with special adaptations to improve their implantation such as stilt roots, buttress roots and columnar roots. However, compared to Masoala, Kupe has more trees higher than 30m. At both sites increasing altitude results in a reduction in the canopy height (to 10- 20m or even lower on exposed ridges).



Plant collecting in Cameroon

There are many differences in the floristic composition of the two sites. At Masoala the canopy is dominated by the families of Burseraceae, Elaeocarpaceae and Cunoniaceae, whereas at Kupe, Fabaceae, Sapotaceae, Meliaceae, Clusiaceae dominate. However, trees of the genus *Uapaca* (Euphorbiaceae) are abundant in the canopy of both sites. At Masoala the shrub layer is dominated by Rubiaceae (e.g. the genera *Psychotria*, *Canthium*, *Coffea*, *Gaertnera*). Likewise, on Mt Kupe this layer is dominated by Rubiaceae but also many Sterculiaceae. There are many genera (e.g. *Mammea*, *Dracaena*, *Ficus*, *Diospyro*) and even some species (e.g. *Rauwolfia madagascariensis*, *Trilepisium madagascariensis*..) that are common to both places.

The main threat to the forest at both sites is human pressure, particularly deforestation to clear land for agriculture. The biggest task for conservationists at both sites is to educate politicians and land managers of the economic importance of forests in protecting watersheds and conserving water sources.

The exercise of comparing forests in quite different parts of the world can be highly enlightening by enabling researchers to see their familiar sites of study in a new light. The forests of Masoala National Park and Mt Kupe are particularly suitable for such exchanges because both sites are the focus of intensive inventory and taxonomic studies. In addition, exchange between Masoala and Mt Kupe may promote a deeper understanding of the relationship between the Malagasy flora and the mother island of Africa.

ALUMNI UPDATE:

NETWORK REGISTRATION – SECOND REQUEST

All Fellows are requested to register their details. We are keen to develop an active and far-reaching network of African conservation professionals. Please send your name, address, tel, fax, email, job title and organisation to : network@earthwatch.org.uk

REQUEST FOR ALUMNI MEMBERS ACHIEVEMENTS UPDATE:

Please let us know your post Fellowship whereabouts. What have you been doing since your Fellowship? Tell us about your organisation, job, responsibilities and any other achievements. We plan to include Alumni updates on Fellows in the next issue of the Newsletter.

Also in Africa

- In April 2001, Earthwatch received a prestigious Darwin Initiative Grant of £153,000 to support our South African Penguin Project. This project is a partnership between Earthwatch, the University of Bristol and the University of Cape Town. The African Programme is responsible for co-ordinating this grant.
- Following Earthwatch's Hippo Sanctuary Appeal in April, in which the BBC made a short film, £2,550 was raised. These funds will go to the Ghanaian Nature Conservation Research Centre and will be used to help the local people of Wechiau manage the rich biological diversity in their Hippo Sanctuary.



Earthwatch Institute (Europe) is the European Office of Earthwatch Institute, which is based in the USA and was founded in Boston in 1971. Earthwatch Institute has other Affiliate Offices in Australia and Japan. Earthwatch Institute (Europe) was registered as a UK charity in 1985 (number 327017) and opened its Oxford office in 1990.

African Programme
Earthwatch Europe
57 Woodstock Road
Oxford OX2 6HJ
Tel: +44 (0)1865 318825
Fax: +44 (0)1865 311383
Email: network@earthwatch.org.uk

Registered charity 327017

www.earthwatch.org/europe/fellowships/africa.html





INVESTOR IN PEOPLE



Earthwatch's African Fellowship Programme provides practical training placements, on ongoing field research projects, to African conservation professionals.

Issue 6 2002

www.earthwatch.org/europe/fellowships/africa.html

Dear Fellow,

Welcome to the sixth Newsletter!

In this edition, we start with a short report on the Fon of Kom receiving his copy of The Plants of Mount Oku and Ijim Ridge Conservation Checklist, Cameroon, to which so many past African Fellows have contributed.

We then focus on the Tanzanian Forest Birds Project. The Principle Investigator, Dr Bill Newmark, provides a summary of the project, supported by experiences from past Fellows. Also included is an article from Johny Rabenantoandro, comparing Cameroon forests to forests in Masoala National Park in Madagascar.

By March 2002, Earthwatch's African Fellowship Programme had provided 589 African Fellowships! This is a significant number, and we are proud of the contribution the Programme has made to the training and development of African conservation professionals.

Arranging Fellow's travel to projects in other African countries can be quite a challenge, and we are particularly pleased to have arranged for Mr Abu Conteh from Sierra Leone to participate in the Tanzania Forest Bird Project. This necessitated over 100 electronic exchanges of contact!

Thank you to all those Fellows who responded to our last Newsletter and registered on our Alumni Network. To all past Fellows who have not yet contacted us, we encourage you to do so. Details of funding opportunities for further training open to African Nationals are currently available on our e-mail Alumni Network (network@earthwatch.org.uk). Please contact us through the Network if you would like such information.

We are always keen to know of your whereabouts and conservation work. Conservation is a small world – perhaps you've met or contacted other Earthwatch Fellows to exchange news or discuss issues. Perhaps your Earthwatch experience has helped you gain a new opportunity. If so, we would love to hear about it!

Robert Llewellyn-Smith
African Programme Manager



Ben Pollard/RBG Kew

Fon of Kom

Cameroon's Rainforest Checklists

Books for Kings

Data repatriation of a different kind

by Benedict John Pollard, Western Cameroon Darwin Initiative Officer, Royal Botanic Gardens, Kew, UK

His Paramount Highness Fon Vincent Yuh II, Fon (King) of Kom, holds a copy of 'The Plants of Mount Oku and the Ijim Ridge, Cameroon – A Conservation Checklist'. As co-author and Earthwatch Principle Investigator, I fulfilled a promise to return with results of five years research on the Ijim Ridge plants. The Fon is a great supporter of our inventory and conservation work, providing housing for two teams at his palace in 1998 and 1999. The Checklist gives the status of the different plants and the various habitats containing them which will assist local communities in establishing community forests and preparing necessary management plans.

I am delighted to be leading another team (April 2002) at Laikom to search for 'dry-season' species not yet studied by us and to monitor populations of Red Data species, in collaboration with the Kilum Ijim Forest Project (BirdLife International). Thank you to the twenty one Fellows, mentioned below, who joined us in the lands of the Kom, thus contributing to this research.

16-27 November 1996

Cecilia Maliwichi
Dickson Kamundi
Richard Duan Nsenkyire
Owusu-Agyei
Senanelo Moyo
Benjamin Manyuchi
Eyassu Baedemariam
Gashu Samson
Afework Abebe

1-15 December 1998

Gabriel Albano
Edson Konde
Veronica Muiruri
Jane Mukunya
Patrick Mucunguzi
Alfred Maroyi
Byamukama Biryahwaho

1-16 November 1999

Anthony Kimaro
Kambale Kioma
Kalindula Musavuli
John Amponsah
Maryam Abdul-lah

Tell me something and I'll forget it;
Show me something and I'll remember it;
Let me do something and I'll understand it.



Supported by:
British American Tobacco p.l.c
Rio Tinto plc
UBS Warburg
HSBC Holdings plc



Tanzanian Forest Birds Project

Since 1996, more than 50 African Fellows from 11 countries have assisted the Tanzanian Forest Birds Project. Earthwatch is supporting Dr William Newmark in monitoring rainforest bird populations to determine the impact of rain forest fragmentation.

by Dr William Newmark, Conservation Biologist, Utah Museum of Natural History



R. Reeve-Johnson/Earthwatch

Bill Newmark demonstrates correct handling of birds

Background

The Eastern Arc Mountains in eastern Tanzania and Kenya contain the majority of moist tropical forests in East Africa and harbor unusual concentrations of globally threatened and endemic species. Unfortunately, nearly three-quarters of the original forest in the Eastern Arc Mountains has been lost. As a result of past forest loss, the current threats facing these forests, and the very high numbers of endemic plants and animal species, the Eastern Arc and adjacent coastal forests have been designated as one of the 17 most threatened tropical ecosystems or biodiversity "hotspots" worldwide.

Research Focus

Understanding the impact of tropical forest fragmentation and loss on biodiversity is essential to developing conservation strategies for the Eastern Arc forests. Since 1987, I have been studying the primary and secondary impacts of forest fragmentation and loss on understory birds in the East and West Usambara Mountains. Earthwatch African Fellows and volunteers, and other researchers have been helping me to examine:

- the metapopulation dynamics of understory bird communities across two networks of forest fragments in the East and West Usambara Mountains;
- understory bird species survivorship in two networks of forest fragments;
- how temperature, vapour pressure deficit, luminescence, and vegetation structure vary along forest edge to interior and across disturbance gradients, and influence of these parameters on the distribution of understory bird species;
- the impact of forest disturbance upon understory bird communities;
- the long-term population dynamics of understory birds species.

Findings

Some of the principal research findings are as follows:

- more than three quarters of the original 20,300 km² of natural forest has been lost with most fragments being small – median forest patch size is 11.5 km² ;
- immediate threats to biodiversity are deforestation, forest fragmentation, over-exploitation of species, exotic invasions and fire spreading from adjacent agricultural lands;
- montane bird species richness is positively correlated with closed forest area while the number of endemic bird species is positively correlated with precipitation;
- the number of plant and bird species as well as the number of endemic plant species are highest at mid-elevation and decline at lower and higher elevations;
- reducing human pressures on remaining natural forest is essential through improving agricultural practices and expanding fuelwood and hardwood plantations;
- upgrading management capacity of local protected area institutions will assist in conflict resolution;
- remaining non-protected forest on public lands should be given protected area status;
- wildlife corridors should be established between largest remaining forest fragments.



R. Reeve-Johnson/Earthwatch

Erecting mist nets

Conclusion

In addition to the "hands on" experience that the African Fellows have gained from the project, another very important benefit of participation in the Tanzanian Forest Birds Project has been the opportunity to meet and work with other professional natural resource managers and scientists. A common theme in much of the discussion is the commonality of problems facing natural resource professionals world wide.

Given the commitment and hard work that the African Fellows have displayed, I am confident they will assume leadership roles in their home countries. Thank you to all the Fellows for their contribution to my research.

My Experience

By Nickson Otiemo, Biologist and Education Officer, Elsamere Field Study Centre, Kenya who joined a team of African conservationists and researchers on the Tanzania Forest Birds Project

As a nominee of Dr Rosie Trevelyan, the Director of the Tropical Biology Association following my attendance of the TBA field course at Naivasha, Kenya in July 2000, I was part of Team Two of the Earthwatch African Fellowship Programme which worked on the Tanzanian Forest Bird Project from 3rd to 18th September 2001.

The East and West Usambaras form part of a larger range extending from south east Kenya to Eastern Tanzania, called the East Arc Mountains, recently declared as one of the 17 globally most threatened tropical forest ecosystems. Fellows travelled by air and by 5pm on 2/9/2001, everyone had arrived at the Dar es Salaam international airport. We were welcomed at the Palm Beach Hotel rendezvous by Robynne Reeve-Johnson (the African Programme Officer at Earthwatch Europe). The PI, Dr William Newmark, arrived at 7pm and gave an elaborate briefing about the project as we waited for dinner, and Fellows asked lots of questions.

The following morning we all set off for Abangulu forest camp in the project site to begin work for the next 16 days during which Fellows had the chance to learn several highly valuable and applicable scientific research methodologies related mainly to forest bird research but relevant to many other diverse disciplines. These included:

1. mist-netting and bird banding for population dynamics determination
2. radio telemetry
3. mapping forest boundaries using GPS
4. sampling leaf litter invertebrates
5. sampling aerial and vegetation insects using sweep nets
6. determining micro-climatic parameters
7. conducting vegetation surveys
8. data entry into a computer database.

All this in two weeks! I clearly was lucky.

Earthwatch supports a wide range of field research projects and we are particularly keen to support African research scientists. If you would like information about Earthwatch research grants for your own project please contact us.



R. Reeve-Johnson/Earthwatch

Radio telemetry training

As a result of mist-netting and ringing lessons, I am now a member of the Nairobi Ringing Group and a research intern at the Department of Ornithology at the National Museums of Kenya. Due to the Fellowship too, I have been invited by Dr. David Harper an Earthwatch PI at Lake Naivasha to join Earthwatch expeditions and help with scientific work in March, 2002.

Since my return from Tanzania, my work at the Elsamere Field Study Centre in Kenya has been much easier. I now can easily support my lectures with demonstrations to visiting groups and include concrete small scale scientific data especially in relation to habitat disturbance by man.

The Earthwatch Fellowship is without doubt one of the very best things that ever happened to me as it has kind of shoved me along the path of my career in conservation. It gave me the chance to meet and work with fellow conservationists from across Africa and to exchange ideas with them. Tanzanians are so remarkably friendly, helpful and hospitable that



R. Reeve-Johnson/Earthwatch

Leaf litter invertebrate samples

I did not have to worry about my security on the streets.

Another major highlight was our visit to the Abangulu Club with Dr. Newmark on our off day. It was such a welcome break from work. The food by field standards was quite nice and accommodation arrangements at Panori and Palm Beach Hotels before and after the project was fantastic. The PI gave lots of challenging lectures and put no barrier between him and us while the field assistants were excellently selected, time conscious and friendly.

The Earthwatch Fellowship, I dare repeat, is the best thing I ever went through. I can't possibly say enough thanks to Earthwatch and to Dr. Rosie Trevelyan of the TBA for making it all possible.

Impressions from Tanzania

Earthwatch funded a team of 8 Fellows from 7 countries to receive training in monitoring rainforest bird populations to determine the impact of forest fragmentation. Some of their impressions are given below:

Vololontiana Razafindratsita is a technical adviser for the Institute for the Conservation of Tropical Environments in Madagascar and works in ecological monitoring. Vololontiana wrote that she 'learned new methods such as radio telemetry for studying bird's behaviour' She also reported that 'being part of this programme has taught me about designing a long term study which is very important in my work'.

Anthony Mapaura, research technician at Zimbabwe's National Herbarium and Botanic Garden reported that "most of the procedures and techniques carried out in the field were new to me and will definitely help my institute and myself in the environmental conservation education programme".



R. Reeve-Johnson/Earthwatch

Vololontiana Razafindratsita from Madagascar holding a forest bird

Thomas Otim, education and information manager at Uganda Wildlife Education Centre reported that "I have gained a lot of experience in field techniques in sampling bird populations and other environmental parameters that are useful in population study. The experience gained will be shared with colleagues working for Nature Uganda who is a BirdLife partner in monitoring waterbird populations in Uganda".

Jacky Ralaivony, a Programme Assistant for Conservation and Reforestation in Madagascar reported "from the field training, I have gained more experience in field techniques and in radio tracking. I will share the experience gained with my colleagues to improve our overall research techniques in the conservation of biodiversity in Madagascar".



R. Reeve-Johnson/Earthwatch

Team Two - Tanzania Forest Birds

Recently published...

Further information on biodiversity conservation in Tanzania's Eastern Arc Mountains can be gained from:

Newmark., W.D (2002). Conserving Biodiversity in East African Forests: a Study of the Eastern Arc Mountains. Ecological Studies, Vol. 155, Springer-Verlag Berlin Heidelberg.

The website providing further information on this publication is:
<http://www.springer.de>