

INTERNATIONAL BIODIVERSITY ACTION DAY 2010 IN CAMEROON

Field Study Visit to the Limbe Botanical Garden and the Bakingili Community Forest 12 May 2010

THEME: BIODIVERSITY AND DEVELOPMENT.

Brief Report on Field Study Visits presented by Thomas Fofung Tata, PhD and Peter Schauerte.

1. INTRODUCTION

The Bakingili Community Forest (BCF) covers a total area of 922ha. On the occasion of the International Biodiversity Day celebrated in Cameroon, participants drawn from Government Services at the National, Regional and Divisional Services, Council Authorities, Civil Society/NGOs, the Private Sector and Local Communities including the Press and national taxonomy experts, made an observation/study field visit to the Limbe Botanical Garden and to one segment covering 122 ha of the BCF.

At the Limbe Botanic Garden, participants went round individually and some in groups looking at the varied flora/botanic species of the garden. After that, they all gathered in one spot where the Conservator of the Garden addressed them on the history and flora diversity of the Garden.

From the Limbe Botanic Garden, participants moved to Bakingili at the foot of Mount Cameroon where they were met by the Mayor of Idenau Council and the Regent Chief of Bakingili. After a brief official welcome by the Mayor and Chief, participant moved to the Bakingili Community Forest (BCF). The starting point of the field visit was a location – a seemingly fallowed farmland (a type of buffer zone) between the CDC oil palm plantation and the BCF. At the starting point, participants were briefed on the objectives of the field visit – to observe, describe, and discuss the biodiversity of the section of the BCF through which they had to walk in terms of habitat types, species, socioeconomic uses, impacts and threats on biodiversity, etc. Participants were divided into nine groups based on specific subject matter that included trees, shrubs, snails, ants, butterflies, reptiles/amphibians, birds, Non Timber Forest Products etc., and each group was lead by a specialist on the subject matter. After the briefing the nine groups moved into the BCF through different directions.

At the end of more than two hours of field study visits into the BCF participants returned and converged at the same spot from where they had taken-off for the visit. This was time to discuss their experiences and findings in the BCF. Each expert briefed the participants on the findings of their group, followed by questions and discussions. A summary of the findings as reported by the experts is presented in the sections that follow.

2. ECOLOGY

The Bakingili Community Forest (BCF) is a type a montane ecosystem that has suffered degradation. The area of the BCF can be divided into four ecological zones, namely:

- i) The CDC Oil Palm plantation zone which extends on a gentle slope about one kilometre from the coastal Limbe-Idenau road towards the slopes of Mount Cameroon where the starting point of the field visit is located. The oil palm trees of the plantation are about two years old and the under-growth is characterised by “cover crop species” (*Eupatorium* sp., *Costus* sp., *Pteridium* sp.) that fertilise the soil and reduce weeds invasion – thus reducing costs of human labour for clearing within the plantation.
- ii) A seemingly fallowed farmland that starts from a gentle slope suddenly rising towards a secondary forest area. Noted in this zone are dispersed cassava and plantain crops, as well as various shrubs and herbs species (*Euphorbia* sp., *Ficus* sp., *Asphilia* sp., *Musanga* sp).
- iii) A Transition Belt characterized by degraded secondary forest and long abandoned farmland (since the time of German colonialization in the 1900’s). Various tree species (*Pycnanthus angolensis*, *Alstonia congensis*, *Sterculia* sp.) become progressively abundant and the area is characterized by typical forest undergrowth (*Barteria fistulosa*, *Leea guinensis*, and some ferns) as the ascent up the mountain increases.
- iv) High Forest Belt as the ascent ended at a ridge which was the highest point of the visit. This zone is characterized by high forest tree species (up to 60 meters) with closed canopy that have little undergrowth and forest floor dominated by leaf litter – here little sunlight reached the forest floor and this zone is the least disturbed by human activities.

3. FLORA

A During a survey in 1998 botanists found and identified 2435 different specis of plants, underlining the spectacular biodiversity in the region. During this field trip a total of 12 species belonging to 10 families were identified in the high forest belt, some of which providing interesting ecosystem services. *Leea guinensis* for example is used in the traditional medicine to treat cardiovascular problems. *Costus afer* or Spiral Ginger can be eaten when sucked like sugar cane. The native umbrella tree (*Musanga cecropioides*), important for providing shade, fuel wood and habitat for native insect species, was found to be threatened by the invasive species *Cecropia peltata*. The dried root of *Rauvolfia vomitaria* showed antipsychotic effects with minimal side effects in clinical studies. The boiled leaves of *Piper umbellatum* are being used as painkillers and demonstrated inhibitory abilities against toxic activities in clinical studies. One of the most stunning experiences for the participants was the discovery of a liana or water-vine (*Landolphia* sp.) which provided fresh and well tasting drinking water running out of its stem when being cut. Apart from these, the high forest belt is especially rich in timber tree species (Sapelli, Iroko, Bubinga, Bilinga, Ilomba etc.). The timber sector accounts for 40% of all exports from Cameroon and thus has a significant economic impact. The grass species *Afromomum* sp., which is constitutes a major part of elephant diet in the Mount Cameroon area, was also found.

4. MAMMALS

The Mount Cameroon region is well known for its highly diverse mammalian fauna (Black Colobus Monkey, Drill, Preuss's Monkey, Red-eared Nose-spotted monkey, Cameroon Soft-furred Mouse, Arrogant Shrew, Cameroon Climbing Mouse etc.) with a good number being endemic to the region. During the field trip not a single mammal could be spotted which might partly be due to the noise of our big group. But it appears, since mammals are especially vulnerable to habitat degradation and destruction, that the real degree of degradation was displayed by the absence of mammals. Intense anthropogenic activities lead to migration of mammals to undisturbed forest areas and thus exclude ecosystem services like bush meat hunting. Furthermore, there are certain plant species which depend on the presence of certain mammals for seed dispersal. The Makore tree for example does not only depend on the seed dispersal by elephants but the seeds will never germinate if they did not pass through the elephants guts. This tree is facing its extinction due to the absence of elephants in most parts of the country. If one part of such a symbiosis is being removed by human activities, the other part can no longer survive on its own. Even indirect observation (tracks, feeding traces and feces) could not reveal the presence of mammals in the BCF, again underlining the high degree of degradation in the area.

5. BIRDS, MOTHS/BUTTERFLIES

Recent studies have revealed a 60% reduction in bird species and family richness from conversion of forest into plantations, with species of restricted range and high conservation status being replaced by those with extensive ranges and low conservation status. The visited ecosystem is under high pressure from agricultural encroachment, notably from the creation of plantations by CDC and the community forest is aiming at reducing this pressure.

The Mount Cameroon ecosystem is particularly rich in birds biodiversity with about 370 species recorded. Two of these are endemic to the region such as the Mount Cameroon Francolin (*Francolinus camerunensis*) and the Mount Cameroon Speirops (*Speirops melanocephalus*). The loss of this mountain ecosystem will lead to the loss of these two species on the entire planet. Since observing birds with a big group is difficult and the time of the field visit around noon was resting time for many species, a total of "only" 25 species was identified. Amongst them were spectacular tropical birds like the Pied Hornbill, the Village Weaver, the Cameroon Sunbird and the Palmnut Vulture, three raptors (Long Crested Eagle, African Harrier Hawk and the Black Kite which is under threat in its European populations), and songbirds like the Banded Prinia and the Chattering Cysticola. Generally, the observed birds belong to two major feeding guilds providing important ecosystem services: frugivores for plant propagation through seed dispersal and insectivores for pollination. The insectivores also fulfill important functions in regulating insect populations. A loss of these functions could lead to the proliferation of insects, some of which could be devastating to agriculture as pests or even dangerous to humans and domestic animals as vectors of diseases. Therefore every species counts and all efforts should be put in to ensure their conservation and the maintenance of a balance in the ecosystem.

There are butterfly and moths species found in the area, but their numbers have greatly reduced due to habitats loss that is attributed to chemicals being used by the CDC in the plantation.

6. Reptiles and Amphibians

The habitat examined appeared to be suitable for some tree-frog species of the genus *Phrynobatrachus* sp. or some snakes like the Gaboon Viper, Green Mamba and Cobra. During the field visit we were unfortunately unable to identify any reptiles or amphibians. We got a glimpse of one lizard which disappeared immediately in the dense undergrowth making identification impossible, thus renaming it was the only option we had: *Lizardus bakingilensis*. Due to the absence of streams or ponds it was stated that the sighting of numerous frog or chameleon species was unlikely anyways. It was also stated that good management and thus protection of the remaining forest area could nevertheless help to provide a habitat for decent population of reptiles and amphibians.

7. Moths and butterflies

Even though Cameroon is known as a country with high numbers of butterfly and moth species, only two species (one Pieridae and one Papilionidae) of butterflies could be found during our field visit. This alarmingly low diversity is most likely due to the extensive use of pesticides and herbicides in the plantations surrounding the BCF.

8. Ants

Opposing to most of the other taxa examined, the ants were quite abundant and the number of species found was relatively high. Within the family Formicidae (Ants), 6 sub-familys were identified, comprising 8 genus and 12 species (*Crematogaster* sp., *Polyrhachis militaris*, *Polyrhachis* sp., *Tetramorium aculeatum*, *Camponotus* sp., *Dorylus* sp., *Odontomachus* sp., *Pachycondyla tarsata*, *Tetraoponera* sp., *Tapinoma* sp., *Pheidole* sp.). Besides the impressive diversity we were also able to observe a symbiosis between one of the ant species (*Aphomomyrmex afer*) and a tree species (*Leonardoxa Africana*). The tree has specialized structures that shelter ants and thus provides the ants with nesting sites and food via production of extrafloral nectar. The workers of the ants patrol young leaves in order to protect their host against herbivorous insects, thus creating a mutual association between the plant and the ant colony.

9. Non Timber Forest Products

It was found that even a degraded forest like the BCF can still provide a good number of NTFP's but that further degradation is threatening these important ecosystem services for the local population. A total of 9 species could be identified of which 4 were edible species and 5 were medicinal plants. The edible species included *Myrianthus arboreus* (fruits), *Dacryodes edulis* or African Plum (fruits), *Piper guinensis* or bush pepper (fruits and leaves), and *Elacis guinensis* or Wild palm tree (fruits and wines). The medicinal species we found were *Fagara* sp. (tuberculosis), *Tabernaemontana* sp. (malaria), *Rauwolfia* sp. (Malaria), *Pycnanthus angolensis* (for women after birth), *Alstonia tongensis* (Malaria and to increase milproduction after birth).

10. CONCLUSIONS.

The degree of threats to the biodiversity of the BCF as a result of anthropogenic activities, let alone from natural disasters – especially volcanic eruptions, is obvious.

While natural disaster cannot be prevented, there is a need to conserve the ecosystems as well as to ensure rehabilitation of degraded biodiversity habitats of the BCF zone. It is paramount in view of the important services and functions provided by the ecosystems and their inhabitants for the benefit of the human community. In addition to that it should be mentioned that intact and diverse ecosystems show an elevated resilience to changes induced by anthropogenic activities, climate change and natural disasters.

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