ANTI-MALARIAL MEDICINAL PLANT UTILISATION AND LOCAL CONSERVATION INITIATIVES: A CASE OF SANGO BAY FOREST RESERVES COMMUNITIES

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Background

- More than 80 % of the populations in developing countries use Traditional Medicine (TM) for their Primary Health Care (WHO, 2002).

- Traditional systems of medicine are, therefore, familiar and affordable to a majority of the people (Begum, 2000).

- Millions of rural livelihoods are dependent on the continued availability and access to wild medicinal plants in order to sustain livelihood and health security. Therefore in order to make health care accessible to 80% of rural people (and now, increasingly urban people) it is critical to sustain the medicinal plant resource base

Background continued…….

- In Uganda, various ecosystem types provide sources of Medicinal Plants. These include forests, grasslands, fallow lands and agricultural fields.

- However, forests are increasing dwindling in size because of encroachment for agriculture and settlement, degradation, and recently threatened by industrialization programs as is the case of Namanve and Mabira forest.

- This study focused on the medicinal plant use and diversity in the Sango bay area with emphasis on prevention and management of malaria using traditional medicine.

Why this study/project on malaria?

- Distant health centres that are poorly facilitated with hardly any medical personnel
- High poverty levels and expensive 'western' medicines
- High malaria prevalence because the study area is a swamp forest
- Malaria is the main cause of mortality especially among the defenceless children under 5 years and pregnant women (causes miscarriages and low weight births), and has social and economic consequences
- About 320 – 350 people die everyday in Uganda because of malaria and 80% of the Ugandan population is at risk of malaria infection
- It costs the Uganda economy about USD 660m annually
- A poor family living in a malaria prone area spends up to 25% of its income on prevention and treatment of malaria
- Malaria slows economic growth in African countries by 1.3% annually

All the above are extreme in Rakai district hence the study

Social and economic consequences of malaria disease in society

Industry:

•Loss of income household through absenteeism from work

•Company production is affected by lack of productivity

•Sick and perennially poor population has low consumptive levels and can hardly afford basic necessities

Education:

•Malaria can impair up to 60% children's learning ability

•Contributes greatly to absenteeism from class

•In case of death of bread winner, children drop out of school

Agriculture:

Social and economic consequences of malaria disease in society continued……

- Time is spent nursing children instead of engaging in productive agricultural work
- Malaria afflicted families harvest only 40% of their crop (MoH)
- This greatly affects the economy that is depended on agriculture
- Hence malaria interferes with farm activities increasing poverty in homes

Socio-cultural Impact:

- Frequent illness or deaths of children causes misunderstanding with families (esp. polygamous families)
- Cause of intsbility in homes due to poverty, illnesses etc
- Less time devouted to work because of deaths, burial activities etc
- MoH loses about USD 600 m per year to malaria in terms of treatment, prevention, time lost due to sickness etc

Study area xristics

Canopy trees are predominantly *Baikiaea* and *Cleistanthus* although Langdale-Brown *et al*. (1964) reported a *Baikiaea-Podocarpus* forest

Aim and Objectives of the study

- To document the key medicinal plants used to treat malaria and examining the socio-ecological factors that influence their use, abundance and distribution.
- This study also assessed the conservation options available for these plants at community level. These data are critical to evaluation of the management and conservation potential of forests for NTFP such as medicinal plants.

Methods

(i) Ethnobotanical surveys

- Ethnobotanical information on wild plants was collected through interviewing 205 respondents (117 females and 88 males) from 72 households. These were from the thirteen villages in the three subcounties surrounding the forest reserve.

- Household respondents were chosen through stratified random sampling whereby households were picked randomly as we walked along paths in each of the villages with the assistants.

- A structured questionnaire was used to collect data on local plants names, uses, parts used, and modes of preparation and administration.

- Plant identification was partly carried out partly in the field using previous works (Katende et al., 1995, 1999; Phillips et al., 2003; FTEA) and also at the MHU for many of the collected voucher specimens that could not be identified in the field.

Methods continued……..

- The elderly people that we came across and were willing to share their traditional knowledge with us were asked to verify some of the information that had been gathered.

- Several informal discussions and transect walks with the local inhabitants were also employed, wherever possible, to corroborate the survey data and to gather additional information

(ii) Floristic data collection and assessment (For key anti-malaria spp.)

Sampling effort was spread throughout the study area by using small plots of 20 m X 50 m (0.1 ha.) at regular intervals along a line transect from a random starting point.

- A total of 45 plots covering 4.5 ha. were established, and in each of the 0.1 ha plot all trees and shrubs with dbh $\geq$ 5 cm were measured, recorded and identified.

Plants used to Treat Malaria

16 plant species were reported by the respondents to treat malaria

- Belonged to 11 families and 14 genera. Four species belonged to the family Fabaceae. Asteraceae and Myrtaceae were represented by 2 species each whereas the other families were represented by a single species each.
- Eight species were trees, 2 were shrubs and 6 were herbaceous plants.
- Eight of the species recorded were typical forest species whereas the others also occur in grassland and other vegetation types.
- The most important species used was *Hallea rubrostipulata* (tree) ranked by 51 (63.8%) of the respondents followed by *Vernonia amygdalina* (shrub), *Warburgia ugandensis* (tree) and *Syzygium guineense* (tree) being ranked by 40%, 28.8% and 16.3% of the respondents, respectively.

•The majority of the plants have been reported in earlier studies to treat malaria and other ailments

• *Vernonia amygdalina* (a shrub) has been reported to be widely used in the country to treat malaria and other ailments

•This study reports the use of four species for the first time: *Hyptis pectinata* Poir., *Indigofera congesta* Baker, *Manilkara obovata* (Sabine & G.Don), and *Sopubia ramosa* (Hochst.) Hochst.

•The majority of respondents used more than one plant for malaria treatment (60%). Some respondents used up to four plant species as a combination (6.3%) although the majority used two species (35%) and others three (18.8%).

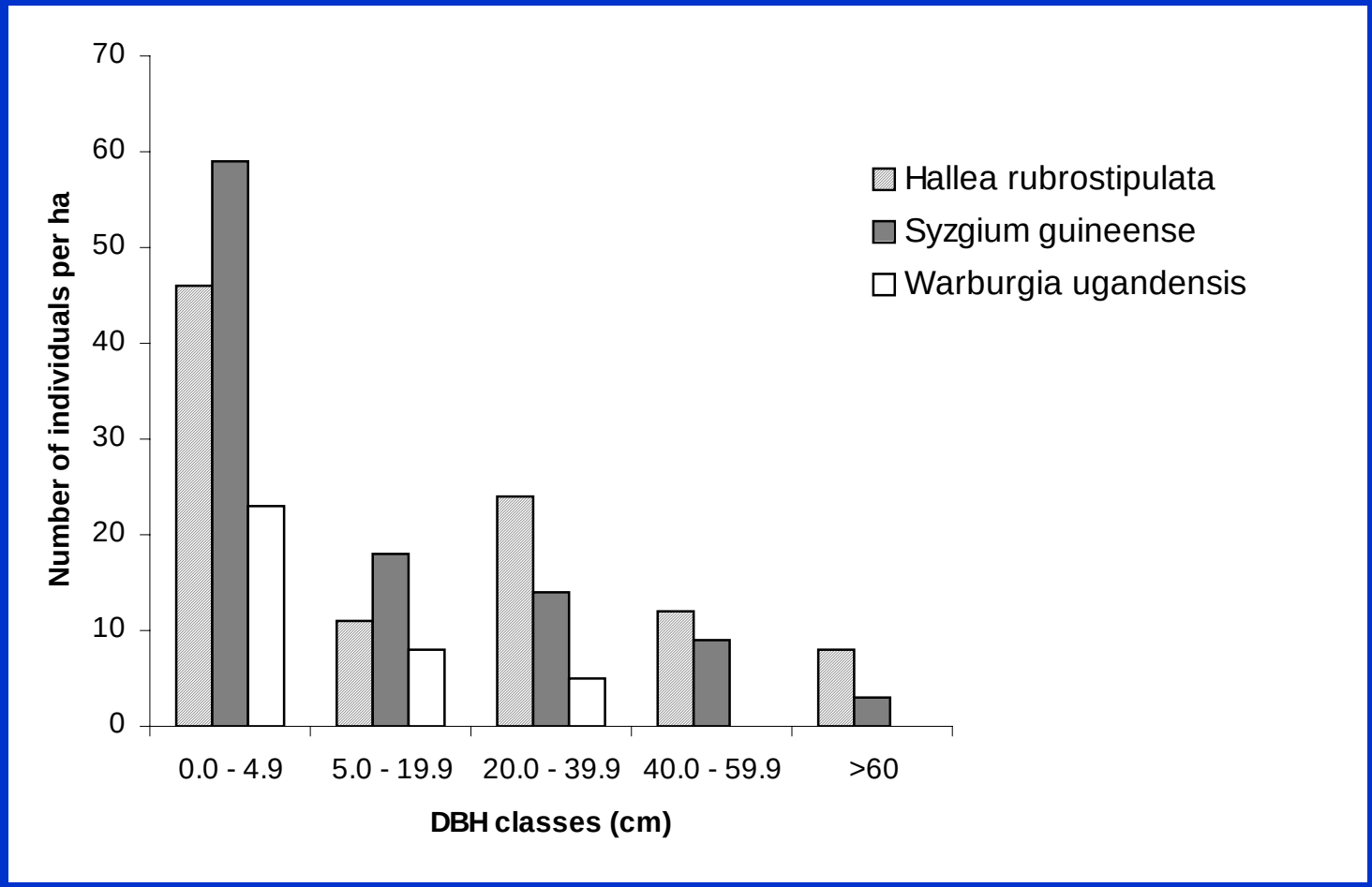
Plant Parts Used and Methods of Application:

•The bark is the most widely used plant part accounting for 37.5% of the plant uses.

• A majority of the remedies are prepared in the form of decoctions from the bark; the bark is collected and boiled with water.

•All the remedies are taken orally.

•To improve the acceptability of certain remedies, additives are added for instance sugar may be added to *Vernonia amygdalina* infusion to reduce the bitterness. *Citrus limon* is added to *Senna didymobotrya* to make it acceptable.



Stem densities (number of stems ha.$^{-1}$) of the three most important species for the treatment of malaria

Habitat and key species conditions:

- Overexploitation through debarking of trees
- Illegal cutting of trees for timber, firewood affects ecosystems function
- Low levels of monitoring by NFS staff due to lack of facilitation
- Increasing population hence increased reliance on forest products including MP.

Local Conservation initiatives with support from Allachy MP Project

- Preservation and planting of some medicinal plants in home gardens
- Encouraging the growth of seedlings in nurseries and distributing them to people in villages
- Encouraging CFM
- Enabling meetings and group discussions among themselves and TH to enable them learn more about traditional and effective management of the disease

Local Conservation initiatives continued……

Preservation in home gardens e.g. *Sopubia ramosa*, *Indigofera congesta*, *Hyptis pectinata* and *Vernonia amygdalina* are preserved in home gardens or farm plots for medicinal purposes.

Options

- ***Insect repellant herbs*** e.g. *Ocimum suave, Cymbopogon citratus*
- ***Environmental management*** *- alteration or destruction of breeding sites*
- Planting of **insect repellants** species around homesteads

Challenges

- Need for a policy in place to guide the NDA in the control of products used by herbalists. There is need for quality assurance and standardization.
- Climate change could spur malaria as a result of environmental shifts affecting parasites and water resources e.g recent floods in Eastern and Northern Uganda followed by high incidences of malaria
- Limited research on the indigenous medicinal plants that can be used for the treatment of malaria.