



INSTITUTIONALIZING BEEKEEPING CAMPS IN PROTECTED AREAS FOR CONSERVATION AND DEVELOPMENT

A CASE STUDY IN NYAHUA MBUGA FOREST RESERVE IN TANZANIA

Presenter

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General Introduction

- Local communities have been set informal camps far from homesteads for carrying out beekeeping
- Known as beekeeping camps found most in miombo woodlands and majority in protected areas: potential also for wild animals ranging from big fives except rhinos to medium animals, reptiles (particularly dangerous snake the black mamba) and birds (interested the indicator bird).
- Types of protected areas beekeeping is carried out: forest reserves, game reserves and bee reserves. Buffer zones in national parks

Problem Statement

- Beekeepers utilizing miombo woodlands tends to travel far from their homes
- The problem underlying beekeepers in protected areas were associated with
 - seasonality and permits to enter and use resources in protected area.
 - production of honey is based on raw products that no mechanism for adding value.
 - Do not have adequate capital to process themselves honey;
 - sell individually by relying on who come is the right buyer - earning is subsistence to solve immediately necessities.
 - No strong legal instrument (registered association) that can stand on their behalf.
 - Conflicts on resource use (i.e. tourist hunting blocks, forest dealers, professionals and “*poachers*”).
 - Hives are subjected to forest/wild fires, pests and vandalism

Objectives of the Study

- To assess institutional set up of beekeeping camps and beekeepers in protected areas for conservation and development
- The specific objectives
 - To examine bee resources and activities of beekeepers in Nyahua Mbuga Forest Reserves
 - To establish acceptable practices and institutional arrangements for beekeeping linking conservation in protected areas.

Study Area

- Nyahua Mbuga Forest Reserve lies between longitude 33° 01'' and 34° 15'' East and Latitude 5° 30'' and 6° 10'' South.
- Gazetted - Government Notice (GN) No. 79 of 26.03.1954
- Area of 672,000 ha with a boundary length of 352.5 km.
- The daily mean temperature varies between 22°C to 30°C and the mean annual rainfall is estimated to 952mm.
- Fourteen villages are surrounding the forest of which eight villages are in Sikonge District, five villages in Uyui District and one village in Manyoni District.
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Methods

- Randomized survey and interviews methods were applied in data collection.
- Areas with more beekeeping activities and along natural springs in Nyahua Mbuga Forest Reserve were given priorities during data collection.
- Beekeepers, forest staff, adjacent village governments and other forest users were interviewed.
- Some useful information were collected directly on the ground (field observation).

Results- Flowering Plants

Vernacular language	Botanical Name	Period of flowering	Uses
Mtundu	<i>Brachystegia speciformis</i>	October to December	Bee forage, log, shade, bark
Muyombo	<i>Brachystegia boemii</i>	March to May	Bee forage, logs, shade
Muba	<i>Julbernardia globiflora</i>	March to May	Bee forage, logs, shade, bark
Kasanda	<i>S w a r t z i a madagascariensis</i>	March to May	Bee forage, logs, shade
Mbanga	<i>Pericopsis angolensis</i>	October to December	Bee forage, logs, shade, bark
Mkola	<i>Afzelia quanzensis</i>	February to May	Bee forage, logs, shade
Mkwaju	<i>Terminalia indica</i>	March to May	Bee forage, wild fruits
Mninga	<i>Pterocarpus angolensis</i>	October to December	Bee forage, logs, bark

Bee colonies

- Bee colonies (un managed) were found clustered on tree branches and in cavities.
- Hives were hanged on trees branches scattered in a radius of 250 metres.
- Occupancy ratio was 15:5 per each 20 hives visited within a range of one square km.
- Stingless bees colonies were found in tree cavities - beekeepers cut the area to obtain colony that kept at homestead.

Results – Number of Hives and Production of Honey and Beeswax in Nyahua Mbuga Forest Reserves

- A total of 27 beekeeping sites (temporary beekeeping camps) have been recognised inside the forest.
- Beekeepers were owned 2,536 top bar hives, 33,300 log hives and 13,587 bark hives.
- Out of these hives, women owned 15.24%, 5.88% and 20.50% of bark, log and top bar hives
- Average production of honey and beeswax in the area was 249,172 kg and 12,101kg, respectively.

Hives in Use and Average Production

Type of Hive	Costs	Average Production		Earnings (in TZS)	
		Honey	Bees wax	Honey	Bees wax
Bark Hives	5,000.00	7.00	1.00	35,000.00	7,000.00
Log Hives	15,000.00	10.00	3.00	50,000.00	21,000.00
Tanzania Top Bar Hive	65,000.00	12.00	2.00	60,000.00	14,000.00
**Frame Hives	100,000.00	10.00	0.00	50,000.00	0.00

Activities of Beekeepers in Nyahua Mbuga Forest Reserve

Activity	Where	Frequency	Percentage of involvement
Making hives using forest resources	Inside the forest	25	32.5
Obtaining boxes hives	Outside by ordering	5	6.5
Building and maintaining beekeeping camps	Inside the forest	15	19.5
Handling bee colonies	Inside the forest	32	41.6
Harvesting bee products	Inside the forest	28	36.4
Storage of bee products	Inside the forest and at home	15	19.5
Sell of bee products	Inside the forest and at home	10	13

Indigenous Knowledge and Applications in Nyahua Mbuga Forest Reserves

- Site selection and setting beekeeping camp were in areas with abundantly flowering tree species, availability of water and not subjected to tsetse fly.
- Hives (log and bark hives) constructed in such a way that it cannot allow water to penetrate in the hive as a means of protecting from decaying.
- Hives hanged on trees and tied by rope or wire to protect from predators – honey badger.
- Escaping wild animals (elephants, lions and buffalos) and snakes in the field
- Uses of benign grasses as smoke materials, also for straining honey and rendering beeswax.

Beekeepers Organization

- A total of 1,087 beekeepers (female 134 and male 953) carried out beekeeping in the forest reserve
- 12 beekeeping groups identified and one beekeeping cooperative union with 352 members.
- Beekeeping sites were established as far as 50km to 120 km from the villages. Distance from one camp to another was ranging from 2.5 to 6.7 km.
- Unit size of beekeepers in one camp varies at an average of 2, 4, 7 individuals but not exceeding 10 beekeepers.
- A beekeeper was required 4 to 7 assistants to accompany during harvesting period and 2 -4 assistants during hive siting time.
- beekeepers utilize 4 weeks during harvest and 3 weeks during hive siting.
- Women were not stay over nights in the camps; they hired youth to assist to carry out beekeeping operations.

Shifting of Beekeeping Functions

Informal Activities/ Functions	Reasons/facts	Formal Functions	Reasons/Facts
Site selection for beekeeping camps and hives siting	Inherited knowledge from ancient or back to areas before formation of villages	Improving beekeeping camps	Conservation of bees and forage, Control illegal activities
Frequency of forest fires, un proper burning of forest	Control of tsetse flies and dangerous animals and snakes.	Application of early and late burning.	Improve honey flow period, Protection of bee colonies
Removal of bee products in time inside the forest	Use of bicycles and man-running wheelbarrows	Introducing incentives scheme to beekeepers camps	Adoption of appropriate technology
Identification of tree species to hang hives in long trees	Knowledge tropical bees that tend to swarm subject to environmental condition	Mapping bee resources and develop beekeeping calendar	Increase production and manage and proper harvest of bee products.
Production of crude and semi processed honey and rendering beeswax in the site	No choice because the sites are far from home	Provision of improved facilities suitable in the area	Improve quality of product diversity.
Sharing costs of stay and work in the field	Trustful among members of the group or society	Improved connections and organization in the field	Support beekeepers and improve financial means.

Capacity Building

- Beekeepers have skills to identify potential beekeeping sites in the forests
- Establish Beekeeping in areas with adequate flowering plants, less predators and availability of water.
- It is a tedious job to maintain beekeeping camps as being reconstructed in each season- destroyed by fires, poachers and sometimes loggers who using the same sites in the absence of beekeepers.
- Forest fires occurrence is high on August and October and low in July.
- Raise awareness to beekeepers that incorporates indigenous knowledge and technical knowledge on forest fire management, animal behaviours and biodiversity
- Improved facilities cannot set in areas that are insecure and not well structured. Combined efforts of beekeepers and Managers may results into change of functions to improve beekeeping in these areas.

Effective Value Chain

- The duration of the permit to enter in the forest is for 3 months and for special cases in two weeks.
- Beekeepers are doing extensive apiary management; hives are hanged on trees.
- They perform other activities not in the forest but simultaneous with beekeeping
- Beekeeping in protected areas contributes to add value for biodiversity conservation and livelihood improvement.
- The production of honey is free from pesticide application and products are natural. However, average production of hive is low to help beekeepers' economically.
- Measures to improve situation of beekeepers may practise and integrate indigenous knowledge that promote sustainable use of resources in protected areas.

Cost Benefit Analysis of Hives in Use

- Beekeepers used to collect logs left by lumbers, which are much interested with steak stem.
- Use of bark hives were in decreasing rate due to on going campaign of abandons them.
- Use of top bar hives is promoted but in area that are secured and not subjected to forest fires.
- Use of log hives in the forest is characterized with many factors amongst the most is availability of logs left by Lumbers. Some tree species have tendency to dry at a certain age. Beekeepers collect the part of log and construct log hive at a local cost level (or just metabolic energy)

Institutional Arrangements

- Beekeepers are getting permit from the Village authorities and District Councils to enter in the forest.
- Forest and Beekeeping Assistants in the District supports beekeepers in case of issues that need resolution.
- Registration of beekeepers and other actors in the forest may improve control of people who are doing illegal activities.

Conservation and Participation of Beekeepers

- Forest areas in Tanzania are estimated to cover a total of 48.1 million hectares; half of this land consists of woodlands. Out of these, 21.7 million hectares are protected areas and 26.4 ha are productive forests
- Experiences are shown that beekeepers obtained permits to enter and carry out beekeeping in Forest and Game reserves.
- Conservation projects are taking beekeeping as an income generating activities that will reduce pressure on natural resources.
- A clear action plan that incorporate beekeeping activities and interests of the resources may lead to well functioned modules for conservation involving rural people.

Conclusion and Recommendations

- Beekeeping sites that have been established by beekeepers may serve as conservation education centres to promote production of natural bee products and application of appropriate incentives to adjacent communities.
- Recognize and promote indigenous knowledge from the beekeepers who carryout beekeeping activities.
- Providing applicable incentives to beekeepers in protected areas than introducing new technologies that may become burden to them;

Thank you

- Nyuki ni Hazina
- Beekeeping is Treasury