



# TRAINING REPORT

APIARY MANAGEMENT FOR BEEKEEPING GROUPS CANODIA AND RIBEEN TEKODIIMA PARISH, KIRYANDONGO DISTRICT

*Wildlife Conservation Society*

# 2020



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## INTRODUCTION

Wildlife Conservation Society (WCS) is currently implementing a project titled “strengthening anti-poaching techniques and countering wildlife trafficking in Uganda” funded by the Illegal Wildlife Trade Challenge Fund (IWT) of the United Kingdom. In this project, WCS is supporting community wildlife scouts and park adjacent communities to mitigate human wildlife conflict as well as develop income-generating activities to enhance community livelihoods.

Uganda Wildlife Authority (UWA), which manages Murchison Falls Conservation Area (MFCA), including Karuma Wildlife Reserve (KWR) has for long supported park adjacent communities with various income generation projects to reduce dependence on the protected areas and to create community incentives to support wildlife conservation. Among others, beekeeping was one of the enterprises promoted by park management authorities.

As part of the aforementioned project, WCS identified two bee keeping groups (Can Odiya and Ribe en Teko) in Kiryandongo District as some of the beneficiaries. Bee House Products Limited was engaged to supply inputs and train the bee keepers in modern beekeeping methods and in the establishment of a bee hive fence to mitigate human wildlife conflict. As part of this assignment, Bee House products Limited carried out a five-day training between 24<sup>th</sup> February and 4<sup>th</sup> March 2020 to equip the beekeepers with the technical skills in apiary management so as to improve their apiaries and increase production levels. The apiaries were expected to generate income for the communities and act as deterrents to crop raiding animals, particularly the elephants.

### Objectives

The main objectives of the training were:

- To equip the bee keepers with technical skills in apiary management so as to increase production levels.
- To provide skills needed to build a bee hive fence to mitigate on the human wild life conflict.

### Trainees & Scope of work

The participants included the 34 members of the two beekeeping groups named above and 9 executive committee members of parish Beekeepers Associations, bringing the total number of trainees to 43. The parish level participants were brought on board with the intention of building their capacity to support beekeepers in their respective parishes.

**Table 1:** Composition of the two beekeeping groups that participated in the training

Age category	No. of members by group	
	Ribe en Teko	Can Odiya
Youth (30 years and below)	4	4
Adults (30-60 years)	10	9
Elderly (over 60 years)	2	5
Total Number of Members	16	18



*Trainees during the learning session*

## **METHODOLOGY**

It was noted that majority of the participants fell in the adult age group and were mostly semi illiterate. As such, a participatory learning approach was adopted as the most effective mode of instruction. The course content was presented in a straightforward way to ensure participants' comprehension. Trainees were involved practical tasks like collecting bee forage, baiting bee hives, making stands, preparing the site for the apiary and placing the bee hives. Learning through sharing experiences with others gave an opportunity to the participants to learn from one another. Exercises were used to consolidate learning for adults.

The trainees were evaluated on a daily basis. They were divided into 5 groups and each was given a topic to discuss and then present to the rest of the class the next day before starting a new session. This made the trainees more active and presenters were randomly chosen.

## **HIGHLIGHTS OF TRAINING**

### **Bee Forage and Environmental Conservation**

The trainees were taken through the importance of bee forage/pasture in beekeeping. Bee pasture or forage are plants that provided nectar or pollen to the bees. These mostly constituted insect pollinated plants which the bees pollinated in the process of collecting nectar. A simple equation was used to show the importance of vegetation in beekeeping as below.



- ✓ Hive inspection & Hygiene
- ✓ Pests and pest control

Further details on the training content are provided in Annex 1 and Annex 2.

## IMMEDIATE BENEFITS OF THE TRAINING

**Increased colonization rates in the bee hives:** Many beekeepers didn't know how to bait or colonize beehives using the different methods they had been taught. However, after the training, every beekeeping group baited at least 3 beehives with various materials like wax, lemon grass & cassava. Shockingly, some of the beehives that were baited colonized after one day.

**Market for the bee products:** The training provided an opportunity for the bee keepers to connect with a buyer who assured them of market for their products. Some beekeepers sold various items to Bee House Products Ltd, the company that was engaged to supply equipment and conduct that training. Bee House Products bought 262 kilograms of comb honey from the youth group, 60kgs of processed honey from the Chairman of Nanda Beekeepers Group and 124.6kgs from the Women's group sold. Table 3 below gives details of the items bought from the communities during training.

**Table 3:** Products bought by the trainer from the farmers during training

Item	Quantity	Unit Price (Ugx)	Amount (Ugx)
<b>Comb Honey</b>	386.6Kgs	8,000	3,092,800
<b>Liquid Honey</b>	40 litres	300,000	600,000
<b>Propolis</b>	2 Kgs	20,000	40,000
<b>Wax</b>	22 Kgs	15,000	330,000
<b>TOTAL</b>			<b>4,062,800</b>

Participants were encouraged to aim at scaling their beekeeping business to commercial level and to increase production due to the assurance of the market by Bee House Products.

## TRAINER'S OBSERVATIONS

- ✚ Most farmers did not see beekeeping as a lucrative business and thus did not embrace large-scale commercial beekeeping. As a result, farmers often took long without visiting their apiaries, exposing them to attack by pests like ants and rodents which were the reason for widespread fleeing of bees.
- ✚ Lack of market and price fluctuations often discouraged farmers from pursuing the business. This was mainly due to lack of market linkages and low production levels.

Also, many farmers were not aware of the market availability for raw propolis, bee venom and wax.

- ✚ Many of the beekeepers in the two beekeeping groups scattered the hives over a big stretch of land making harvesting and routine inspection difficult.

## RECOMMENDATIONS

1. There are hundreds of abandoned hives that once taken care of can generate income for communities. These should be cleaned, rebaited and reset.
2. Further training in value addition to the primary products like honey, propolis and wax should be planned in order to diversify products and generate additional income from products like candles, cosmetics and shoe polish from wax.
3. The Uganda Wildlife Authority (UWA) should encourage beekeepers who have hives in the park to re arrange them in a line formation to help deter crop raiding to reinforce the beehive being established.
4. Beekeepers should be with more inputs like harvesting kits and processing equipment to enhance production and value addition. The 3 sets of harvesting kits are not enough for the two groups.

## CONCLUSION

The training delivered the most needed skills for the participants, many of whom had never received any training. However, training could only contribute 25% to the success of beekeeping. The 75% is dependent on the beekeepers' commitment to putting knowledge and skills gained into practice. Given that this was the first major engagement with the beekeepers in the two parishes, there is need for continued support to the beekeepers including those not trained under this project in order increase production and encourage group marketing in the entire sub county. This can be done through liaising with other partners and encouraging UWA to support the beekeepers through revenue sharing.

## ANNEX 1: SUMMARY OF TRAINING CONTENT

THEME	DETAILS
Day 1:	
<b>Expectations of the Trainees</b>	<ul style="list-style-type: none"> <li>• Learning Apiary management techniques</li> <li>• Pests and how to control</li> <li>• Increasing honey production</li> <li>• Adding value to bee products</li> <li>• Other bee products apart from honey</li> <li>• Making money in beekeeping</li> <li>• The different bee products gotten in the hive</li> <li>• Harvesting different bee products</li> <li>• Getting protective wear and hives</li> </ul>
<b>Introduction to Bee keeping: History of beekeeping in the area</b>	History of beekeeping and also introduction of beekeeping in the Game reserve. Current beekeeping practice is in the project area.
<b>Importance of beekeeping</b>	<ul style="list-style-type: none"> <li>• Pollination for most of the food crops.</li> <li>• Requires low investment.</li> <li>• Income generation through sale of the bee products; honey, propolis, wax, Pollen, Royal jelly, bee venom.</li> <li>• Control of elephant invasion on crops and communities.</li> </ul> <p>Environmental conservation - conserving the natural vegetation but as well as planting bee forage.</p> <ul style="list-style-type: none"> <li>• Promotion of bee keeping skills that leads to employment opportunities in different stages of the honey value chain.</li> </ul>
<b>Bee Products</b>	<p><b>Primary Bee Products &amp; Uses</b></p> <p><b>Honey</b> – Medicinal purposes</p> <ul style="list-style-type: none"> <li>- Raw material for other secondary products like wine,</li> <li>- Used as Sugar in tea &amp; juice</li> <li>- Used in local brew</li> <li>- Used in facials by ladies</li> </ul> <p><b>Propolis</b> – Medicinal uses (antibiotic, anti-fungal, antibacterial &amp; antiviral)</p> <ul style="list-style-type: none"> <li>- Making ointment</li> <li>- Soap</li> <li>- Tincture</li> </ul> <p><b>Wax</b></p> <ul style="list-style-type: none"> <li>- Making candles</li> <li>- Shoe polish</li> <li>- Wood vanish</li> <li>- Baiting /attracting bees in the hives</li> <li>- Raw material in making soap and other cosmetics</li> </ul> <p><b>Bee Venom</b></p> <ul style="list-style-type: none"> <li>- Treatment of various illnesses like arthritis, and boosting immunity</li> </ul> <p><b>Pollen</b></p> <ul style="list-style-type: none"> <li>- Its rich in protein</li> </ul> <p><b>Royal Jelly</b> – Anti aging</p>
Day 2	

<p>Bee Biology include communication</p>	<p><b>Bee Lifecycle</b>  <b>The different bee caste in the hive and their roles</b>  <b>Queen</b> - It lays eggs approximately 1000-2000 per a day. It's the only female that lays eggs in the hive. Life span for the queen is 5 years  <b>Workers</b> -The worker bees do most of the work in the bee hive.</p> <ul style="list-style-type: none"> <li>• Security at the entrance</li> <li>• Building combs</li> <li>• Nursing and feeding young bees</li> <li>• Collecting nectar, water and pollen</li> <li>• Cleaning the hive</li> </ul> <p>In a bee hive it's estimated to have over 30000 bees with 1 queen and a few drones approximately between 100-500  Communication in bees (dance; pheromones)</p>
<p><b>Types of Hives Advantages and Disadvantages</b></p>	<p><b>Local hives (Psalm tree hives, Log hives)</b>  <b>Advantages:</b> Cheap; readily available materials; produce more propolis</p> <p><b>Disadvantages:</b> Easily affected by the pests; not durable (last for less than 5years)</p> <p><b>Kenya top bar hives</b>  <b>Advantages:</b> Last for over 10 years; not so expensive compared to langstroth; produce all bee products  <b>Disadvantages:</b> Fairly costly for local farmers; honey and pollen are all in one box; produce low quantities of propolis</p> <p><b>Langstroth hives/frame hives</b>  <b>Advantages:</b> Honey is separated from other products like pollen and eggs/brood; harvest 3-4 times a year; honey is clearer and cleaner  <b>Disadvantages:</b> It requires a centrifuge extractor to harvest honey which is quite expensive; the hive is so expensive; cannot be hanged due to its weight</p>
<p>Bee Forage calender (practicals)</p>	<p>Practical session and presentations 2hrs  Trainees are sent to look around for the bee foraging plants for pollen and nectar</p>
<p>Harvesting Seasons</p>	<p><b>3 Harvesting Seasons</b>  <b>1<sup>st</sup> Season</b> is February March April (longest and best season)  <b>2<sup>nd</sup> Season</b> is June July  <b>3<sup>rd</sup> Season</b> is November December</p>
<p>Days 3</p>	
<p>Evaluation and assessment for the previous work</p>	<p>Presentations from the trainees representatives from the selected 5 groups <b>(1hr 30mins)</b></p>
<p>Factors considered in site selection</p>	<p>Theory</p> <ul style="list-style-type: none"> <li>• Near fresh water supply; not contaminated water</li> <li>• Easy for the beekeeper to reach and work</li> <li>• Near food sources for bees</li> <li>• On high ground so water would drain</li> <li>• Not in wet swampy ground or humid place because it makes it difficult to 'mature' the honey</li> <li>• Wind-break to prevent the hives being blown in the wind</li> </ul>

	<ul style="list-style-type: none"> <li>• Shady place during hot weather</li> <li>• Away from floods and open fires</li> <li>• Near the beekeeper's house to discourage theft</li> <li>• Away from areas heavily sprayed with insecticides Like to the DDT spraying program of Uganda.</li> <li>• Away from people, animals, etc.</li> </ul>
Hive setting and placement of hives	Practical session for 2hrs in the apiary
Making bee hive stands	Practical session in making hive stands 3hrs
Day 4: Colonization	
<b>Evaluation and Assessment</b>	Presentations from trainees previous work
Baiting using the different materials (Wax, Lemon grass, cassava)	Practical session for 2hrs
Absconding & swarming	<p><b>Theory (1hr 30mins)</b></p> <p>Reasons for Absconding and examples</p> <ul style="list-style-type: none"> <li>• Pests</li> <li>• Weather conditions</li> <li>• Disturbances by people</li> </ul> <p>Reasons for Swarming</p> <ul style="list-style-type: none"> <li>• Old queen and emerging young queen</li> <li>• Space narrowing in the hive</li> <li>• Population increment</li> </ul> <p>How to control absconding &amp; swarming</p>
<b>Hive inspection</b>	Practical session in the Apiary
Day 5	
<b>Evaluation and Assessment</b>	Presentations from the trainees on the previous work
Identification of pests in the area & Control measures	<p>Theory 2hrs</p> <p>Locally available pests identified by trainees</p> <p>Control measures</p>
Harvesting Kit	Practical use of the bee protective wear (Bee suits, gloves, gumboots, smoker, hive tool, airtight buckets, bee brush)
Bee keeping Business & Cost benefit analysis	Theory: Consideration of beekeeping as a business; cost benefit analysis (50 bee hives investment)

## ANNEX 2: PESTS AND PEST CONTROL

Pest	Control Measure
<b>1. Insects</b>	
Safari Ants	<p>All insects have almost got similar solutions to counter their destructiveness. The common control measures used by beekeepers are;</p> <ul style="list-style-type: none"> <li>• Fresh ash to control crawling pests like safari ants, grease on the stands of the hives to prevent small and big ants, old car oil at the base of the poles to prevent termites.</li> <li>• Destroying ant nests.</li> <li>• Flying insects like beetles, moth, and wasps require a well build hive with only entrance hole which should be limited to 8mm diameter.</li> <li>• Regular inspection and destroying affected combs. Regular smoking with a bit of tobacco as fuel before the honey flow season.</li> <li>• The apiary should be kept clean with short grass with no littering of</li> </ul>
Small black	
Spiders	
Wax moth	
Hive Beetles	
Termites	
Wasp	
Cockroaches	
<b>2. Animals</b>	
Honey badger	<ul style="list-style-type: none"> <li>• Use of traps for honey badger which is very common in Nakaseke.</li> <li>• Fence the apiary and train beekeepers with good beekeeping practices.</li> <li>• Regular inspection to kill any for rats</li> <li>• Sensitize the surrounding community.</li> </ul>
Rat	
Untrained man/woman	
<b>3. Reptiles</b>	
Lizards	<p>Good bee hives with limited entrance without landing board can help. Regular inspection and clean apiary.</p>
Snakes	
<b>4. Birds</b>	
	<p>The basic solution for these birds is using traps, catapults, nets, bow and arrow.</p>

## ANNEX 3: PICTORIAL

### Types of hives and sample products



*A Psalm tree hive commonly used in the area*



*A KTB hive*



*A picture showing a Langstroth hive*



*A sample of packaged honey*



*A processed block of bee wax*

**Photos from the training session**



*Trainee presenting results of bee calendar exercise*



*Cover Photo: Demonstrating laying of top bars on the hive after baiting*