hambai WILD

BEE WISE

A Toolkit on Beekeeping for Human-Wildlife Conflict Mitigation

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Introduction

Zimbabwe is home to a diverse group of people and to a quarter of the worlds remaining wild elephant population. This is not without its challenges for communities that live with and around wildlife.

This toolkit is designed to explain and simplify how beekeeping can create 'living fences' to help reduce human-wildlife conflict in communities coexisting with elephants. Bees naturally deter elephants, and by providing communities with the skills and knowledge from this toolkit, we can protect crops and lives.

In turn, this approach promotes sustainable livelihoods through income from beekeeping and positive coexistence between people and wildlife.

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Importance of Bees in our Ecosystem

Bees and elephants are important for people and for the planet.

Many plants would not survive without bees. They help with pollination of wild and cultivated plants including the fruits and vegetables that we eat.

Cross-pollination

1. Pollen from the reproductive parts in plants stick to bees as they visit flowers to collect food (including nectar that they turn into honey)

2. The bee travels to another plant of the same species and the pollen on the bee sticks to the reproductive part of that flower - in effect pollinating the flower.

- African honey bees are adaptive and resilient due to many successful wild colonies.
- Bees serve as indicators of ecosystem health.
- Bees have an important role in increasing farmers' yields - particularly with flowering crops such as sunflower or tomatoes.
- Bees help control pests and diseases in ecosystems.

Cultural Value

In African culture, honey and bees are often linked to traditional practices and beliefs. Honey is used in various ceremonies and is seen as a symbol of sweetness and prosperity.

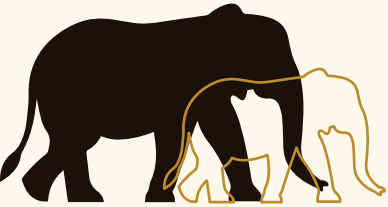
Culturally, honey is also valued for its medicinal properties. Overall, honey is recognized as an important source of food and medicine that provides employment and income to marginalized communities.

Importance of Elephants in our Ecosystem

Elephants are important for seed dispersal and the creation of waterholes in the wild.

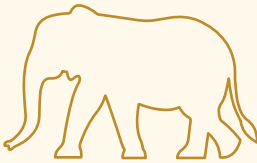
Elephants are ecosystem engineers that open forested areas into grassland and pathways.

Cultural Value



1. Elephants are part of our national heritage.
2. Culturally, Elephants are revered for their size, strength and intelligence, often symbolizing wisdom, resilience and the strength of the community.
3. Elephants appear in various folklore and proverbs, often representing survival and adaptation to a changing environment.
4. As large, majestic animals, elephants embody the connection to the land and nature, reinforcing the communitys relationship with their environment.

Human-Wildlife Conflict (Elephants)



- Communities living near protected areas have dangerous encounters with large elephant populations as elephants look for food and water on migration pathways which now include farmland, community areas and settlements.
- Challenging climatic conditions are exacerbating food insecurity and human-wildlife conflict.
- The efforts made by communities to protect their crops has led to accidents and even deaths of both farmers and elephants.
- A solution that protects people and elephants is key to a healthy co-existence between the two.

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Human-Wildlife Conflict (Elephants)

- Beekeeping can stand as a tool to mitigate conflict between elephants and people. It can also provide additional income to communities from honey and hive products.

Beekeeping for Human-Wildlife Conflict Mitigation

- Despite their small size, bees can inflict intense pain on elephants by stinging the sensitive interior of their trunks.
- Elephants avoid bees and fear their stings, running from the sound of swarming bees and warning other elephants.
- Elephants appear to retain a negative memory about honey bees, repelling them from the area.
- Setting up beehives around cultivated plots and homesteads can be an effective way to keep elephants away.

Innovation - Beehive Fence

- The beehive fence innovation includes beehives suspended every 10 meters from 9 foot posts, connected one to the other through a linked wire system.
  - As elephants attempt to enter the area, they instinctively try to pass between the beehives and as the interconnecting wire stretches, the movement will cause the hives to swing, disturbing the bees and causing them to launch an attack.
- These fences are simple and inexpensive ways for farmers to keep their crops safe.
  - They are easy to build and maintain.

- The hives have thatched roofs that keep the bees dry in the rain, and keep them from getting overheated in the sun. These fences also help pollinate crops and bring additional revenue to farmers who harvest the honey.

What You Need to Start Beekeeping

Innovation around beekeeping for conflict mitigation

1 Bee hives

(Kenya Top Bar or Local Traditional hives)




2 Bee suits

(including veil), gum boots, gloves

3 Smoker and fuel


4 Bee Brush

5 Honey Knife

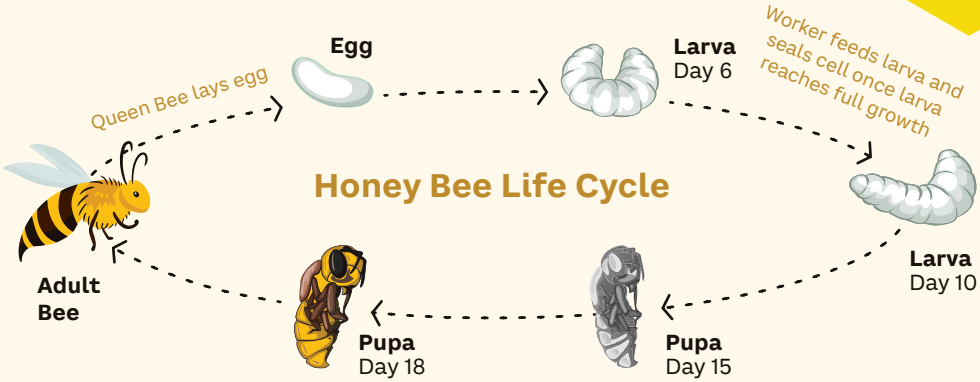

6 High-quality plastic buckets

(with a close-fitting lid for honey harvesting and storage)



All About Honey Bees

Honey bees are amazing creatures and have specific requirements to live and thrive. Understanding these requirements is key to effective beekeeping.



Social Structure

Honey bees within a colony have different roles. Some bees focus on reproduction, while others work together to care for the eggs, larvae, and pupae.

Each bee colony has one queen who lays all the eggs, thousands of worker bees that are females but dont reproduce, and a few hundred male drones that appear during certain times of the year.

During the summer and fall, while resources are high, specialized workers tend to developing brood (eggs, larvae, and pupae) inside the hive.

3 Types of Bees

Worker

Drone

Queen

Honey Bees Require the Following:

- Plants that provide pollen and nectar such as native flowers, acacia, eucalyptus, fruit trees, wildflowers, flowering shrubs, and home gardens.
- Water from perennial rivers and streams, ponds, natural springs, man-made water sources.
- Places to nest such as hives.

Honey Bees May Be Affected by the Following:

1. Water availability
2. Temperature and climate change
3. Deforestation and land-use changes that reduce available forage and nesting sites
4. Predators and disease wasps, ants, honey badgers, varroa mites, and cobwebs
5. Agriculture pesticide use
6. Fires

Local Honey Bee Subspecies *(Apis mellifera scutellata)* Behavior

1. Workers are very aggressive when defending the hive. This is why elephants fear them.

2. From September through December, about half the workers and the queen produce a swarm to split the colony and find a new nesting location, leaving behind a young queen. This is the best time to attract a colony to a new hive.

Beekeeping for Honey

Optimizing beehive management for honey production can lead to the sale of hive products for added household income.

How to attract wild bees to your hive during the swarming season. This would be in August.

Bait hives with wax and lemongrass

You can do this on top bar hives by rubbing the wooden top bars, the entrance holes, the exterior of the hive, and the lid with fresh lemongrass to mimic the smell of the queen and then paint melted wax on the bar's groove facing down. This will allow the bees to build straight comb. You can also bait the inside of a traditional log hive with melted wax and lemongrass.

Ensure proper placement of the hive

- Hives can be placed on hive stands, hung from trees, or hung as part of a fence.
- Set hives 2-3 meters off the ground in a vegetated area about 2-3 weeks ahead of the swarming season this would be in August.
- If hives are not being occupied, check inside the hive to ensure no other animal has occupied it.

How to optimize for honey production in your hive

1. **Ensure floral resources are available year-round, or supplement with sugar water when flowers are not abundant**
2. **Ensure safe water sources are available**

   Can provide man-made watering stations with floats or places for bees to stand so they dont fall into the water.

3. **Check on your bees**

- See if you can locate the queen, workers, drones during certain seasons, brood, and capped honey in the hive.
- Observe where the bees are foraging and if they have any favorite plants.
- Notice how the bees react to your local weather patterns.
- Ask for help from beekeeping mentors when you have questions.

Tips and Tricks for Harvesting Honey

1. Wear a full bee suit, veil, boots, gloves for personal protection
2. Work at night and use gentle movements
3. Use smoke on both ends of the hive and at each opening
4. Assess the colony and look for the brood nest
5. Find the first capped honey comb furthers from the brood
6. Harvest honey comb/s and place them in a clean plastic bucket with the lid closed to keep bees out
7. Leave honey for bees so they will stay fed and happy - only harvest excess honey

Primary Hive Products

1. **Honey**
2. **Beeswax**
3. **Pollen**
4. **Propolis**

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Value-added Products Made with Hive Products

Candles

Skincare Balms and Creams

Soap

Propolis Tinctures

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