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We would like to thank
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Beehive fences as a new human-elephant conflicts mitigation tool

Introduction:

Chanthaburi in the South-East of Thailand is one of the most severe areas of human-elephant conflicts (HEC) in Thailand. About 80 wild elephants are permanently living outside the protected area, and are raiding crops almost each night. In Kenya, Dr. Lucy King developed and tested beehive fencing as an effective method to mitigate crop raiding. This project, supported by Fondation Ensemble, initiates beehive fence projects in Thailand and investigates whether beehive fencing is as effective in Asia as it is in Africa. In addition, the project also examines the initial and evolving behavior of elephants in reaction to the presence of bees.

The study focuses on four experimental plots that are equipped with camera traps. If this sustainable method proves to be effective in Thailand, it could be implemented in other human-elephant conflict areas in South-East Asia.

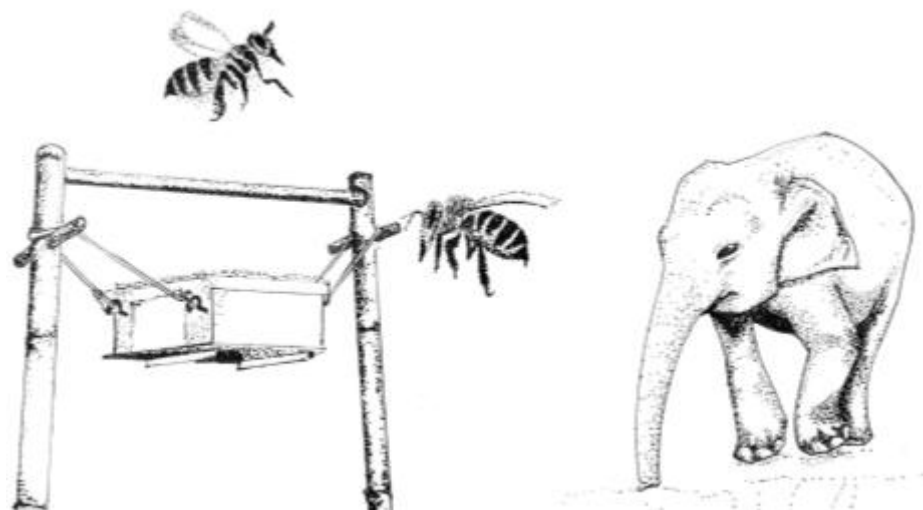
The project site, in Kaeng Hang Maew district, Pawa sub-district, Chanthaburi province, is surrounded by a number of protected areas with significant numbers of wild elephants. The plots, on private property, are selected based on the attractiveness for elephants, level of current crop raiding and the willingness of the owner to take care of the bees.

Objectives:


To stimulate dialogue and to gain and spread knowledge about wild elephants and human-elephant conflicts in Chanthaburi provinces in order to empower villagers to initiate and manage conservation actions and to realize positive change.

To raise awareness amongst local communities and involve them in testing models of beehive fencing techniques suitable for Asia.

To spread the gained knowledge to other HEC areas in Thailand and SE Asia through publications, presentations, community study tours, medias and local ambassadors.



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Synthesis

The beehive fencing projects in Thailand are implemented and monitored by our partner organization the Phluang Wildlife Research Station (PWRS). The Phluang Wildlife Research Station has the first research team in Thailand to conduct a beehive fence experiment with the aim to mutually benefit both farmers and elephants.

BTEH has been collaborating with PWRS since December 2015.

To date (December 2016), a total of 5 beehive fence pilot projects have been implemented in Loei and Chantaburi provinces.

BTEH is working with PWRS to conduct community-based conservation initiatives in Chantaburi since October 2016.



Beehive fence installation in Chantaburi



Beehive fence is protecting house and property of a farmer in Chanthaburi



Camera traps are installed around the fence



December 2016

Methodology:

1. The beehive fences were constructed by the Phluang Wildlife Research Station (PWRS) with the financial and practical support of BTEH in June 2016.
2. 40 boxes of honeybees with approximated 20,000 honeybees (*Apis mellifera*) per box were installed around the private properties of two selected farmers. Each box was hung 150 cm above the ground and connected to each-other with ropes.
3. The fence has been constructed from bamboo poles. Each beehive was hung 150 cm above the ground and the hives had 3-9 meters distance in between them. In Africa, scientists suggested 10m distance in between the hives, but we found out that less distance works better to deter Asian elephants. At areas where elephants used to enter the plantation, we increased the density of hives. As the hives are connected to each other with ropes, they will swing when an elephant tries to enter the plantation.
4. The farmers received beekeeping trainings in June – November 2016.
5. PWRS and BTEH visit the pilot sites on a monthly basis to check effectiveness of the beehive fences;
6. Antoinette van de Water, founder of BTEH, monitors the effectiveness of the technique. 12 Bushnell Trophy Cam HD camera traps were purchased with the support of Fondation Ensemble and installed around the fence to monitor the effects of the beehive fences.

Results

- Elephants appeared at the fence from 7 pm – 4.25 am. Only a few elephants managed to get inside the fence.
- Most elephants that appeared on the videos spend their time eating, inspecting the hive or seem to be alert. The most frequent observed reaction towards the bees is walking away and curling the tail.
- The farmers and their families feel safer and less stressed as they saw from camera trap footages that it can prevent wild elephants from entering their farms.
- The camera trap footage shows a reaction of the elephants towards the bees. Current videos show how elephants close their eyes whilst poking the hive and bending down their heads to get under the rope of the hive without disturbing it too much, or how elephants quickly run through the fence to exit the plot.

With the limited amount of data, it is too early to draw any scientific conclusions. But to mitigate human-elephant conflicts and to create a more positive perception towards wild elephants and conservation work, beehive fencing does seem to be a good method in SE Asia as well. It has an immediate positive effect on the livelihoods of households, both in terms of reducing crop raiding and generating alternative income. Combined with other community-based conservation projects, the method can ensure that elephants and people may live near each other in harmony. If this sustainable method proves to be effective in Thailand, it could be implemented in other human-elephant conflict areas in SE Asia.

As suggested by Dr. Lucy King of Save the Elephants in Kenya, Asian elephants might be less familiar with the bee species *Apis mellifera*. Their behavior towards the honeybees could therefore change during the course of the study. It seems like crop raiding still occurs on a regular basis, but there might be a learning and effectiveness curve throughout the duration of the study with the efficiency of the beehive fences slowly increasing, which could indicate that the elephants are learning to avoid them.

Sources

Ms. Rachaya Arkajak, PWRS, interviews with Ms. Dararat Sirimaha, beehive fence's farm owners and local government officials in Chanthaburi.