

Climatic cycle migrations of giant honeybees, *Apis dorsata* at their home Phung trees: A hint of adaptation success?

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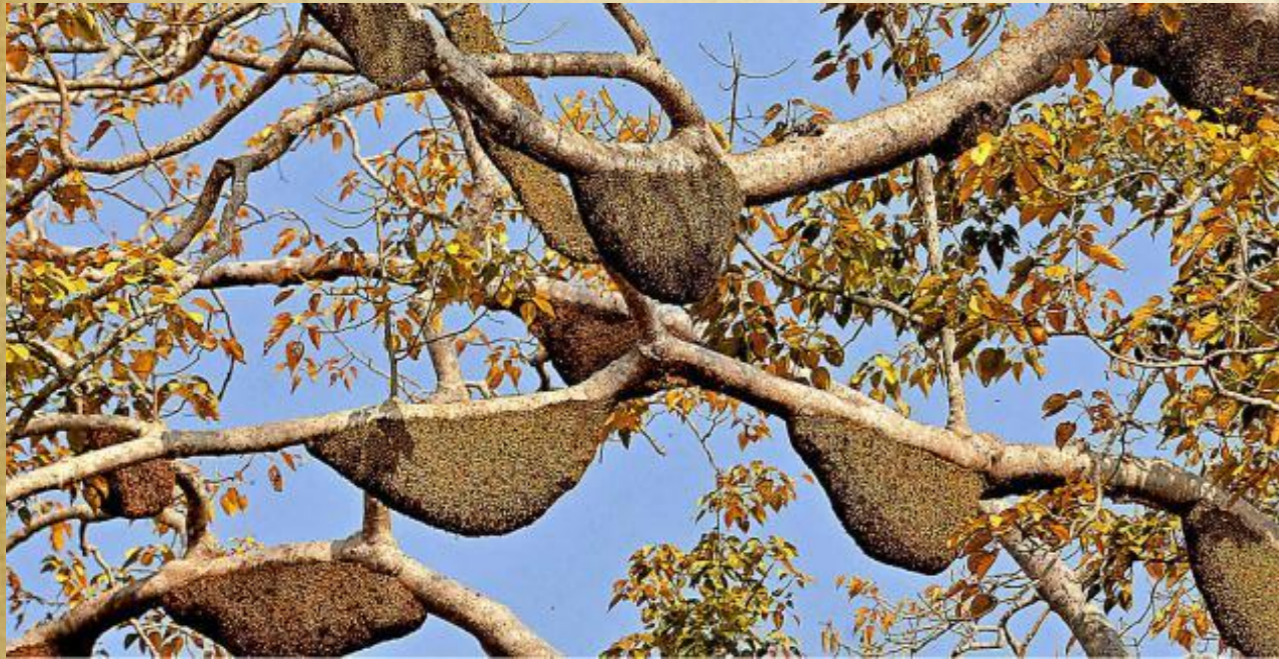
***A. dorsata* : the giant honeybees: key stone pollinator in dipterocarp forest and evergreen Forests**



Giant honeybees: a key pollinator in evergreen forest



Migratory behaviour and colony aggregation in Giant honeybees



Giant honeybees, *Apis dorsata*
return to their nest sites

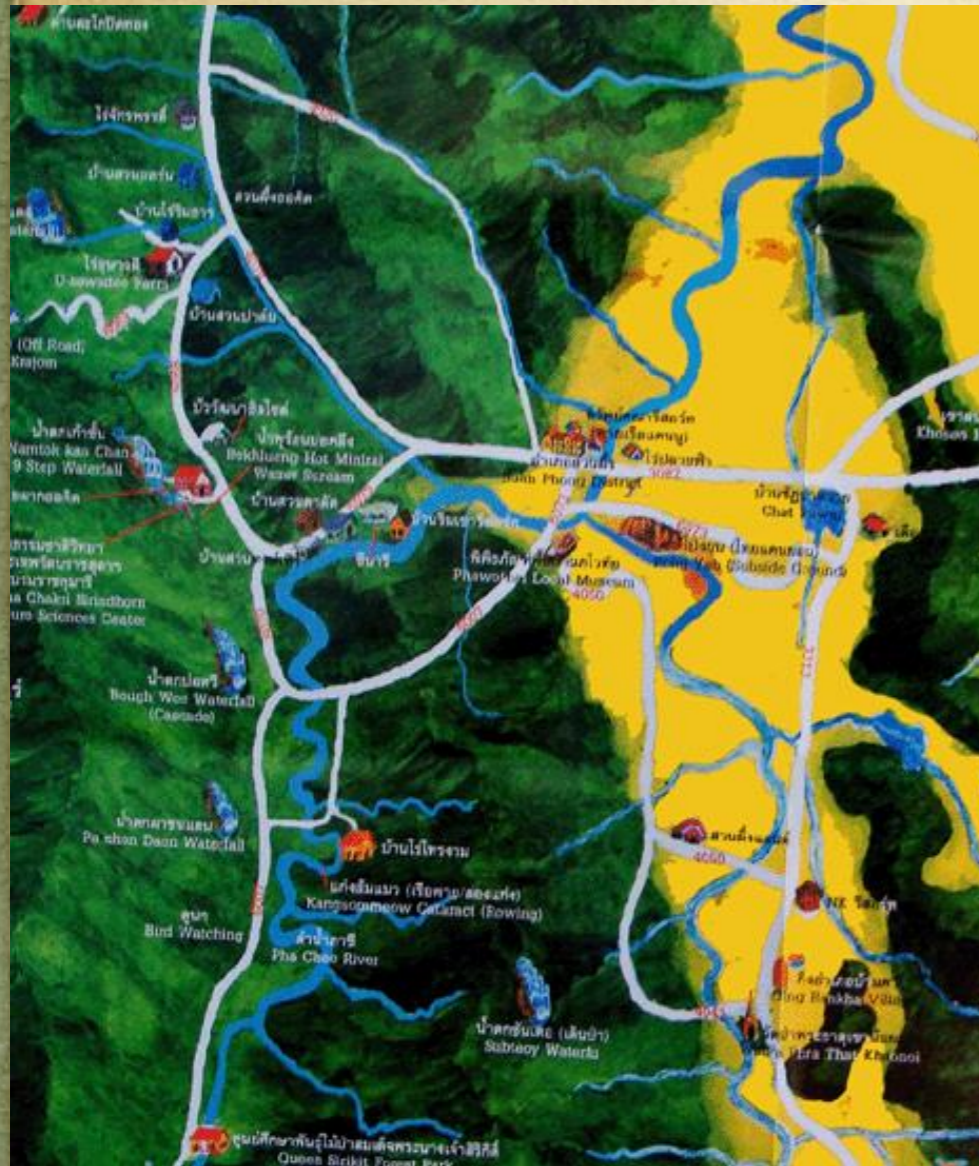


Nest sites fidelity in Giant Honeybees *Apis dorsata*



Suan Phoeng District, Ratchaburi Province (Before 1987)

Major population were Karen Tribes



Suan Phueng Etymology



The name *Suan Phueng* (*garden of bees*): hundreds of *A. dorsata* nesting at Phueng trees (bee tree), are commonly found in the district

Suan Phung: 1987-Present As The Queen of the West



Aims

To investigate the phenomena of seasonal migration, aggregations and seasonal stability of *A. dorsata* colonies at their home Phung trees *Ficus albipila* and *Kompassia malaccensis*.

To contribute and encourage the participation of the community in the conservation of *Apis dorsata* and their home trees.



Research methods

Abundance of Phung trees, Ficus albipila and Kompassia malaccensis

- Line transects
- Interviews of the tribal/local honey collectors
- GPS Tracking

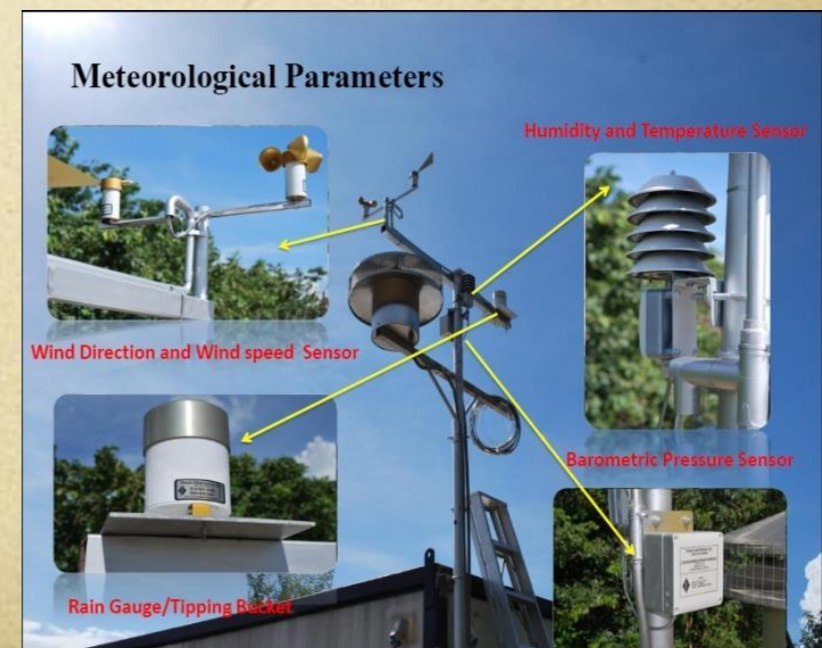


Apis dorsata: colony population and growth rates
Carried out at monthly intervals throughout the year, starting from 2011 to 2022.

Dates of migration and number of colonies nesting at particular sites, size of colony, position of colony, number of absconding colonies

Meteorological parameter

- Temperature, humidity and rainfall
- Earth System Science Center, King Mongkuts University of Technology Thonburi.



Beeflora

Mar-Apr



Pterocarpus macrocarpus

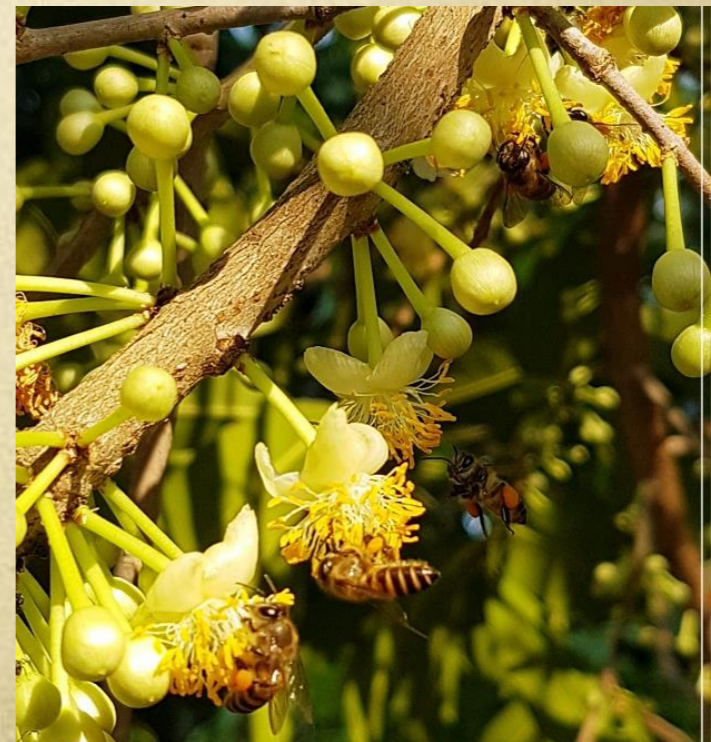


Shorea roxburghii

Nov-Dec



Zollingeria dongnaiensis



Mammea siamensis

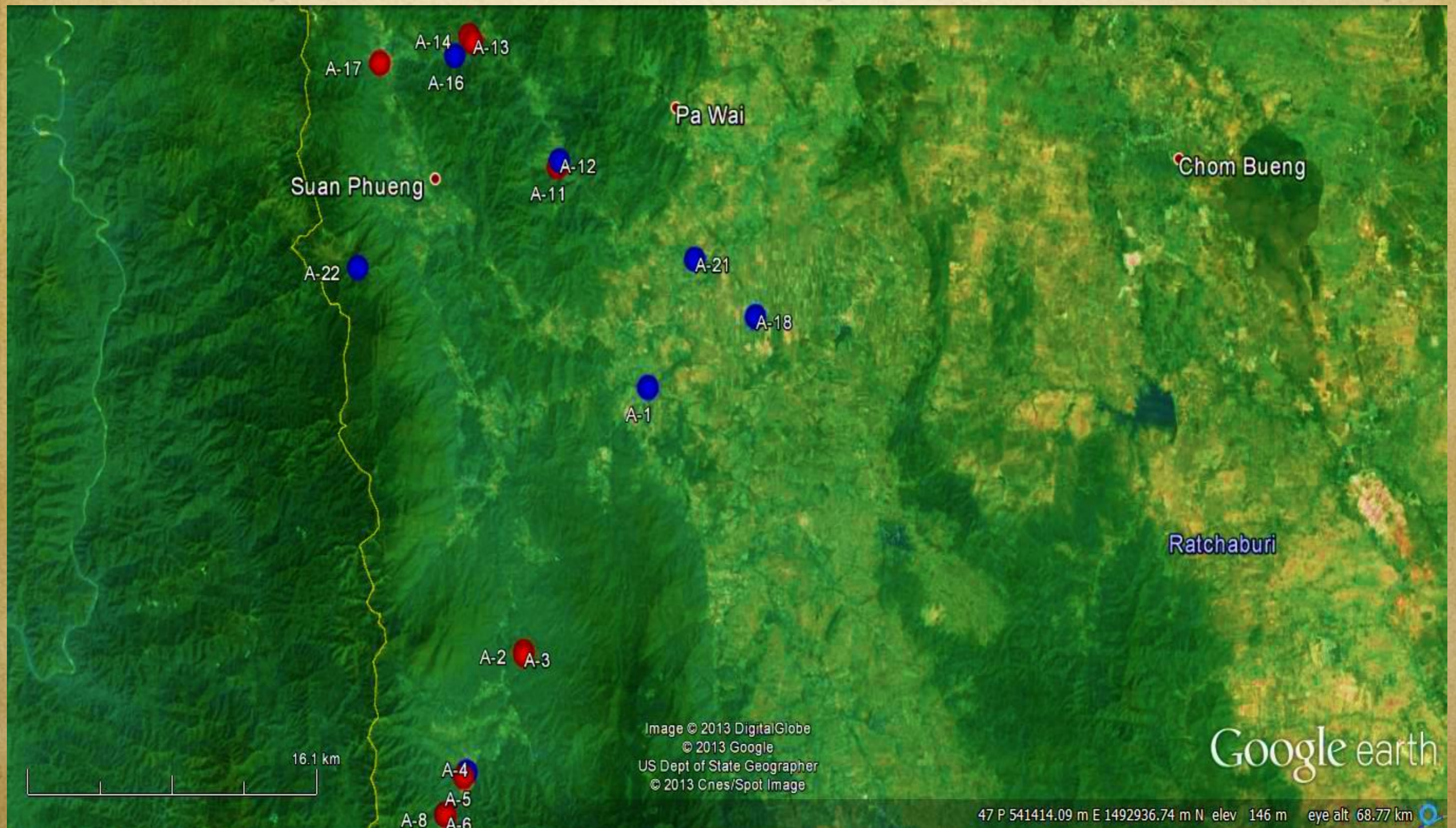
Results

Distribution of bee trees in Suangphung district.

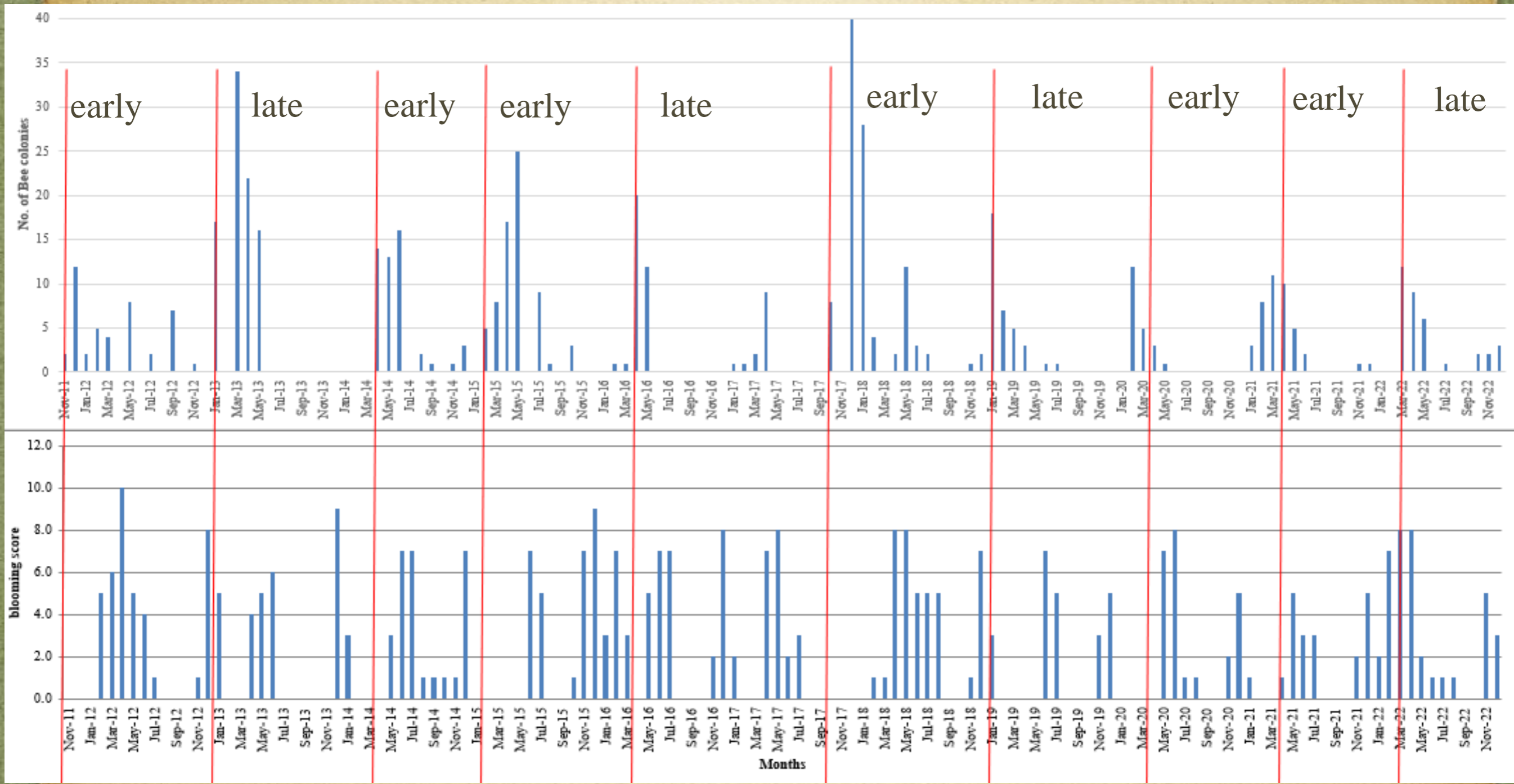


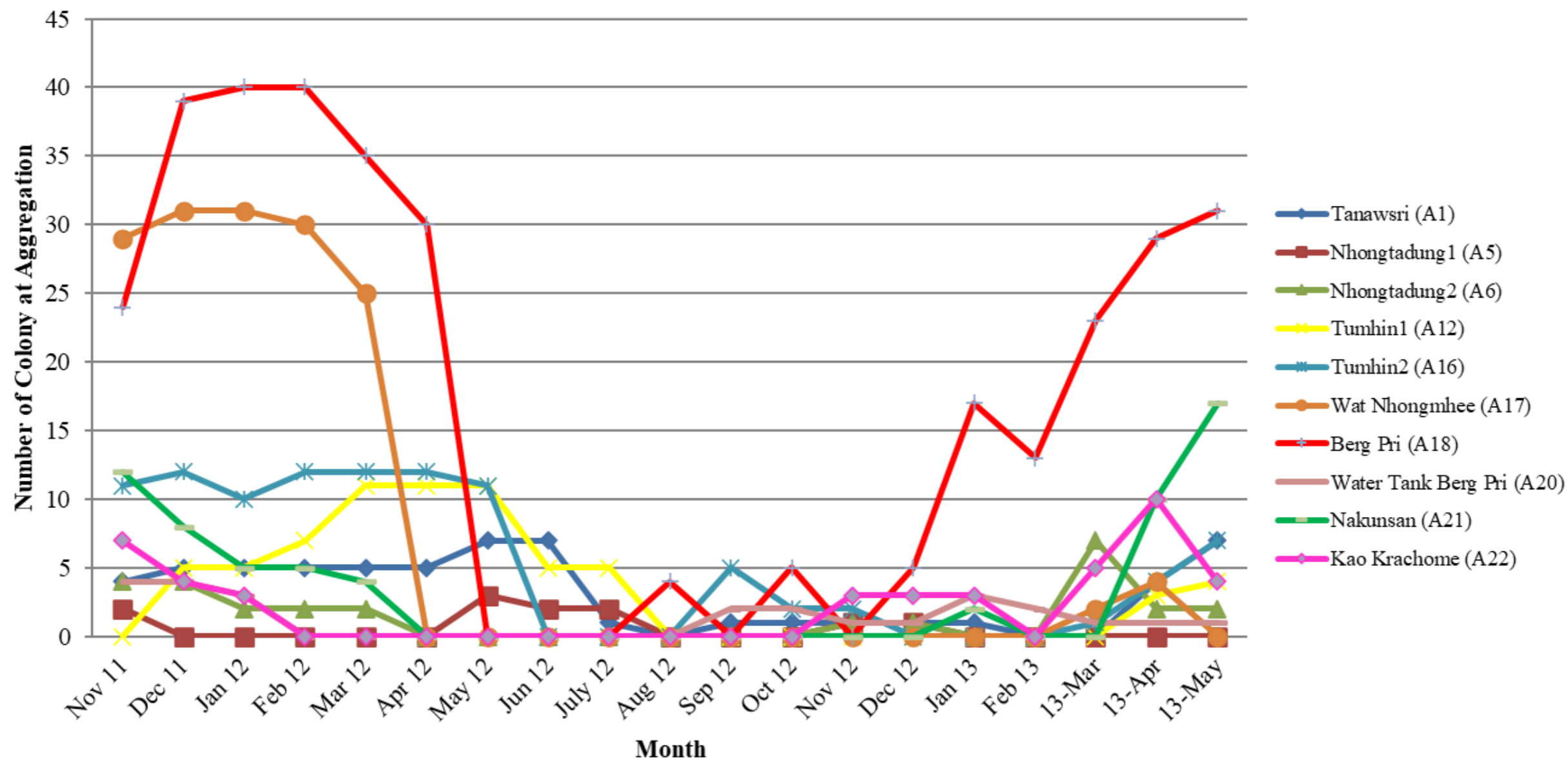
Total 22 Mature bee trees in the Area 21 of *Ficus spp* and one *Kompassia sp*.

Distribution of bee trees in Suangphung district.



Of total 22 bee trees, 10 is active sites with up to 3 colonies of bees and only 5 considered as active nesting site at the end of study periods





TANAWSRI (A1)



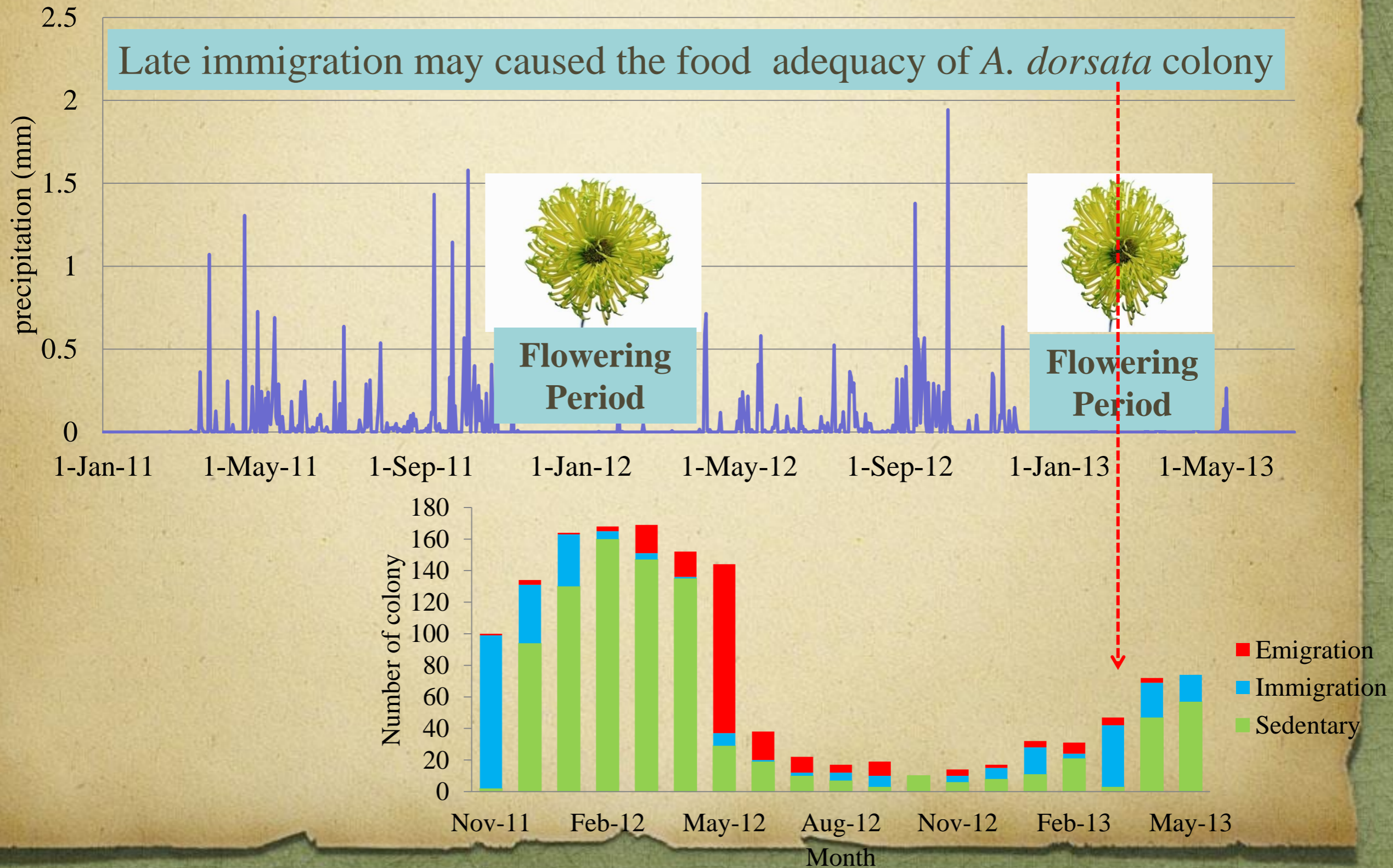
WAT NHONGMHI (A17)



Potential Threats To *Apis dorsata*

Climate Changes

ElNino – LaNina Effect caused the abnormal season → the abnormal migration pattern in *A. dorsata*



Habitat Destruction



❖ Deforestation & Forest fire/Land use
/Pesticide/Illegal logging

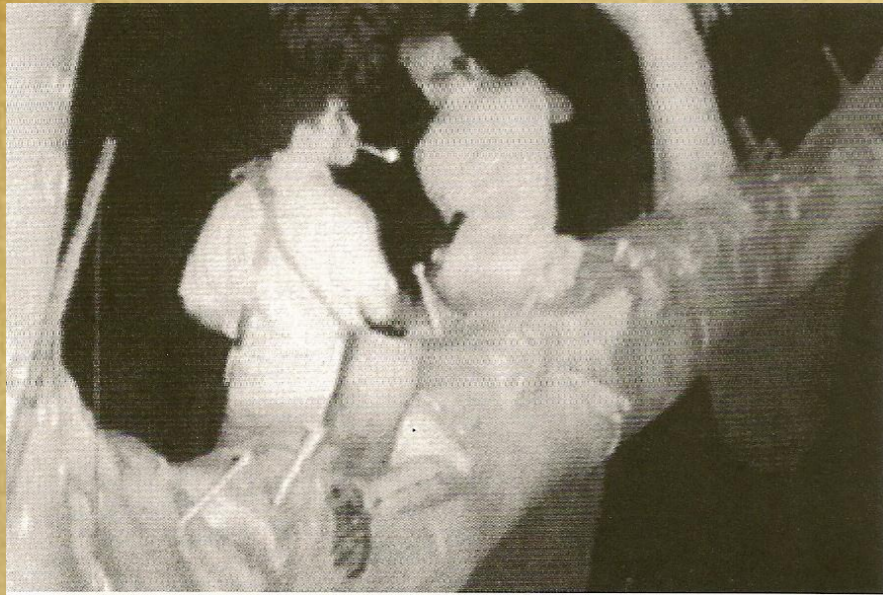
❖ Of total 22 mature bee trees, there are 81.8% bee trees surrounded by the agricultural area with pesticides in use.

❖ 77.2% of bee trees which are active nesting site of *A. dorsata* are threatened by pesticides and expansion of community area



Honey Hunting

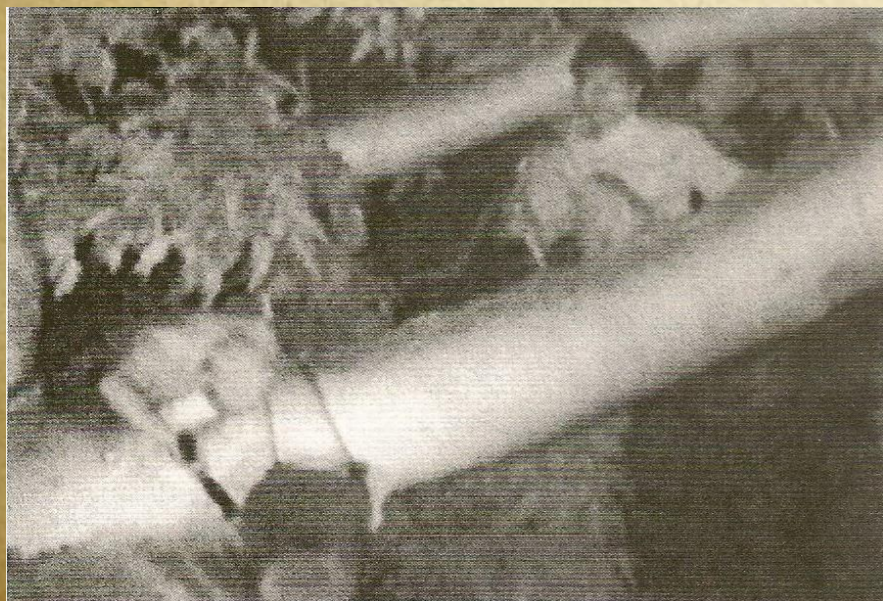




- ❖ In 2013-2014, A total 157 *A. dorsata* colonies had been harvested for honey and brood

After honey harvesting

- ❖ 122 colonies (77.8%) absconded within one month
- ❖ 35 colonies absconded within 2 months



Conclusion

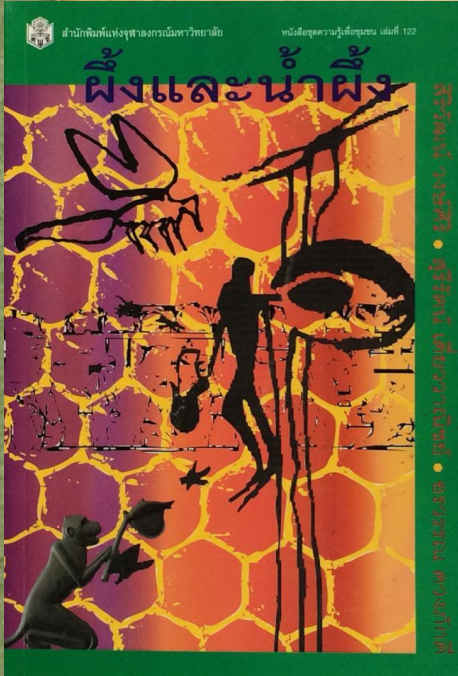
A difficult situation has been found both in bee trees and giant honeybees, *A. dorsata*.

The number of bee trees which survived in Suangphung area is about 22 trees but only 10 of 22 trees attracted gathering swarms of giant honeybees.

The number of giant honeybees, *A. dorsata* colony has been severely reduced by almost 90% from immigration season of 2012 to 2022.

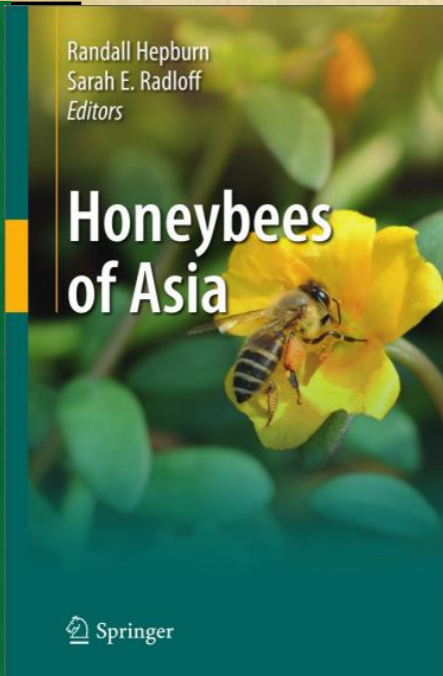
The *A. dorsata* population in Suan Phung area are being pushed to the edge of extinction from their habitat

Textbooks and Book chapters



2009

Chulalongkorn
University Press



2011

Spinger-Verlag
Berlin Heidelberg



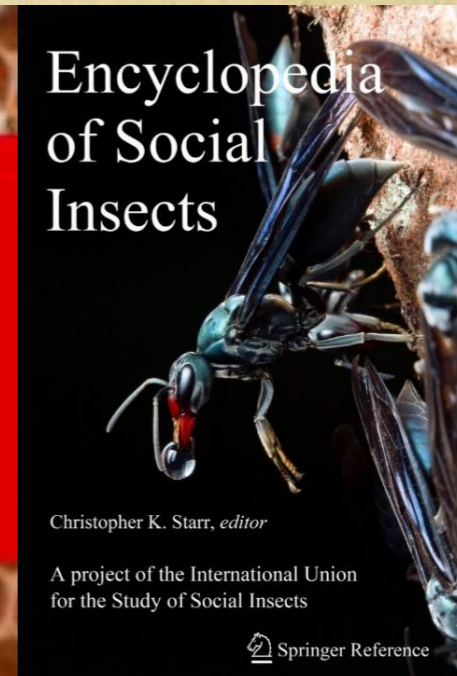
2014

Spinger-Verlag
Berlin Heidelberg



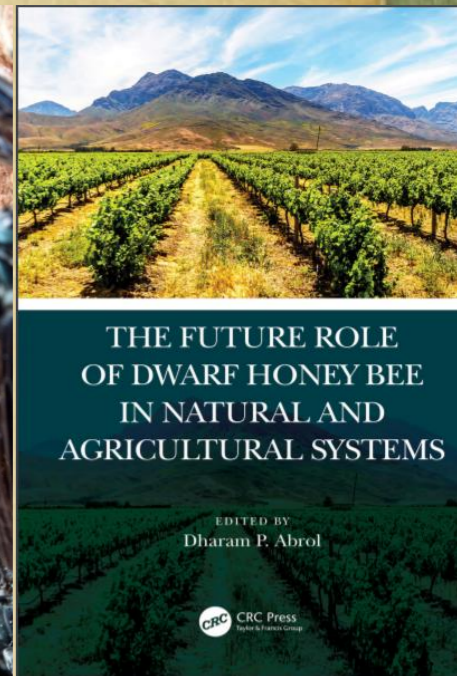
2019

Intechopen



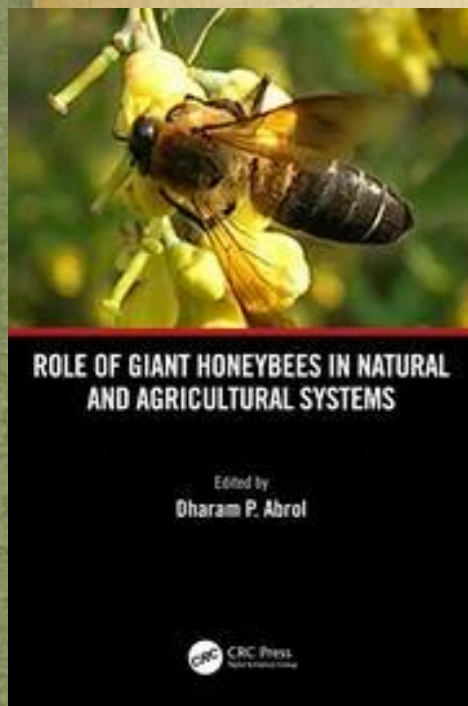
2020

Springer



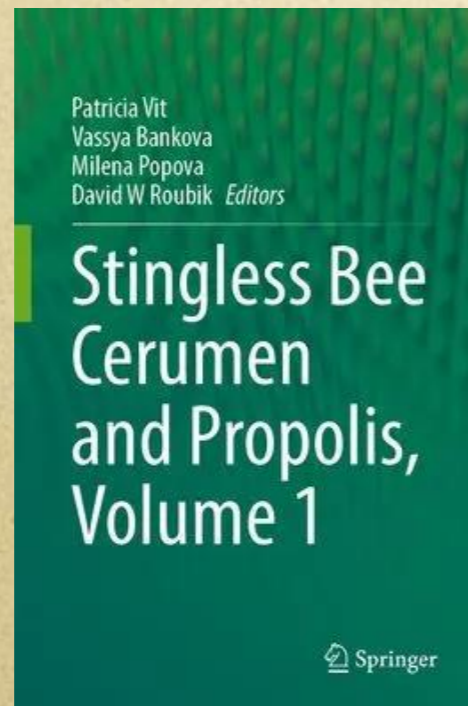
2020

Tyler & Francis



2023

Tyler & Francis



2024

Springer

THANK YOU

Bee connecting the WORLD



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Ms. Junjira Nakiam

KMUTT



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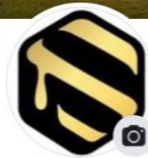
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