Nominating the bee trees of Nandagudi/Ramagovindapura as a World’s First Bee Heritage Site

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Honeybee species found in SE Asia

**Single comb, exposed nests**

**Giant Honeybees**
- *Apis dorsata* (3 sub-species)
  - i. *Apis dorsata* dorsata
  - ii. *Apis dorsata* binghami
  - iii. *Apis dorsata* breviligula
- *Apis laboriosa*

**Dwarf or Small Honeybees**
- *Apis andreniformis*
- *Apis florea*

**Multi comb, enclosed nests**

**Cavity nesting bees**
- *Apis cerana* (6 sub-species)
  - (1) *Apis cerana* koschevnikovi
  - (2) *Apis cerana* nigrocincta
  - (3) *Apis cerana* nuluensis
  - (4) *Apis cerana* cerana
  - (5) *Apis cerana* indica
  - (6) *Apis cerana* himalaya

**Introduced species**
- *Apis mellifera*
Distribution of *Apis dorsata* sub-species in Asia.
Apis dorsata – are most typically found in aggregated nesting sites in emergent trees
They frequently nest on man-made structures; apartment buildings, billboards and water towers are favorites at Bangalore.
The village of Ramagovindapura; a unique aggregation of *Apis dorsata* colonies.
In January, 2010 there were at least 630 colonies nesting in one tree in the center of Ramagovindapura village.
## Colonies monitored in Ramagovindapura tree

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Apis dorsata bee colonies</th>
<th>Number of colonies harvested</th>
<th>Income generation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>252</td>
<td>70</td>
<td>Rs. 12,000=00</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>310</td>
<td>110</td>
<td>Rs. 21,000=00</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>370</td>
<td>150</td>
<td>Rs. 32,000=00</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>410</td>
<td>150</td>
<td>Rs. 32,000=00</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>432</td>
<td>170</td>
<td>Rs. 34,000=00</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>410</td>
<td>160</td>
<td>Rs. 30,000=00</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>442</td>
<td>165</td>
<td>Rs. 32,000=00</td>
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</tr>
<tr>
<td>2005</td>
<td>475</td>
<td>150</td>
<td>Rs. 30,000=00</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>566</td>
<td>160</td>
<td>Rs. 34,000=00</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>570</td>
<td>180</td>
<td>Rs. 36,000=00</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>625</td>
<td>200</td>
<td>Rs. 38,000=00</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>617</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>630</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>2011</td>
<td>620</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>2012</td>
<td>622 (average # of nests over 15 years = 424)</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

*With a view to conserving populations of *Apis dorsata*, the harvesting of honey has been stopped.

During the study period, farmers report that there has been a tremendous increase in the productivity of agriculture, horticulture and the forest produce in the study area. The villagers are selling their farm products in the local market at a premium price.
What are the benefits of bees to the agricultural community?

- Increased fruit, seed, and nut set from the pollination efforts of honeybees.
- Villagers report harvesting 5 crops/year due to the presence of honeybees.
- Increased $N_2$ fertilizer contribution from the fecal deposits of honeybees.
How much of a $\text{N}_2$ fertilizer contribution can honeybees make?

20-30 colonies of *Apis dorsata* can deposit 800-1200 kg of $\text{N}_2$ fertilizer per year spread in the defecation area (Annamalai, 2012)

A pollen analysis of the fecal spotting from honey bees will reflect the bee-friendly crops in the area.
If we use the Annamalai, 2012 data of 40kg of N₂ per colony then the one village tree (averaging 424 colonies over 15 years) has produced **almost 17,000 kg of fertilizer per year**, spread over the defecation area. We need to confirm these numbers!
What are some other benefits for the community?

- Sales of honey and wax within and outside of the community.
- Manufacture of value added products from bee products - Hand creams, candles, etc.
- Tourist attraction - api and agritourism.
Incorporation and cooperation of the local villagers is an **integral** aspect of the project.
If nominated as World Heritage Site (WHS) what are some other benefits for the Nandagudi communities?

1. Legal protection of the land incorporated into the WHS zone.
2. Opportunity to instigate a chemical free (possible organic) zone close to a demanding market (Bangalore).
3. Continuation of traditional agricultural lifestyle for generations of famers to come even in the face of an expanding Bangalore.
How does a place become a WHS?

1) Recognition that a particular site has unique cultural or natural significance and outstanding universal value.

2) Establishing the boundaries of a particular site plus recommendation and recognition of a Buffer Zone.

3) Study and documentation of the unique characteristics and outstanding universal value, of the proposed site.
4) Current state of conservation and factors affecting the property.
5) Listing of site on the Home Country’s “tentative list”.
6) Submission of selected site names from the Country’s tentative list to the UN body (UNESCO).
7) Selection of sites by UNESCO.
We are seeking support from:

- Asian Apiculture Association
- Apimondia (world congress on BK)
- Recently formed Indian Pollinator Initiative (IPI)
- International Insect Science Congress
- AICRP on Honeybees and Pollinators
- Bangalore University (among others), State and national entities.
- World-wide entomological and environmental agencies.
This is NOT an easy process- it will take 3-4 years, numerous ecological, sociological and economic impact investigations; and will cost money!

Good News! We are just kilometers away from Bangalore University – easy access for student studies. Bad news- it will still cost money!
I would encourage all interested bee people to visit this "World’s First Bee Heritage Site" at Ramagivindapura to catch the Busses!
Thank you