Completion Report on Bee Sanctuary work at Bikkapathy Mund

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Udhagamandalam

By

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Introduction:

The location and densities of honeybee nests could be constrained by food availability, nest site limitation and nest predation (Seeley et al. 1982; Tscharntke et al. 1998; Liow et al. 2001; Eltz et al. 2002; Kajobe and Roubik 2006; Thomas et al. 2009). Food limitation probably plays a primary role in nest site selection among social insects (Deslippe and Savolainen 1994). Eltz et al. (2002) have shown that the nest densities of tropical stingless bees varied 20-fold at the landscape level with relation to floral resources. In general eusocial bees tend to be generalists in usage of floral resources, and might be less constrained by food availability (Michener 2000; Heithaus 1979).

Liow et al. (2001) have shown that the abundance of Apis spp. was not related to vegetation parameters, stingless bees might be more responsive to habitat features such as the presence of large trees. Stingless bee can be generalists or specialists with regard to nesting trees (Roubik 2006), and the abundance, size and species of trees appear to be associated with the density of stingless bee nests in tropical forests (Eltz et al. 2003; Samejima et al. 2004), and in Sarawak they seem to be partial to fig trees (Roubik 2006). A study on Trigona minangkabau in Sumatra also reiterates the importance of nesting site availability in limiting the number of colonies (Inoue et al. 1993), whereas other studies carried out in the Neotropics and in the dipterocarp forests of North Borneo indicate that importance of food resources (Hubbell and Johnson 1977; Eltz et al. 2002).

Nest predation could also be important in determining nest features and location. Honeybees of the genus Apis and many stingless honeybees of the tribe Meliponini have complex societies with permanent to semi-permanent nests with provision for the production and storage of honey. Therefore loss of nests could have drastic consequences. Among the tropical Apidae, responses to nest destruction can range from nest replacement to abandonment. The Meliponini that have permanent nests are more vulnerable to nest destruction since nests cannot be replaced.

Experiments have shown that Apis mellifera chose nest-sites based on two parameters: cavity size and entrance size (Lindauer 1961; Seeley 1977; Seeley and Buhrman 2001). Larger cavities allow large colonies to develop and small entrances reduce chances of predation (Seeley and Buhrman 2001). Increasing nesting height and colony level behavioral attributes influenced levels of nest predation in Meliponine colonies by tool using humans and chimpanzees in Uganda (Kajobe and Roubik 2006).

Among the Indian honeybees, the nests of the open nesting Apis dorsata are located in inaccessible sites and the ferocious workers actively defend the nest against intruders (Seeley et al. 1982; Thomas et al. 2009). Other species such as Apis florea are more susceptible to nest predation since the open nests are placed under twigs and branches on shrubs. Apis cerana nests in hollows and cavities and the nests are

well defended.
We looked at the nesting requirements of *Apis cerana* bees in randomly laid plots where the nests were located. *Apis cerana* are cavity nesting and build parallel combs. This study was conducted in one sites representing the shola grassland vegetation formation in the Nilgiri Biosphere Reserve, southern India.

Wild honey is an important product harvested from natural ecosystems worldwide for millennia (Crane 1999), and wild bees contribute pollination services vital for food production (Losey and Vaughn 2006). Therefore understanding the factors that regulate nest densities of wild honey bees could be important for the sustainable management of honey harvesting.

Study area and methodology:

The Nilgiri Biosphere Reserve (NBR) is part of the Western and Eastern Ghats chain of mountains of the Indian peninsula, and lies between 100 45'N to 12 0 N and 760 E to 770 15' E with a total area of 5520 km2 spread across the three southern states of Karnataka, Kerala and Tamil Nadu. Altitude varies from 250m to 2650m, and at least four of the major rivers of south India originate in this region - the Bhavani, Moyar, Kabini and Chaliyar rivers. The intensity of the rainfall brought by the south west and north east monsoon winds differ across topographic and altitudinal gradients (Lengerke 1989). The western ranges of the NBR receive higher precipitation (up to 4600 mm) while the eastern parts are part of the rain shadow, receiving less than 800 mm rainfall annually (Prabhakar 1994). Most of the precipitation is during the South West monsoon from the months of June to August. The eastern and northern parts often suffer from drought, though some rainfall from October to November is received during the North East monsoon.

This range of topography and climate has resulted in sharp gradients of vegetation composition, ranging from thorny scrub forest dominating the north-eastern region and intergrading westwards into dry and moist deciduous forests and wet evergreen forests towards the Wynaad. Most of the major vegetation types of peninsular India occur in the NBR (Champion and Seth 1968). Many of the indigenous communities in the Nilgiris are dependent upon wild honey to supplement household income (Keystone Foundation 2007).

Bikkapathy Mund, in the Kotagiri region was chosen as the study site to propose a Bee Sanctuary declaration for the area. The village is inhabited by Todas, an indigenous community of the region.

We used random 10x10m plots to determine the density of Apis cerana bee colonies in the region. Each plot was intensively searched for nests among the vegetation and on the ground with the assistance of experienced honey gatherers from the local tribal community, reducing the probability of missing nests, particularly of the less conspicuous colonies.

Preliminary Results:

A total of 53 colonies were located and tagged. Only 11 of the 53 colonies were occupied. The remaining cavities were unoccupied. The number of tree species in which these cavities were found was 21. The average height of trees in which the colonies present was 15.8m and an average girth of 1.71m. On the other hand the average height of trees in which the cavities were unoccupied was 14.6 and the average girth was 3.1m.

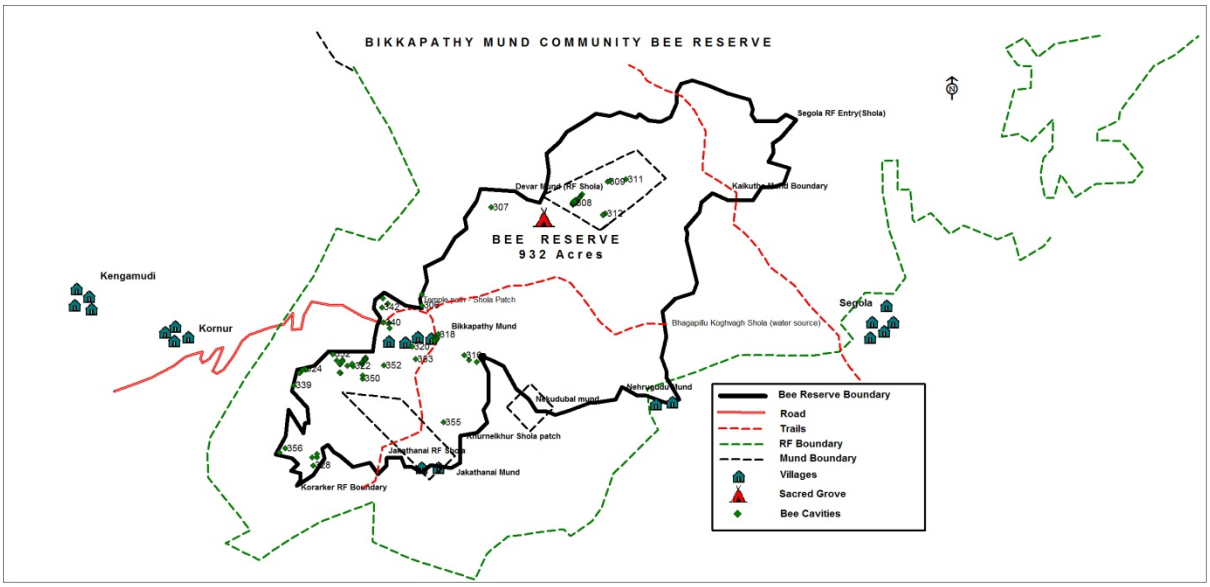

Fig1. Map of Apis cerana colony distribution in Bikkapathy Mund

Discussion:

The traditional system of wild bee rearing is practised within the Toda community.
However, during recent times these trends have changed to a certain extent, wherein the cavities are not maintained and in certain cases subject to predation by animals and humans. Improper methods of harvest have also led to the cavities been damaged, which results in not being occupied by the *Apis cerana* bees. Through the tagging of these cavities, we envisage that a participatory method of community based monitoring is initiated. In a manner that the cavities are regularly monitored and maintained so that it is occupied by the Apis cerana bees. This would have a direct benefits, in terms of pollination services, as in the Nilgiri Biosphere Reserve Apis cerana is known to pollinate 74% of the plants. It is indeed of prime importance that these habitats are preserved and conserved.

Based on the discussion the colonies were enumerated in the forest region and tagged with GPS ids and mapped the area. The demarcated area for the community bee reserve is 932 acres and has a colony density of 57 bee cavities which were taken up for monitoring. A group discussion with the honey gatherers happened to ensure the importance of the

protection to the bees and the reserve in terms of not only honey as a source of income but also its importance in pollination, biodiversity aspect. Two display boards on the community bee reserve with a map was erected one at the Mund entrance and the other at the Kukalthorai junction where people use the footpath leading to the Mund and the reserve.

The monitoring of the bee cavities in the reserve was for a period of five months which started from the month of February 2012 up to June 2012. It was observed once every 15 days after the bee cavity has been occupied and once a month if the cavity is empty. Data sheets were maintained periodically to check the absence presence of bees and a whole range of information were collected related to status of cavity occupation, location, if cavity occupied the activity of bees there in whether dancing, bringing in pollen etc. The flowering vegetation pattern is recorded and any other relevant information related to that specific location is also observed. One cavity is observed for minimum 15 minutes for the data collection. During the observation period of five months the colony occupancy was from 15 cavities to maximum of 17 cavities. There were different flowering trees from wild to lantana etc. The data collection is shown in the Annexure below.

Display board at Bikkpathy Mund about the Community Bee Reserve

Annexure **Community Bee Reserve - Bee Colony monitoring data sheet** February 2012 - Starting Round

(To be taken once every month and twice a month after colony has been occupied by bees) Observation time for each cavity – 15 min.

Tag ID	Name of surveyor	Date	Location of the Shola	Status of cavity (Empty, Occupied-Intact, plundered, harvested, re cut, etc)	If Occupied, estimated age of colony :	Bee type (If Apiscerana then color, local name of bee)	Bee activity if cavity colonized (Bees dancing, entering, leaving, less bees leaving, more bees entering ,entering with pollen load)	Name of the flowering tree	Bees Foraging(Y/N)	If Y, colour of bee	Number of Bees(Few/Many)	Harvest Status (ready to harvest or will be ready in 2 weeks or harvested 2 kgs. Honey golden or brown or pale color, taste)	Notes
1	Kuttan,Ptker	22-02-2012	Devermund	Empty		Cerana,theneri							No flower
2	Kuttan,Ptker	22-02-2012	Devermund	Empty		Cerana,theneri							No flower
3	Kuttan,Ptker	22-02-2012	Devermund	Empty		Cerana,theneri							No flower
4	Kuttan,Ptker	22-02-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color	Kiskark	Foraging no				
5	Kuttan,Ptker	22-02-2012	Devermund	Empty		Cerana,theneri							No flower
6	Kuttan,Ptker	22-02-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color						No flower
7	Kuttan,Ptker	22-02-2012	Devermund	Empty		Cerana,theneri							No flower
8	Kuttan,Ptker	22-02-2012	Devermund	Empty		Cerana,theneri							No flower
9	Kuttan,Ptker	22-02-2012	Devermund	Empty		Cerana,theneri							No flower
10	Kuttan,Ptker	22-02-2012	Devermund	Empty		Cerana,theneri							No flower
11	Kuttan,Ptker	22-02-2012	Devermund	Empty		Cerana,theneri							No flower
12	Kuttan,Ptker	22-02-2012	Bkm	Empty		Cerana,theneri							No flower
13	Kuttan,Ptker	22-02-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
14	Kuttan,Ptker	22-02-	Bkm	Working		Cerana,theneri	Pollen collet yellow	Kersh foraging					

		2012					color	sound					
15	Kuttan,Ptker	22-02-2012	Bkm	Empty		Cerana,theneri							No flower
16	Kuttan,Ptker	22-02-2012	Bkm	Empty		Cerana,theneri							No flower
17	Kuttan,Ptker	22-02-2012	Bkm	Empty		Cerana,theneri		Landana					
18	Kuttan,Ptker	22-02-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound	Redes				
19	Kuttan,Ptker	22-02-2012	Bkm	Empty		Cerana,theneri							No flower
20	Kuttan,Ptker	23-05-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color						
21	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
22	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri		Kersh foraging sound					
23	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri							
24	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri							
25	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri							
26	Kuttan,Ptker	23-05-2012	Koraryur	Empty		Cerana,theneri							
27	Kuttan,Ptker	23-05-2012	Koraryur	Working	15days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
28	Kuttan,Ptker	23-05-2012	Koraryur	Working	15days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
29	Kuttan,Ptker	23-05-2012	Koraryur	Working		Cerana,theneri	Pollen collet yellow color						
30	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri							
31	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri							
32	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri							
33	Kuttan,Ptker	23-05-2012	Thoduthrsh	Working	15days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
34	Kuttan,Ptker	23-05-2012	Thoduthrsh	Working	One month	Cerana,theneri	Pollen collet yellow color						
35	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Empty		Cerana,theneri		Oduthin foraging sound					

36	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Empty		Cerana,theneri		Kersh foraging sound					
37	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Empty		Cerana,theneri							
38	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Empty		Cerana,theneri							
39	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
40	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri							
41	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri							
42	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Empty		Cerana,theneri							
43	Kuttan,Ptker	23-05-2012	Thoduthrsh	Empty		Cerana,theneri		Kersh foraging sound					
44	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
45	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Empty		Cerana,theneri							
46	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Empty		Cerana,theneri							
47	Kuttan,Ptker	23-05-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
48	Kuttan,Ptker	22-02-2012	Thoduthrsh	Empty		Cerana,theneri							
49	Kuttan,Ptker	22-02-2012	Kuduri thrsh	Empty		Cerana,theneri							
50	Kuttan,Ptker	23-05-2012	Kuduri thrsh	Empty		Cerana,theneri							
51	Kuttan,Ptker	22-02-2012	Kothrundi	Empty		Cerana,theneri							
52	Kuttan,Ptker	23-05-2012	Kothrundi	Empty		Cerana,theneri							Noflower
53	Kuttan,Ptker	23-05-2012	Kothrundi	Empty		Cerana,theneri							
54	Kuttan,Ptker	22-02-2012	BKm	Working		Cerana,theneri	Pollen collet yellow color	Landana bees no ac					

Community Bee Reserve - Bee Colony monitoring data sheet

March 2012 - 1st Round

(To be taken once every month and twice a month after colony has been occupied by bees) Observation time for each cavity – 15 min.

Tag ID	*Name of surveyor*	*Date*	*Location of the Shola*	*Status of cavity (Empty, Occupied-Intact, plundered , harvested , re cut, etc)*	*If Occupied, estimated age of colony :*	*Bee type (If Apiscerana then color, local name of bee)*	*Bee activity if cavity colonized (Bees dancing, entering, leaving, less bees leaving, more bees entering ,entering with pollen load)*	*Name of the flowering tree*	*Bees Foraging(Y/N)*	*If Y, colour of bee*	*Number of Bees(Few/Many)*	*Harvest Status (ready to harvest or will be ready in 2 weeks or harvested 2 kgs. Honey golden or brown or pale color, taste)*	*Notes*
1	Kuttan,Ptker	03-09-2012	Devermund	Empty		Cerana,thenери							No flower
2	Kuttan,Ptker	03-09-2012	Devermund	Empty		Cerana,thenери							No flower
3	Kuttan,Ptker	03-09-2012	Devermund	Empty		Cerana,thenери							No flower
4	Kuttan,Ptker	03-09-2012	Devermund	Working		Cerana,thenери	Pollen collet yellow color	Kiskark	Foraging no				
5	Kuttan,Ptker	03-09-2012	Devermund	Empty		Cerana,thenери							No flower
6	Kuttan,Ptker	03-09-2012	Devermund	Working		Cerana,thenери	Pollen collet yellow color						No flower
7	Kuttan,Ptker	03-09-2012	Devermund	Empty		Cerana,thenери							No flower
8	Kuttan,Ptker	03-09-2012	Devermund	Empty		Cerana,thenери							No flower
9	Kuttan,Ptker	03-09-2012	Devermund	Empty		Cerana,thenери							No flower
10	Kuttan,Ptker	03-09-2012	Devermund	Empty		Cerana,thenери							No flower
11	Kuttan,Ptker	03-09-2012	Devermund	Empty		Cerana,thenери							No flower

12	Kuttan,Ptker	03-09-2012	Bkm	Empty		Cerana,thenri							No flower
13	Kuttan,Ptker	03-09-2012	Bkm	Working		Cerana,thenri	Pollen collet yellow color	Kersh foraging sound					
14	Kuttan,Ptker	03-09-2012	Bkm	Working		Cerana,thenri	Pollen collet yellow color	Kersh foraging sound					
15	Kuttan,Ptker	03-07-2012	Bkm	Empty		Cerana,thenri							No flower
16	Kuttan,Ptker	03-07-2012	Bkm	Empty		Cerana,thenri							No flower
17	Kuttan,Ptker	03-07-2012	Bkm	Empty		Cerana,thenri		Landana					
18	Kuttan,Ptker	03-07-2012	Bkm	Working		Cerana,thenri	Pollen collet yellow color	Kersh foraging sound	Redes				
19	Kuttan,Ptker	03-07-2012	Bkm	Empty		Cerana,thenri							No flower
20	Kuttan,Ptker	03-07-2012	Thoduthrsh	Working		Cerana,thenri	Pollen collet yellow color						
21	Kuttan,Ptker	03-07-2012	Thoduthrsh	Empty		Cerana,thenri							Noflower
22	Kuttan,Ptker	03-07-2012	Thoduthrsh	Empty		Cerana,thenri		Kersh foraging sound					
23	Kuttan,Ptker	03-07-2012	Thoduthrsh	Empty		Cerana,thenri							
24	Kuttan,Ptker	03-07-2012	Thoduthrsh	Empty		Cerana,thenri							
25	Kuttan,Ptker	03-09-2012	Thoduthrsh	Empty		Cerana,thenri							
26	Kuttan,Ptker	03-09-2012	Koraryur	Empty		Cerana,thenri							
27	Kuttan,Ptker	03-09-2012	Koraryur	Working	25days	Cerana,thenri	Pollen collet yellow color	Kersh foraging sound					
28	Kuttan,Ptker	03-09-2012	Koraryur	Working	15days	Cerana,thenri	Pollen collet yellow color	Kersh foraging sound					
29	Kuttan,Ptker	03-09-2012	Koraryur	Working		Cerana,thenri	Pollen collet yellow color						
30	Kuttan,Ptker	03-09-2012	Thoduthrsh	Empty		Cerana,thenri							
31	Kuttan,Ptker	03-09-2012	Thoduthrsh	Empty		Cerana,thenri							
32	Kuttan,Ptker	03-09-2012	Thoduthrsh	Empty		Cerana,thenri							
33	Kuttan,Ptker	03-09-2012	Thoduthrsh	Working	15days	Cerana,thenri	Pollen collet yellow color	Kersh foraging sound					

34	Kuttan,Ptker	03-09-2012	Thoduthrsh	Working	One month	Cerana,thenери	Pollen collet yellow color						
35	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Empty		Cerana,thenери		Oduthin foraging sound					
36	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Empty		Cerana,thenери		Kersh foraging sound					
37	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Empty		Cerana,thenери							
38	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Empty		Cerana,thenери							
39	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Working		Cerana,thenери	Pollen collet yellow color	Kersh foraging sound					
40	Kuttan,Ptker	03-07-2012	Thoduthrsh	Empty		Cerana,thenери							
41	Kuttan,Ptker	03-07-2012	Thoduthrsh	Empty		Cerana,thenери							
42	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Empty		Cerana,thenери							
43	Kuttan,Ptker	03-07-2012	Thoduthrsh	Empty		Cerana,thenери		Kersh foraging sound					
44	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Working		Cerana,thenери	Pollen collet yellow color	Kersh foraging sound					
45	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Empty		Cerana,thenери							
46	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Empty		Cerana,thenери							
47	Kuttan,Ptker	03-07-2012	Thoduthrsh	Working		Cerana,thenери	Pollen collet yellow color	Kersh foraging sound					
48	Kuttan,Ptker	03-07-2012	Thoduthrsh	Empty		Cerana,thenери							
49	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Empty		Cerana,thenери							
50	Kuttan,Ptker	03-07-2012	Kuduri thrsh	Empty		Cerana,thenери							
51	Kuttan,Ptker	03-09-2012	Kothrundi	Empty		Cerana,thenери							
52	Kuttan,Ptker	03-09-2012	Kothrundi	Empty		Cerana,thenери							Noflower
53	Kuttan,Ptker	03-09-2012	Kothrundi	Empty		Cerana,thenери							
54	Kuttan,Ptker	03-09-2012	BKm	Working		Cerana,thenери	Pollen collet yellow color	Landana bees no ac					
55	Kuttan,Ptker	03-07-2012	Thoduthrsh	Empty		Cerana,thenери							

56	Kuttan,Ptker	03-07-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color						
57	Kuttan,Ptker	03-07-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color						

Community Bee Reserve - Bee Colony monitoring data sheet

March 2012 - 2nd Round

(To be taken once every month and twice a month after colony has been occupied by bees) Observation time for each cavity – 15 min.

Tag ID	*Name of surveyor*	*Date*	*Location of the Shola*	*Status of cavity (Empty, Occupied-Intact, plundered, harvested, re cut, etc)*	*If Occupied, estimated age of colony :*	*Bee type (If Apiscerana then color, local name of bee)*	*Bee activity if cavity colonized (Bees dancing, entering, leaving, less bees leaving, more bees entering ,entering with pollen load)*	*Name of the flowering tree*	*Bees Foraging(Y/N)*	*If Y, colour of bee*	*Number of Bees(Few/Many)*	*Harvest Status (ready to harvest or will be ready in 2 weeks or harvested 2 kgs. Honey golden or brown or pale color, taste)*	*Notes*
1	Kuttan,Ptker	27/3/2012	Devermund	Empty		Cerana,theneri							No flower
2	Kuttan,Ptker	27/3/2012	Devermund	Empty		Cerana,theneri							No flower
3	Kuttan,Ptker	27/3/2012	Devermund	Empty		Cerana,theneri							No flower
4	Kuttan,Ptker	27/3/2012	Devermund	Working	10month	Cerana,theneri	Pollen collet yellow color	Kiskark	Foraging no				
5	Kuttan,Ptker	27/3/2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color						No flower
6	Kuttan,Ptker	27/3/2012	Devermund	Empty		Cerana,theneri							No flower
7	Kuttan,Ptker	27/3/2012	Devermund	Empty		Cerana,theneri							No flower
8	Kuttan,Ptker	27/3/2012	Devermund	Empty		Cerana,theneri							No flower
9	Kuttan,Ptker	27/3/2012	Devermund	Empty		Cerana,theneri							No flower

10	Kuttan,Ptker	27/3/2012	Devermund	Empty		Cerana,theneri							No flower
11	Kuttan,Ptker	27/3/2012	Devermund	Empty		Cerana,theneri							No flower
12	Kuttan,Ptker	27/3/2012	Bkm	Empty		Cerana,theneri							No flower
13	Kuttan,Ptker	27/3/2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
14	Kuttan,Ptker	27/3/2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
15	Kuttan,Ptker	27/3/2012	Bkm	Empty		Cerana,theneri							No flower
16	Kuttan,Ptker	27/3/2012	Bkm	Empty		Cerana,theneri		Cockwood,koli					No flower
17	Kuttan,Ptker	27/3/2012	Bkm	Empty		Cerana,theneri		Landana					
18	Kuttan,Ptker	26/3/2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound	Redes				
19	Kuttan,Ptker	03-07-2012	Bkm	Empty		Cerana,theneri							No flower
20	Kuttan,Ptker	26-3-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color						
21	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
22	Kuttan,Ptker	26/3/2012	Thoduthrsh	Working	15days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
23	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
24	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
25	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri		Kersh foraging sound					Noflower
26	Kuttan,Ptker	26/3/2012	Koraryur	Empty		Cerana,theneri							Noflower
27	Kuttan,Ptker	26/3/2012	Koraryur	Working	40days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
28	Kuttan,Ptker	26/3/2012	Koraryur	Working	30days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
29	Kuttan,Ptker	26/3/2012	Koraryur	Working	2month	Cerana,theneri	Pollen collet yellow color						
30	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
31	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower

32	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
33	Kuttan,Ptker	26/3/2012	Thoduthrsh	Working	30days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
34	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty	45days	Cerana,theneri							
35	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
36	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
37	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
38	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
39	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
40	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
41	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
42	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
43	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri		Kersh foraging sound					
44	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
45	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
46	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
47	Kuttan,Ptker	26/3/2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
48	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
49	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
50	Kuttan,Ptker	26/3/2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
51	Kuttan,Ptker	26/3/2012	Kothrundi	Empty		Cerana,theneri							Noflower
52	Kuttan,Ptker	26/3/2012	Kothrundi	Empty		Cerana,theneri							Noflower
53	Kuttan,Ptker	26/3/2012	Kothrundi	Empty		Cerana,theneri							Noflower

54	Kuttan,Ptker	27/3/2012	BKm	Working		Cerana,theneri	Pollen collet yellow color	Landana bees no ac					
55	Kuttan,Ptker	26/3/2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
56	Kuttan,Ptker	26/3/2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color						
57	Kuttan,Ptker	26/3/2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					

Community Bee Reserve - Bee Colony monitoring data sheet

April 1 st Round

(To be taken once every month and twice a month after colony has been occupied by bees) Observation time for each cavity – 15 min.

Tag ID	*Name of surveyor*	*Date*	*Location of the Shola*	*Status of cavity (Empty, Occupied-Intact, plundered, harvested, re cut, etc)*	*If Occupied, estimated age of colony :*	*Bee type (If Apiscerana then color, local name of bee)*	*Bee activity if cavity colonized (Bees dancing, entering, leaving, less bees leaving, more bees entering ,entering with pollen load)*	*Name of the flowering tree*	*Bees Foraging(Y/N)*	*If Y, colour of bee*	*Number of Bees(Few/Many)*	*Harvest Status (ready to harvest or will be ready in 2 weeks or harvested 2 kgs. Honey golden or brown or pale color, taste)*	*Notes*
1	Kuttan,Ptker	28-04-2012	Devermund	Empty		Cerana,theneri							No flower
2	Kuttan,Ptker	28-04-2012	Devermund	Empty		Cerana,theneri							No flower
3	Kuttan,Ptker	28-04-2012	Devermund	Empty		Cerana,theneri							No flower
4	Kuttan,Ptker	28-04-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color	Kiskark	Foraging no				
5	Kuttan,Ptker	28-04-2012	Devermund	Empty		Cerana,theneri							No flower
6	Kuttan,Ptker	28-04-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color						No flower
7	Kuttan,Ptker	28-04-2012	Devermund	Empty		Cerana,theneri							No flower
8	Kuttan,Ptker	28-04-2012	Devermund	Empty		Cerana,theneri							No flower
9	Kuttan,Ptker	28-04-2012	Devermund	Empty		Cerana,theneri							No flower

10	Kuttan,Ptker	28-04-2012	Devermund	Empty		Cerana,theneri							No flower
11	Kuttan,Ptker	28-04-2012	Devermund	Empty		Cerana,theneri							No flower
12	Kuttan,Ptker	28-04-2012	Bkm	Empty		Cerana,theneri							No flower
13	Kuttan,Ptker	28-04-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
14	Kuttan,Ptker	28-04-2012	Bkm	Empty		Cerana,theneri							No flower
15	Kuttan,Ptker	28-04-2012	Bkm	Empty		Cerana,theneri							No flower
16	Kuttan,Ptker	28-04-2012	Bkm	Empty		Cerana,theneri		Koli,Ladana no foraging					No flower
17	Kuttan,Ptker	28-04-2012	Bkm	Empty		Cerana,theneri		Landana ,Koli,Pudur no foraging					
18	Kuttan,Ptker	27-04-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Redes,karugu foraging sound					
19	Kuttan,Ptker	27-04-2012	Bkm	Empty		Cerana,theneri							No flower
20	Kuttan,Ptker	27-04-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color						No flower
21	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
22	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri		Kersh foraging sound					
23	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
24	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
25	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
26	Kuttan,Ptker	27-04-2012	Koraryur	Empty		Cerana,theneri							Noflower
27	Kuttan,Ptker	27-04-2012	Koraryur	Working	70days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
28	Kuttan,Ptker	27-04-2012	Koraryur	Working	60days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
29	Kuttan,Ptker	27-04-2012	Koraryur	Working		Cerana,theneri	Pollen collet yellow color						
30	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
31	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower

32	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
33	Kuttan,Ptker	27-04-2012	Thoduthrsh	Working	60days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
34	Kuttan,Ptker	27-04-2012	Thoduthrsh	Working	75days	Cerana,theneri	Pollen collet yellow color						
35	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Empty		Cerana,theneri		Oduthin foraging sound					Noflower
36	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Empty		Cerana,theneri		Kersh foraging sound					Noflower
37	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
38	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
39	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
40	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
41	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
42	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
43	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri		Kersh foraging sound					
44	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
45	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
46	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
47	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
48	Kuttan,Ptker	27-04-2012	Thoduthrsh	Working	1year	Cerana,theneri	Pollen collet yellow color		and white color				Noflower
49	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
50	Kuttan,Ptker	27-04-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
51	Kuttan,Ptker	27-04-2012	Kothrundi	Empty		Cerana,theneri		Padani foraging 4bee AC					
52	Kuttan,Ptker	27-04-2012	Kothrundi	Empty		Cerana,theneri							Noflower
53	Kuttan,Ptker	27-04-2012	Kothrundi	Working		Cerana,theneri	Pollen collet yellow color						Noflower

54	Kuttan,Ptker	27-04-2012	BKm	Working		Cerana,theneri	Pollen collet yellow color	Landana bees no ac					
55	Kuttan,Ptker	27-04-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
56	Kuttan,Ptker	27-04-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet red color						Noflower
57	Kuttan,Ptker	27-04-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color						Noflower

Community Bee Reserve - Bee Colony monitoring data sheet

April 2nd Round

(To be taken once every month and twice a month after colony has been occupied by bees) Observation time for each cavity – 15 min.

Tag ID	*Name of surveyor*	*Date*	*Location of the Shola*	*Status of cavity (Empty, Occupied-Intact, plundered, harvested, re cut, etc)*	*If Occupied, estimated age of colony :*	*Bee type (If Apiscerana then color, local name of bee)*	*Bee activity if cavity colonized (Bees dancing, entering, leaving, less bees leaving, more bees entering ,entering with pollen load)*	*Name of the flowering tree*	*Bees Foraging(Y/N)*	*If Y, colour of bee*	*Number of Bees(Few/Many)*	*Harvest Status (ready to harvest or will be ready in 2 weeks or harvested 2 kgs. Honey golden or brown or pale color, taste)*	*Notes*
1	Kuttan,Ptker		Devermund	Empty		Cerana,theneri							No flower
2	Kuttan,Ptker	04-12-2012	Devermund	Empty		Cerana,theneri							No flower
3	Kuttan,Ptker	04-12-2012	Devermund	Empty		Cerana,theneri							No flower
4	Kuttan,Ptker	04-12-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color	Kiskark	Foraging no				
5	Kuttan,Ptker	04-12-2012	Devermund	Empty		Cerana,theneri							No flower
6	Kuttan,Ptker	04-12-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color						No flower
7	Kuttan,Ptker	04-12-2012	Devermund	Empty		Cerana,theneri							No flower

8	Kuttan,Ptker	04-12-2012	Devermund	Empty		Cerana,theneri								No flower
9	Kuttan,Ptker	04-12-2012	Devermund	Empty		Cerana,theneri								No flower
10	Kuttan,Ptker	04-12-2012	Devermund	Empty		Cerana,theneri								No flower
11	Kuttan,Ptker	04-12-2012	Devermund	Empty		Cerana,theneri								No flower
12	Kuttan,Ptker	04-12-2012	Bkm	Empty		Cerana,theneri								No flower
13	Kuttan,Ptker	04-12-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound						
14	Kuttan,Ptker	04-12-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound						
15	Kuttan,Ptker	04-12-2012	Bkm	Empty		Cerana,theneri								No flower
16	Kuttan,Ptker	04-12-2012	Bkm	Empty		Cerana,theneri								No flower
17	Kuttan,Ptker	04-12-2012	Bkm	Empty		Cerana,theneri		Landana						
18	Kuttan,Ptker	04-12-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound	Redes					
19	Kuttan,Ptker	04-12-2012	Bkm	Empty		Cerana,theneri								No flower
20	Kuttan,Ptker	04-10-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color							
21	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri								Noflower
22	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri		Kersh foraging sound						
23	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri								Noflower
24	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri								Noflower
25	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri								Noflower
26	Kuttan,Ptker	04-10-2012	Koraryur	Empty		Cerana,theneri								Noflower
27	Kuttan,Ptker	04-10-2012	Koraryur	Working	55days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound						
28	Kuttan,Ptker	04-10-2012	Koraryur	Working	45days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound						
29	Kuttan,Ptker	04-10-2012	Koraryur	Working		Cerana,theneri	Pollen collet yellow color							
30	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri								Noflower
31	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri								Noflower
32	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri								Noflower
33	Kuttan,Ptker	04-10-2012	Thoduthrsh	Working	45days	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound						
34	Kuttan,Ptker	04-10-2012	Thoduthrsh	Working	60days	Cerana,theneri	Pollen collet yellow color							

35	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Empty		Cerana,theneri		Oduthin foraging sound					Noflower
36	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Empty		Cerana,theneri		Kersh foraging sound					Noflower
37	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
38	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
39	Kuttan,Ptker	04-12-2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
40	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
41	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
42	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
43	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri		Kersh foraging sound					
44	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
45	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
46	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
47	Kuttan,Ptker	04-10-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					
48	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
49	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
50	Kuttan,Ptker	04-10-2012	Kuduri thrsh	Empty		Cerana,theneri							Noflower
51	Kuttan,Ptker	04-10-2012	Kothrundi	Empty		Cerana,theneri							Noflower
52	Kuttan,Ptker	04-10-2012	Kothrundi	Empty		Cerana,theneri							Noflower
53	Kuttan,Ptker	04-10-2012	Kothrundi	Empty		Cerana,theneri							Noflower
54	Kuttan,Ptker	04-12-2012	BKm	Working		Cerana,theneri	Pollen collet yellow color	Landana bees no ac					
55	Kuttan,Ptker	04-10-2012	Thoduthrsh	Empty		Cerana,theneri							Noflower
56	Kuttan,Ptker	04-10-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color						
57	Kuttan,Ptker	04-10-2012	Bkm	Working	1month	Cerana,theneri	Pollen collet yellow color	Kersh foraging sound					

Community Bee Reserve - Bee Colony monitoring data sheet

May - Ist Round

(To be taken once every month and twice a month after colony has been occupied by bees) Observation time for each cavity – 15 min.

Tag ID	*Name of surveyor*	*Date*	*Location of the Shola*	*Status of cavity (Empty, Occupied-Intact, plundered, harvested, re cut, etc)*	*If Occupied, estimated age of colony :*	*Bee type (If Apiscerana then color, local name of bee)*	*Bee activity if cavity colonized (Bees dancing, entering, leaving, less bees leaving, more bees entering ,entering with pollen load)*	*Name of the flowering tree*	*Bees Foraging(Y/N)*	*If Y, colour of bee*	*Number of Bees(Few/Many)*	*Harvest Status (ready to harvest or will be ready in 2 weeks or harvested 2 kgs. Honey golden or brown or pale color, taste)*
1	Kuttan,Ptker	15-05-2012	Devermund	Empty		Cerana,theneri						
2	Kuttan,Ptker	15-05-2012	Devermund	Empty		Cerana,theneri						
3	Kuttan,Ptker	15-05-2012	Devermund	Empty		Cerana,theneri						
4	Kuttan,Ptker	15-05-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color					
5	Kuttan,Ptker	15-05-2012	Devermund	Empty		Cerana,theneri						
6	Kuttan,Ptker	15-05-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color					
7	Kuttan,Ptker	15-05-2012	Devermund	Empty		Cerana,theneri						
8	Kuttan,Ptker	15-05-2012	Devermund	Empty		Cerana,theneri						
9	Kuttan,Ptker	15-05-2012	Devermund	Empty		Cerana,theneri						
10	Kuttan,Ptker	15-05-2012	Devermund	Empty		Cerana,theneri						
11	Kuttan,Ptker	15-05-2012	Devermund	Empty		Cerana,theneri						
12	Kuttan,Ptker	15-05-2012	Bkm	Empty		Cerana,theneri						
13	Kuttan,Ptker	15-05-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color					
14	Kuttan,Ptker	15-05-2012	Bkm	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
15	Kuttan,Ptker	15-05-2012	Bkm	Empty		Cerana,theneri						
16	Kuttan,Ptker	15-05-	Bkm	Empty		Cerana,theneri						

		2012										
17	Kuttan,Ptker	15-05-2012	Bkm	Empty		Cerana,theneri		Lantana,Koli,	pudur forage no ac			
18	Kuttan,Ptker	15-05-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Redes,Karugu forage no ac				
19	Kuttan,Ptker	15-05-2012	Bkm	Empty		Cerana,theneri						
20	Kuttan,Ptker	17-05-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color					
21	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri		Neeran no forage ac				
22	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri		Neeran no forage ac				
23	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri						
24	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri						
25	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri						
26	Kuttan,Ptker	17-05-2012	Koraryur	Empty		Cerana,theneri						
27	Kuttan,Ptker	17-05-2012	Koraryur	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
28	Kuttan,Ptker	17-05-2012	Koraryur	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
29	Kuttan,Ptker	17-05-2012	Koraryur	Working		Cerana,theneri	Pollen collet yellow color					
30	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri						
31	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri						
32	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri						
33	Kuttan,Ptker	17-05-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color	Neeran no forage ac				
34	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
35	Kuttan,Ptker	17-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
36	Kuttan,Ptker	17-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
37	Kuttan,Ptker	17-05-2012	Kuduri thrsh	Empty		Cerana,theneri						

38	Kuttan,Ptker	17-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
39	Kuttan,Ptker	17-05-2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet red and yellow color					
40	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri						
41	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri						
42	Kuttan,Ptker	17-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
43	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty		Cerana,theneri						
44	Kuttan,Ptker	17-05-2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet red and white color					
45	Kuttan,Ptker	17-05-2012	Kuduri thrsh	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
46	Kuttan,Ptker	17-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
47	Kuttan,Ptker	17-05-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color					
48	Kuttan,Ptker	17-05-2012	Thoduthrsh	Empty	1year	Cerana,theneri						
49	Kuttan,Ptker	15-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
50	Kuttan,Ptker	15-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
51	Kuttan,Ptker	15-05-2012	Kothrundi	Empty		Cerana,theneri		Padani forage no ac				
52	Kuttan,Ptker	17-05-2012	Kothrundi	Empty		Cerana,theneri						
53	Kuttan,Ptker	17-05-2012	Kothrundi	Working	15days	Cerana,theneri	Pollen collet yellow color					
54	Kuttan,Ptker	15-05-2012	BKm	Working	1year	Cerana,theneri	Pollen collet yellow color	Landana,forage no ac				
55	Kuttan,Ptker	15-05-2012	Thoduthrsh	Empty		Cerana,theneri						
56	Kuttan,Ptker	17-05-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color					
57	Kuttan,Ptker	17-05-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color					

Community Bee Reserve - Bee Colony monitoring data sheet May 2nd Round

(To be taken once every month and twice a month after colony has been occupied by bees) Observation time for each cavity – 15 min.

Tag ID	*Name of surveyor*	*Date*	*Location of the Shola*	*Status of cavity (Empty, Occupied-Intact, plundered, harvested, re cut, etc)*	*If Occupied, estimated age of colony :*	*Bee type (If Apiscerana then color, local name of bee)*	*Bee activity if cavity colonized (Bees dancing, entering, leaving, less bees leaving, more bees entering ,entering with pollen load)*	*Name of the flowering tree*	*Bees Foraging(Y/N)*	*If Y, colour of bee*	*Number of Bees(Few/Many)*	*Harvest Status (r harvest or will be 2 weeks or harve kgs. Honey golde brown or pale co taste)*
1	Kuttan,Ptker	30-05-2012	Devermund	Empty		Cerana,theneri						
2	Kuttan,Ptker	30-05-2012	Devermund	Empty		Cerana,theneri						
3	Kuttan,Ptker	30-05-2012	Devermund	Empty		Cerana,theneri						
4	Kuttan,Ptker	30-05-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color					
5	Kuttan,Ptker	30-05-2012	Devermund	Empty		Cerana,theneri						
6	Kuttan,Ptker	30-05-2012	Devermund	Working		Cerana,theneri	Pollen collet yellow color					
7	Kuttan,Ptker	30-05-2012	Devermund	Empty		Cerana,theneri						
8	Kuttan,Ptker	30-05-2012	Devermund	Empty		Cerana,theneri						
9	Kuttan,Ptker	30-05-2012	Devermund	Empty		Cerana,theneri						
10	Kuttan,Ptker	30-05-2012	Devermund	Empty		Cerana,theneri						
11	Kuttan,Ptker	30-05-2012	Devermund	Empty		Cerana,theneri						
12	Kuttan,Ptker	30-05-2012	Bkm	Empty		Cerana,theneri						
13	Kuttan,Ptker	30-05-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color					
14	Kuttan,Ptker	30-05-2012	Bkm	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
15	Kuttan,Ptker	30-05-2012	Bkm	Empty		Cerana,theneri						

16	Kuttan,Ptker	30-05-2012	Bkm	Empty		Cerana,theneri						
17	Kuttan,Ptker	30-05-2012	Bkm	Empty		Cerana,theneri		Lantana,Koli,	pudur forage no ac			
18	Kuttan,Ptker	30-05-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color	Redes,Karugu forage no ac				
19	Kuttan,Ptker	30-05-2012	Bkm	Empty		Cerana,theneri		Koli forage no ac				
20	Kuttan,Ptker	31-05-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collet yellow color					
21	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri		Neeran no forage ac				
22	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri		Neeran no forage ac				
23	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri						
24	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri						
25	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri						
26	Kuttan,Ptker	31-05-2012	Koraryur	Empty		Cerana,theneri						
27	Kuttan,Ptker	31-05-2012	Koraryur	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
28	Kuttan,Ptker	31-05-2012	Koraryur	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
29	Kuttan,Ptker	31-05-2012	Koraryur	Working		Cerana,theneri	Pollen collet yellow color					
30	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri						
31	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri						
32	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri						
33	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri	Bear disturbed colony,colony absconding	Neeran no forage ac				
34	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
35	Kuttan,Ptker	31-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
36	Kuttan,Ptker	31-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
37	Kuttan,Ptker	31-05-2012	Kuduri thrsh	Empty		Cerana,theneri						

38	Kuttan,Ptker	31-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
39	Kuttan,Ptker		Kuduri thrsh	Working		Cerana,theneri	Pollen collet red and yellow color					
40	Kuttan,Ptker		Thoduthrsh	Empty		Cerana,theneri						
41	Kuttan,Ptker		Thoduthrsh	Empty		Cerana,theneri						
42	Kuttan,Ptker		Kuduri thrsh	Empty		Cerana,theneri						
43	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri						
44	Kuttan,Ptker	31-05-2012	Kuduri thrsh	Working		Cerana,theneri	Pollen collet red and white color					
45	Kuttan,Ptker	31-05-2012	Kuduri thrsh	Empty		Cerana,theneri	Bear disturbed colony,colony absconding					
46	Kuttan,Ptker	31-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
47	Kuttan,Ptker	30-05-2012	Thoduthrsh	Empty		Cerana,theneri		Kiskark forage no ac				
48	Kuttan,Ptker	30-05-2012	Thoduthrsh	Empty	1year	Cerana,theneri						
49	Kuttan,Ptker	30-05-2012	Kuduri thrsh	Empty		Cerana,theneri						
50	Kuttan,Ptker		Kuduri thrsh	Empty		Cerana,theneri						
51	Kuttan,Ptker	30-05-2012	Kothrundi	Empty		Cerana,theneri		Padani,bayodenceforage no ac				
52	Kuttan,Ptker	31-05-2012	Kothrundi	Empty		Cerana,theneri						
53	Kuttan,Ptker	31-05-2012	Kothrundi	Working	30days	Cerana,theneri		Pollen collet yellow color				
54	Kuttan,Ptker	30-05-2012	BKm	Working	1year	Cerana,theneri	Pollen collet yellow color	Lantana,forage no ac				
55	Kuttan,Ptker	31-05-2012	Thoduthrsh	Empty		Cerana,theneri						
56	Kuttan,Ptker	31-05-2012	Thoduthrsh	Working		Cerana,theneri	Pollen collect red color					
57	Kuttan,Ptker	30-05-2012	Bkm	Working		Cerana,theneri	Pollen collet yellow color					