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Research Article

Distribution and nest architecture of dammer bees

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ABSTRACT

Stingless honeybees (*Meliponini*, *Apidae:Hymenoptera*) are small to medium sized perennial eusocial insects (Nagamitsu et al., 1998) with a vestigial sting (Karunaratne and Edirisinghe, 2007) commonly distributed in tropical and subtropical regions of the world (Leonhardt et al., 2007). A study was conducted regarding nesting habits and nest structure of feral colonies and rearing practices of the stingless bee, *Trigona iridipennis* Smith at Annamalai University, Annamalai Nagar, Chidambaram. The relative abundance, density and frequency of nests varied significantly at different nesting sites.

Key Words:

Stingless bees, nest architecture, nesting site, nest direction, distribution of dammer bees.

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INTRODUCTION

Trigona iridipennis Smith is one of the most primitive honey bee (Lindauer, 1956; Kerr and Maule, 1964), widely distributed in Asian countries. It is highly social and live in perennial colonies (Leonhardt et al., 2007), most abundant and effective pollinator of various flowering plants occurs in both natural habitats, agro ecosystems (Roubik, 1989).

Moreover, reports on various aspects of stingless bee under human inhabited conditions are scanty (Kuberappa et al., 2005).

MATERIALS AND METHOD

Some Observations on the Stingless Bee, *Trigona Iridipennis*.

A study was conducted during 2010-2011 in the Dept of Entomology, Annamalai Nagar. Dammer bees foraging activities and behaviour to ascertain its efficient exploitation for pollination. *Trigona iridipennis* or *Melipona iridipennis* were surveyed at all the places by following and examined at residential area and non-residential area at Annamalai Nagar area with latitude of 11°23'48" N and longitude of 79°42'58" E with +4.680m MSL.

Nesting Site: The floral source at residential buildings is good (Sheetal and Basavarajappa, 2009), with better flow of nectar

and pollen during most of the months, perhaps this could support the stingless bee population, year around and results more nesting density at residential buildings compared to other places. Thus, the nest density was on par with floral abundance. Further, *Trigona iridipennis* is a small sized bee with Vestigial sting (Karunaratne and Edirisinghe, 2007) can't defend itself against predatory species Viz., Red ant (*Oecophylla sp.*) Black ants (*Formica sp.*) Paper wasp (*Vespa cincta*) and spiders in the nature.

Moreover, the places selected by *Trigona iridipennis* at residential buildings have not usually offered by predatory species. All these conditions might have helped *Trigona iridipennis* SMITH to nest more at residential buildings and supported under human inhabited conditions. Further stingless bees presence may help protecting local flora and their conservation is essential to mankind.

Nest Architecture

The entrance gate of *Trigona iridipennis* SMITH was projected by dark brown to black cerumen. Its shape and size were all varied where most of these were round orifices and the volume of cerumen depends upon strength and age of colony. Internal architectures of *Trigona iridipennis* SMITH colony consisted of brood, pollen and honey areas in arranged way. Broods were reared in the waxy cells which were oval or elliptical bids in shape.

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Dammer BEE Colony



Stingless bees are also called resin bees. They actively collect plant resins for construction of their nest in combination with wax secreted from their bodies. Resin foraging is a tough task when compared with either pollen foraging or nectar foraging.

They also collected resin from the cracks or rotten fruits and cut surface of the fruit stalk. Resin robbing was found to be unique resin collection strategy adopted by resin foragers.

Nest direction

The *Trigona iridipennis* SMITH nest opening was small to medium in size with semi-circular and circular openings. The nest opening circumference was 3.12 cm with the projection length 1.96 cm from the surface. The nest depth varied considerably and it range between one and 22cm. Further the nests were oriented to all directions, east, west, north, south, north-east, north-west, south-west directions.

Distribution of Stingless Bees in World

Stingless bees are found in all three tropical regions. The indo-pacific fauna extend transoceanically from India through South East Asia Guinea to Australia.

All these conditions might have *Trigona iridipennis* to nest more at residential and supported the perennial nesting behaviour under human inhabited conditions. Further, Stingless bees presence may help protecting local flora and their conservation is essential for mankind. They have pollinating characters like polylecty, floral constancy, domestication and perennial nature. Stingless bees are considered important natural pollinator for the tropical and sub tropical crops. The use of stingless bees as crop pollinators has opened a new economic for melliponiculture.

RESULTS AND DISCUSSIONS

The most important Genera are *Trigona* and *Melipona* in dammer bees. The use and management on non-*Apis* bees and other insects for crop pollination is important because of the almost total reliance of world agriculture on honey bees. Stingless bees are common visitors to flowering plants in the tropics, but evidence for their importance and effectiveness as crop pollinators is lacking for most plant species.

Stingless bee species are considered as ideal pollinators for green house cultivated crops due to their short flight range. Similar trend was observed for nesting abundance. The nesting frequency was 100% at other objects followed by residential building, office buildings also were recorded. Further, stingless bees presence may help protecting local flora and their conservation is essential to mankind.

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References

- Basavarajappa, s. 2008. Some observations on the wild honeybee population in Mysore, Karnataka. Nat. Conf. on BSBC. Kuvempu Uni. Shankaraghatta. Abstract no. Shankaraghatta. Abstrct no. CO5. 46-47.
- Heard, T. A. 1999. The role of Stingless bees in crop pollination Annu. Rev. Entomol. 44.183-206.
- Karunaratine, W.M.K.K and Edirisinghe, J. P. 2007. Appearance and Recruitment of *Trigona iridipennis* nests in selected area in Peradeniya University park. Proc. Peradeniya Uni. Res. Sessions, 12, part I 74-76.
- Kerr. E. W. And Maule, V. 1964. Geographic distribution of Stingless bees and its implications (Hymenoptera: Apidae). New York Entoml. Soc. 72: 2-17.
- Kuberappa, G. C. Mohite, G.S. and Kencharaddi, R.N. 2005. Biometrical variations among populations of Stingless bee, *Trigona iridipennis* in Karnataka. Indian Bee J. 67 (3 & 4): 145-149.
- Leonhardt, S. D. Kworschak, K., Eltz, T. And Bluthgen, N. 2007. Foraging loads of Stingless bee and Utilization of stored nectar for pollen harvesting. Apidologie, 38: 125-137.
- Lindauer. M. 1956. Uber die Vertandigung bei indischen. Z.F.Vergl. Physiol., 38: 521-527.
- Michener. C.D.1990. Classification of the Apidae (Hymenoptera) Univ. Kans. Sci. Bull. 54:75-164.
- Nagamitsu. T., Momose, K., Inoue, T. And Roubik, D.W. 1999, Perference in flower visits abd partitioning in pollen diets of Stingless bee in an Asian tropical rain forest. Res. Popul. Ecol. 41:195-202.
- Roubik, D.W. 1989 Ecology and natural History of Tropical Bees. Cambridge Uni. Press, Uk.
- Roubik, D.W.2006. Stingless honeybee nesting biology, Apidologie, 37:124-143.
- Sheetal, V. K. And Basavarajappa, S. 2009. Spatial distribution of Stingless bee, *Trigona iridipennis* Smith in Manasagangotri, Mysore, India. ISEPEHH-09, Abstract no. BD04, 131. n