An abandoned nest of *Vespa affinis* (Hymenoptera: Vespidae)

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Although *Vespa affinis* is one of the most common hornets in subtropical and tropical Asia (Archer 1997), very few studies have been made on the taxonomy of this species in Bangladesh (Akter et al. 2020) and no studies have been reported yet on its nest structure in this southern Asian country. Therefore, we present some observations of an abandoned nest of *Vespa affinis* obtained from the southern part of Bangladesh.

The nest was collected from Barishal Sadar Thana (22.698N & 90.363E) of Barishal metropolitan area in Bangladesh (Figure 1) on 8 December 2019 after the whole colony had left the nest. It was built on the outer wall of a house (Image 1) and the nest bottom was approximately 1.6 m above the ground. According to Archer (2008), *Vespa* sp. maintain an annual colony cycle and the cycle length is longer in tropical regions for *Vespa affinis*; on the basis of this statement and our observation, we also found that the colony cycle length of this species was approximately eight months and the wasps vacated the nest just prior to the arrival of winter. On 19 December 2019, the nest was transferred to the Entomology Laboratory of the University of Dhaka, Dhaka.

The nest was found roughly pear-shaped, consisting of seven combs. The upper combs were comparatively larger in diameter than the lower ones, especially the second comb which was found larger in diameter than the other six combs. Each comb was attached to the adjacent combs with the support of a varied number of both flattened and ribbon like pillars. The nest was surrounded by layers of envelopes, which were light in weight, with a single opening to the outside. It was unfortunate that the outer envelope was destroyed due to transportation and dryness (Image 2). The role of the layered envelope is to safeguard the colony against enemies and maintain constant humidity and temperature inside the nest (Klingner et al. 2005, 2006). The experimental nest had a blunt roof cone rather than a pronounced conical roof showed by van der Vecht (in Malaya, 1957). Van der Vecht (1957) had suggested that during heavy rains, the roof cone assists in shedding water from the nest.

We took some measurements of the nest. Maximum diameter of the nest was recorded at 45.5 cm and the total weight and height of the nest structure (without the external envelope) measured 913 g and 27 cm, respectively. The measurement of maximum diameter and height was done by using a measuring tape and weight was measured in a weight balance machine.

To count the total number of cells, Latter's formula was applied to each of the combs and the formula was:

\[ N = \left( \frac{3n}{2} + 1 \right) \]

where \( N \) is the total number of cells in one comb.
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Figure 1. The right image shows the location of Barishal metropolitan in Bangladesh. The left image shows the location of Barishal sadar thana in Barishal metropolitan from where the nest of *Vespa affinis* was collected.

Image 1. Nest of *Vespa affinis*. © Jannat Ara Jharna
An abandoned nest of Vespa affinis

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Image 2. The same nest without the envelope.

\[ \times \frac{n}{2} \text{; where } n \text{ is the number of cells counted across its maximum diameter (Latter 1935).} \]

By applying this formula, in total 10,639.25 cells were estimated from the whole nest. But unfortunately, the cells were found empty (without any eggs, larvae, and pupae). Like Seeley & Seeley (1980), we also assume that before leaving the nest the wasps had stopped the rearing of their offspring.

As wasps play an important role in ecology and some characters of nest structure have importance in taxonomy (i.e., supra-specific classification) (Yamane & Makino 1977), we suggest further research on the nest structure to better understand the taxonomy, distribution, nesting biology, and evolution of nests of this species.

References


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