

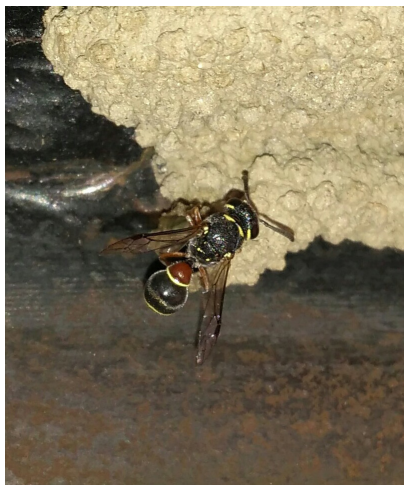
Observations on nesting biology of a potter wasp in West Bengal, India

Paraleptomenes miniatus (de Saussure, 1855) (Hymenoptera: Vespidae: Eumeninae) is one of the six species of genus *Paraleptomenes* Giordani Soika, 1970 reported from India, out of the 11 globally known species under this genus (Kumar et al. 2014; Bai et al. 2022). Members of the subfamily Eumeninae are commonly known as potter wasps (Kumar et al. 2020). Globally, there are three subspecies of *Paraleptomenes miniatus*, which are *P. m. mephitis* (Cameron, 1901), *P. m. miniatus* (de Saussure, 1855), and *P. m. nigrithorax* Giordani Soika, 1994 (Yeh & Lu 2007; Kumar et al. 2014; Pannure et al. 2016).

Krombein (1978, 1991) studied the life history, nests and nest associates of *P. m. mephitis* (as *P. mephitis*) in Sri Lanka. This wasp constructs mud nests in sheltered situations, such as beneath covered walkways, house eaves and verandah roofs and the nests consist of tubes placed side by side against a flat surface, with the outer end of the tubes curved away from the substrate (Krombein 1991). Natural history of the Eumeninae is poorly studied in India and for most species, nothing is known about their biology, behaviour, prey associations, and hence conservation status (Kumar et al. 2020). In the present

study, nesting biology of *P. m. miniatus* from West Bengal is observed and documented. Photographs of the observations were taken by a Lenovo K33a42 smart phone. The potter wasp was identified as female *P. m. miniatus* from field observations and photographs by following characters: body black; legs reddish-brown variegated with yellow; clypeus long and pyriform; yellow marks on each side of clypeus at base, a vertical spot above clypeus in interantennal space, at emargination of eyes, a line behind them, ventral side of scape and two spots on dorsal side of pronotum, a spot anteriorly and another posteriorly on tegula, parategula, two spots on either sides of scutellum and metanotum, a spot on mesepisternum; scutellum convex; metanotum very oblique; petiole (1st metasomal segment) in dorsal view narrower than 2nd metasomal segment, wider apically than basally; maximum width of petiole about equal to its median length; fundamental colour of petiole red ferruginous, with a transverse yellow band apically (Yeh & Lu 2007; Kumar et al. 2014; Pannure et al. 2016).

Field observations were made on the nesting biology at Panihati (22.699 °N, 88.370 °E), North 24 Parganas District, West



Dorsal view of the female potter wasp.



Lateral view of the female potter wasp on its nests.



Frontal view of the female potter wasp head.



1st (right one) and 2nd (left one) nest.



1st, 2nd, and 3rd nest.



Addition of 4th nest.



Construction of the 5th nest.



Five nests.



A cuckoo wasp (Chrysidae) on the nests.

Table 1. Details of nests from construction to adult emergence.

Nest Number	Starting of nest construction (Date)	Completion of nest construction (Date)	Time span (from date of starting to completion)	Emergence of adult wasp from nest (Date)	Time span (from date of completion of nest building to emergence)
1	-	-	-	31.iii.2020	-
2	-	25.iii.2020	-	07.iv.2020	14 days
3	25.iii.2020	01.iv.2020	8 days	14.iv.2020	14 days
4	01.iv.2020	10.iv.2020	10 days	25.iv.2020	16 days
5	10.iv.2020	17.iv.2020	8 days	02.v.2020	16 days

Table 2. Details of the reusing of own nests by the female *Paraleptomenes miniatus miniatus*.

Nest Number	Date of reclosing of the nest	Date of adult emergence	Time span
2	25.iv.2020	10.v.2020	16 days
4	04.v.2020	17.v.2020	14 days

Table 3. Measurements of the different nests of the female *Paraleptomenes miniatus miniatus*.

Nest Number	Length (millimetres)	Width (millimetres)	Diameter of nest mouth (millimetres)
1	20	~3	2
2	20	3	~2.5
3	19	3	~2.5
4	20	3.5	3
5	20	4	2.5

Bengal, India from 20 March to 17 May 2020. Panihati is a part of Gangetic plains biogeographic zone with an elevation of about 13 m and total area of 19.38 sq.km. On 20 March 2020, the author found one completely constructed mud nest and one incomplete mud nest attached together side

by side at the ventral surface of a black-coloured iron frame at the author's residence. This iron frame was a part of a collapsible gate and was horizontally placed at about 1.8 m height from the ground. An adult female *P.m. miniatus* was observed carrying an insect larva with it at 1359 h and entering into

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the incomplete second mud nest through the open nest mouth. Then after some time, came out from the nest by walking backward. Nests of this potter wasp were tube-shaped, with the nest mouth outwardly curved from the iron substratum. Five nests were constructed by the female potter wasp, which were attached and parallel to one another, on the iron substratum. Nest building took place from morning to afternoon. At night, the female wasp was observed to take rest inside an incomplete nest, by facing its head towards the nest's open mouth. Complete nest building took 8–10 days. Each completely constructed nest's mouth was closed by mud. Adult wasps emerged from nests on 14th or 16th days, from the date of completion of nest building. The female was observed to reuse its own 2nd and 4th nest for egg laying. The 5th nest was constructed in opposite direction with respect to the other four nests. Each nest tube had two cells, separated by a transverse mud wall at the middle.

Details of nest building, emergence, reusing of nests, and measurements of different nests are presented in Tables 1–3. On 14 May 2020, at 1002 h, an adult Chrysididae (Cuckoo wasp) was observed walking and entering into the open-mouthed nests, from which an adult *P. m. miniatus* already emerged. Chrysidids are known nest associates of *P. m. mephitis* (Krombein 1991).

References:

- Bai, Y., J.M. Carpenter, B. Chen & T.J. Li (2022).** A review of the genus *Paraleptomenes* Giordani Soika, 1970 (Hymenoptera: Vespidae: Eumeninae) from China, with descriptions of two new species. *Journal of Hymenoptera Research* 90: 185–199.
- Kumar, P.G., A. Pannure & J.M. Carpenter (2020).** Potter wasps (Hymenoptera: Vespidae: Eumeninae) of India, pp. 187–200. In: Rahmani. S., P. Mohanraj & H.M. Yeshwanth (eds.). *Indian Insects: Diversity and Science*. CRC Press, Taylor and Francis Group, Boca Raton, Florida, USA.
- Kumar, P.G., J.M. Carpenter & G. Sharma (2014).** A review of the genus *Paraleptomenes* Giordani Soika, 1970 (Hymenoptera: Vespidae: Eumeninae: Odynerini) from the Indian subcontinent, with the description of a new species from the eastern Himalayas. *Zootaxa* 3802(1): 131–143.
- Krombein, K.V. (1978).** Biosystematic studies of Ceylonese wasps, III. Life history, nest and associates of *Paraleptomenes mephitis* (Cameron) (Hymenoptera: Eumenidae). *Journal of the Kansas Entomological Society* 51(4): 721–734.
- Krombein, K.V. (1991).** Biosystematic studies of Ceylonese wasps, XIX: Natural history notes in several families (Hymenoptera: Eumenidae, Vespidae, Pompilidae, and Crabronidae). *Smithsonian Contribution to Zoology* 283: 1–41.
- Pannure, A., V.V. Belavadi & J.M. Carpenter (2016).** Taxonomic studies on potter wasps (Hymenoptera: Vespidae: Eumeninae) of south India. *Zootaxa* 4171(1): 1–51.
- Yeh, W.C. & S.S. Lu (2007).** New records of three potter wasps (Hymenoptera: Vespidae: Eumeninae) from Taiwan. *Formosan Entomologist* 27: 83–90.

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