https://doi.org/10.33307/entomon.v49i4.1350
Entomon 49(4): 569-572
Short communication No. ent. 49415

Life cycle of *Megymenum distanti* Kocorek & Ghate, 2012 (Heteroptera, Dinidoridae) on *Momordica indica* L.

Aishwarya S. Naik[1], Vijaykumar S. Gadekar[#2] and S.V. More[1*]

[1]Department of Zoology, ADK Science College, Dodamarg, Sindhudurg 416512, Maharashtra, India.
[2]Department of Zoology, Sangola College, Sangola, Solapur 413307, Maharashtra, India
Email: sadamore6046@gmail.com

ABSTRACT: The life history of a dinidorid bug *Megymenum distanti* Kocorek & Ghate, 2012 was examined under controlled laboratory conditions. The female bug laid about 32 eggs after mating. Only 8 of these 32 eggs actually hatched, for a hatching ratio of only 25 per cent and these 8 nymphs were observed further. The eggs required 11 to 13 days to hatch. There were five nymphal stages, lasting 48 days in total. The nymphal periods for the first, second, third, fourth, and the fifth instars were 11, 9, 8, 7 and 13 days, respectively. Male adults survived 21 days on average, whereas female adults lived 32 days on average after mating. Within 82-93 days, the entire life cycle was completed. Except for the first instar nymph, both nymphs and adults feed on leaves of *Momordica indica* L.
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KEY WORDS: Dinidoridae, life history, nymphs, adult longevity

The family Dinidoridae (Hemiptera, Heteroptera), is a small family with roughly a hundred species distributed among16 genera (Lis *et al*., 2012). However, there is no common name for this family. This family includes the subfamilies Dinidorinae and Megymeninae and four tribes Megymenini, Dinidorini, Thalmini, and Eumenotini (Durai, 1987). There are about 26 species in the genus *Megymenum* Guerin, that are distributed in the Oriental, Australian and Sumatra Regions (Rolston *et al.,* 1996; Kocorek and Lis, 2000) and only 6 of these are found in India (Rolston *et al.,* 1996; Kocorek and Lis, 2000; Kocorek and Ghate, 2012). During field work, the first author, observed this bug on the host plant *Momordica indica* L. (during mating phase) on July 7, 2022. A single mating pair of bugs was collected from Dodamarg Tehsil (Lat. 15. 681004° N and Long. 74.96668° E) at an elevation of 51 m. These bugs were brought to the laboratory and then placed in an insect rearing cage (size is 15×15×15 cm) for further observations of their life history. The bug was identified as belonging to the genus *Megymenum* based on Distant (1902) and further identified as *M. distanti* based on Kocorek and Ghate (2012).

Megymenum distanti Kocorek and Ghate, 2012

Adult body large, somewhat ovoid, dark brownish to black, with metallic tinge (Plate I - Fig. 2, 13). Head brownish to black, punctured, mandibular plates deeply concave, preocular part swollen with very sharp process; mandibular plates longer than

* Author for correspondence

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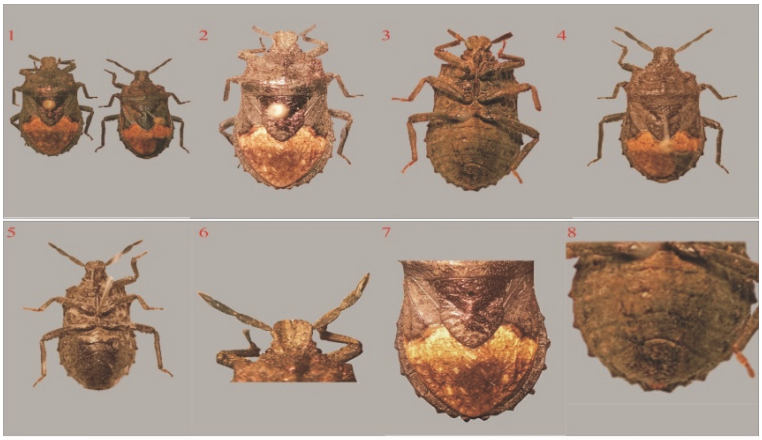

Plate - 1. (*Megymenum distanti*). 1. female and male, 2. Dorsal view of female, 3. Ventral view of female, 4. Dorsal view of male,5. Ventral view of male, 6. Antennae and head, 7. Scutellum and membrane, 8. abdominal segments

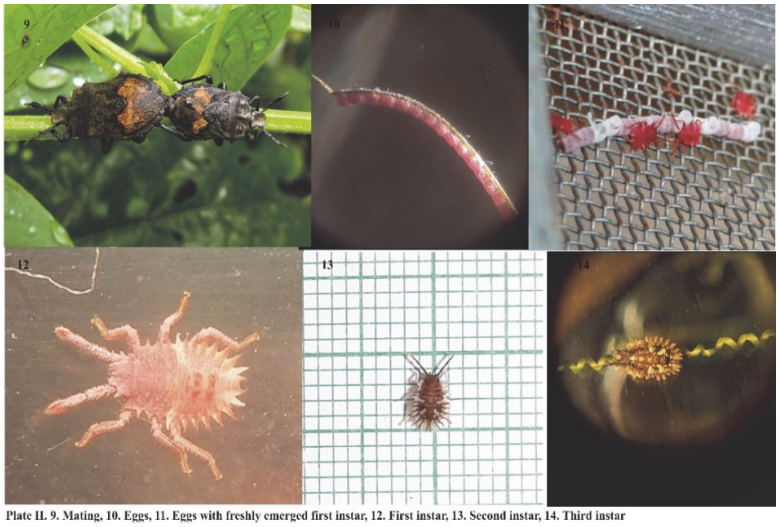

Plate II. 9. Mating, 10. Eggs, 11. Eggs with freshly emerged first instar, 12. First instar, 13. Second instar, 14. Third instar

Plate III. 15. Fourth instar, 16 & 17. Dorsal and ventral view of fifth instar, 18. Fifth instar in rearing cage, 19& 20. Moulted skin of fifth instar (dorsal and ventral view), 21. Freshly emerged adult with creamy white colour, 22. Adult with moulted skin

clypeus; eyes brownish and rounded, ocelli light brown in colour. Antennae four segmented, brownish to black, first segment short, not extending beyond the head, second segment longer than other antennal segments and slightly flattened, segment fourth narrow, spindle shaped with apex pointed

(Plate I - Fig. 6); rostrum light brown extending beyond fore coxae, segment first extending beyond the base of head, bucculae lobed and dark brown. Pronotum dark brown, with punctures on its anterior surface and numerous fine ridges, antero-lateral margin rounded while lateral pronotal margins bearing a single pointed projection (Plate I - Fig. 2). Scutellum dark brownish to black, with distinct punctures on its surface, triangular (Plate I - Fig. 7); corium shorter than scutellum, with fine punctures, membrane light brown , with dark brownish patches on its surface, not reaching tip of abdomen, with numerous veins. Abdomen as broad as pronotum at base. Legs brownish black, tarsal segments brown, ventral surface of all femora with small spines. Abdomen ventrally brownish to black with fine punctures on its lateral margin, connexivum exposed (Plate I - Fig. 8). Measurements (in mm based on single male/ female). Male: total body length 12. 5 to 13 and Female: total body length 13.4 to 13.9.

Adult dinidorid bug was first discovered on the campus of Pune University. After a ten-year gap, this species was again discovered in Dodamarg, on different host plant on July 7, 2022. The life history of *Mygemenum distanti* was studied under laboratory conditions. The descriptions and illustrations of the stages from eggs to fifth instar nymphs are given below. For this life cycle study, only a single mating pair was collected. After mating, female bug laid 32 eggs on the tendrils of host plants (Plate II, Fig. 10). Only 8 of these 32 eggs hatched, and all these eight nymphs developed into adult stage. Of the eight adults, 5 were females, and the rest were male. Eggs are tiny, barrel-shaped, white and about 1.2mm in length after the oviposition, and then turn into brownish red, as the development proceeds. The eggs are laid as continuous chains on the tendrils.

First instar (Plate II, Fig. 11, 12)**:** The eggs hatched after 11 days. The first instars were dark reddish (Plate II, Fig. 11) and 4mm in length. The early instars showed colour variation. The first instar nymphs move around the eggs without feeding (Plate II, Fig. 11). Body less elliptical, flat, newly emerged nymph covered with reddish colouration on head, antennae, pronotum, abdomen, legs, rostrum, and ventral region then turn into brownish yellow and ventrally pale cream coloured. Eye brownish and rounded, preocular spine prominent, pronotum with a thin angular process, mandibular plate and clypeus of head distinct; abdominal segmental suture visible with lateral projection on connexival areas, legs with fine black spinulus, wing pads not developed, spiracles visible.

Second instar (Plate II, Fig. 13): nymph (about 8 mm in length) began feeding on the leaves and was more active than the first instar; duration of this stage was around nine days. Body flat, mandibular plates longer than clypeus and distinct, eye brownish and rounded, preocular spine prominent; antennae robust with spinules, not longer than body, antennal segment 1st to 3rd are black, apical segment pale ochraceous with pointed, segment 1st small as compared to others, not reaching apex of head; pronotoum reddish ochracecous, lateral margin sinuate (Plate II, Fig. 13), covered with brown patches; abdomen pale brownish with brown patches and spots, crenulate on connexival area (Plate II, Fig. 13); dorsal abdominal glands well developed, scutellum not well developed. Ventrally pale ochracecous, spiracles are visible and distinct.

Third instar (Plate II, Fig. 14): nymphs (11mm) increased in size compared to earlier instar, were more active, and its total duration was only 8 days. Body darker in colour (Plate II, Fig. 14), mandibular plates longer than clypeus and distinct, eyes well developed, brownish and rounded, preocular spine prominent. Antennae black only 4th segment pale ochracecous, pronotum with brownish patches and spots with lateral margin, sinuate; abdomen pale ochracecous, oval, wider than pronotum, with lateral spinules on connexival area (Plate II, Fig. 14); dorsal abdominal glands well developed; spiracles are clearly visible; legs brownish white in colour.

Fouth instar (Plate III, Fig. 15): nymph was considerably larger than one in its third instar, has a more active feeding capacity, and it has a body surface that is brown. Nymphs spent 7 days in their fourth instar stage. Head pale ocharacecous, Eyes brownish, preocular spine dark and prominent with

concave, antennae black, segment first short, segment 1st to 3rd black, segment 4th pale ocharacecous with pointed tip (Plate III, Fig. 15); pronotum covered with brownish patches and spots and laterally sinuate; abdomen, pale ochracecous, oval shaped, broader than pronotum, with lateral spinules on connexival area, dorsal gland well developed, trichobothria visible and in pairs situated below spiracles, spiracles visible and dark brown, labium pale ocharacecous, extending beyond the prostrnum; wing pads developed (Plate III, Fig. 15).

Fifth instar (Plate III, Fig. 16, 17, 18)**:** nymphs, were much larger than those in the previous instars, were actively feeding on the host plant. These have body parts that are well developed and darker in colour. This stage just needs 13 days to finally moult into an imago. Head pale ocharacecous, mandibular plates longer than clypeus and joined in front of median lobe, eyes well developed, brownish and rounded, preocular spines sharp and prominent (Plate III, Fig. 16). Antennae black, segment first short, not reaching apex of head, segment second long as rest of antennal segment, segment 1st to 3rd black and segment 4th pale ocharacecous with pointed tip; Pronotum well developed than 3rd and 4th instar, and covered with brownish black irregular spots, anterior margin concave behind head (Plate III, Fig. 16), fine teeth like appearance on its lateral margin, dentate on its posterior border, lateral angles with small blunt spine like structure; abdomen well developed, broader than pronotum, dark brownish, with irregular brown to blackish spots and patches, spinules like appearances on connexival areas (Plate III, Fig. 16); wing pads well developed with brown spots, dorsal glands dark and prominent; scutellum not fully developed, its surface covered with brown spots; ventrally dark brown to blackish spots laterally (Plate III, Fig. 17); rostrum pale ocharacecous extending beyond the fore coxae; femora darker, with small ventral spinules, tarsi brownish and two segmented claws well developed; spiracles dark brown and visible, trichobothria located below spiracles.

The lives on the host plant *Mormodica india* and is the second recorded host plant for this species, where it completes its whole life cycle. The entire life cycle was completed within 82-93 days. Of the two adults collected and reared in lab, the female survived more than male, female bug spent 32 days after laying eggs, while male survived only 21 days. From first instar to fifth instar nymphal period is about 48 days in total. Adults that have recently emerged are creamy white (Plate III, Fig. 21), with the exception of their antennae and eyes.

ACKNOWLEDGEMENTS

The authors are extremely grateful to Dr. Hemant Ghate, Department of Zoology, Modern College Pune, who helped in the identification and his comments allowed us to make improvements to the article content. The authors appreciate the facilities and encouragement provided by the ADK Science College, Dodamarg administration.

REFERENCES

Durai P.S.S. (1987) A revision of the Dinidoridae of the world (Heteroptera: Pentatomoidea). Orient Insects 21: 163–360.

Kocorek A., Ghate H.V. (2012) *Megymenum distanti*, a new remarkable species of the Dinidoridae, subfamily Megymeninae (Hemiptera: Heteroptera: Dinidoridae) from India. Zootaxa 3218: 31–39.

Kocorek A. and Lis J.A. (2000) A cladistic revision of the *Megymeninae* of the World (Hemiptera: Heteroptera: Dinidoridae). Polskie Pismo Entomologiczne 69: 7–30.

Lis J.A., Lis P., Ziaja D.J. and Kocorek A. (2012) Systematic position of Dinidoridae within the superfamily Pentatomoidea (Hemiptera: Heteroptera) revealed by the Bayesian phylogenetic analysis of the mitochondrial 12S and 16S rDNA sequences. Zootaxa 3423: 61–68.

Rolston L.H., Rider D.A., Murray M.J. and Aalbu R.L. (1996) Catalog of the *Dinidoridae* of the World. Papua New Guinea Journal of Agriculture, Forestry & Fisheries 39: 22–101.

(Received September 22, 2024; revised ms accepted November 16, 2024; published December 31, 2024)