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Three new species of *Kerria* (Hemiptera: Coccoidea: Tachardiidae) from India

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Abstract

Three new species of *Kerria* Targioni-Tozzetti from India, namely *Kerria pennyae* Ahmad & Ramamurthy **sp. nov.** on *Schleichera oleosa* from Orissa, *Kerria dubeyi* Ahmad & Ramamurthy **sp. nov.** on *Ficus bengalensis* from Bangalore and *Kerria varshneyi* Ahmad & Ramamurthy **sp. nov.** on *Ziziphus mauritiana* from Punjab are described and illustrated, and a key is provided to species of *Kerria* known from India.

Key words: *Kerria*, new species, lac insects, key, India

Introduction

Lac insects are morphologically distinctive scale insects (Hemiptera: Coccoidea) belonging to the family Tachardiidae, secreting a resinous secretion that forms a test over the body (Chamberlin, 1923; Varshney, 1976). This family includes nine genera and 96 species with 24 species representing 4.7% of the total Coccoidea in India (Ben-Dov *et al.*, 2013). Some members of this family are commercially exploited for their resin, wax and dyes (Varshney, 1976; Ramani *et al.*, 2007). Ahmad *et al.* (2013) recently described three new species from India and also gave a key to all the species known from India and adjoining countries.

In this paper, three further new species of *Kerria* are described and illustrated with line diagrams and scanning electron microscopic images. The species are compared to their congeners based on the morphology of the adult female, with an updated key to the species of *Kerria* from India.

Material and methods

The specimens used in this study are from the lac insect cultures maintained at the field gene bank of Indian Institute of Natural Resins and Gums (IINRG), Ranchi (2319'51"N, 8522'18"E; Elevation ~2080ft). The samples had been drawn from the cultures maintained as lines on *Flemingia macrophylla* grown under potted conditions. Adult female specimens, collected and preserved in ethyl alcohol, were prepared as permanent mounts following the method of Varshney (1976) except that a new polychromatic stain, prepared with phosphomolybdic acid, orange G, aniline blue (WS) with acid fuchsin in distilled water, was used. This enabled differential staining of the cuticular features. The preserved specimens were treated in 10% KOH, rinsed in 5–8 changes of distilled water, and the internal contents cleaned through a small lateral incision in the integument in 1% glacial acetic acid. Cleared specimens were stained in polychromatic stain, and then passed through increasingly strong solutions of ethyl alcohol to dehydrate them. Once dehydrated, they passed through several grades of xylene, before mounting in DPX and then dried on a hot plate at 45–60°C for 48 hr. Each illustration is a generalization of several specimens, and drawings of the whole mounts were prepared using a drawing tube attached to either a Leica DM

- Brachia elevated and club-shaped; dorsal spine subequal to or longer than pedicel 18
- 18. Length of brachia subequal to that of supra-anal plate; distance of anterior spiracle from brachial plate 206–325 μm
..... *sharda* Mishra & Sushil
- Length of brachia distinctly greater than that of supra-anal plate; distance of anterior spiracle from brachial plate 189–205 μm
..... *brancheata* Varshney
- 19. Brachial crater not defined; perivulvar pore clusters 68–70 in number *rangoonensis* (Chamberlin)
- Brachial crater well defined; perivulvar pore clusters fewer than 60 20
- 20. Marginal duct clusters of duplex type; with large nuclear and small secondary ducts; with 58 perivulvar pore clusters
..... *greeni* (Chamberlin)
- Marginal duct clusters of simplex type; no large nuclear ducts present; with fewer than 50 perivulvar pore clusters 21
- 21. Marginal duct clusters present on a weakly-marked, oval, sclerotized plate; perivulvar pore clusters secondarily clustered . . .
..... *meridionalis* (Chamberlin)
- Marginal duct cluster without a sclerotized plate; perivulvar pore clusters without secondary clusters 22
- 22. Length of dorsal spine equal to width of brachial plate; length of anterior spiracle equal to or less than width of brachial plate; antennae one segmented with 4 long setae on apex *javana* (Chamberlin)
- Length of dorsal spine 1.16x longer than width of brachial plate; length of anterior spiracle 1.3x longer than width of brachial plate; antennae 3 segmented with 3 long setae on apex *manipurensis* Ahmad & Ramamurthy

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