

**First record of *Tachardiaephagus tachardiae*
(Howard, 1896) (Hymenoptera, Chalcidoidea, Encyrtidae)
from an invasive Lac insect, *Kerria destructor*
Talukder and Das, 2020 (Hemiptera, Kerriidae)**

Anil Kumar Dubey¹, A. Rameshkumar¹ and S.R. Koteswar Rao²

¹Zoological Survey of India, Prani Vigyan Bhavan, M-Block, New Alipore, Kolkata 700053, India.

²Department of Entomology, Acharya N. G. Ranga Agriculture College, Bapatla, Andhra Pradesh 522101, India.

Email: anil.2kd@gmail.com

ABSTRACT: An invasive species of Lac insect, *Kerria destructor* Talukder and Das, 2020 was described from West Bengal, India. Since then, there is no record of any natural enemies on the insect. Here, reporting an encyrtid parasitoid, *Tachardiaephagus tachardiae* (Howard, 1896) as natural enemy of the invasive lac insect. *Annona squamosa* and *Peltophorum pterocarpum* are reported as new host plants for this pest with its geographical extension in Andhra Pradesh. Intraspecific variation was noted in the number of anal ring setae of *K. destructor*. © 2025 Association for Advancement of Entomology

KEY WORDS: Parasitoid, new host plants, geographical extension, intra-specific variation

Invasive species quickly spread in a new environment due to their high reproductive potential and lack of competitors or natural enemies. The Parties of Convention on Biological Diversity (CBD) prepared Strategic Action Plan recognizing threat from Invasive Alien Species to biodiversity. The National Biodiversity Authority (NBA) has enlisted 157 Invasive Alien Species of animals from India which includes 59 terrestrial fauna and 98 marine fauna (Sandilyan *et al.*, 2019). Majority of them are insects belonging to the order Hemiptera followed by Lepidoptera, Diptera and Hymenoptera. The Lac Insect, *Kerria destructor* was described by Talukder and Das in 2020 from West Bengal, reporting mortality of road side rain tree (*Albizia saman* (Jacq)) in urban areas of West

Bengal. Severe infestation of lac resulting in defoliation and death of rain tree in various districts is reported as serious threat to biodiversity, and the rain tree has great potential for CO₂ sequestration (Talukder and Das, 2020). *Albizia saman* is also known to be infested with six species of *Kerria* (Hemiptera, Kerriidae) viz., *K. chinensis* (Mahdihassan), *Kerria destructor* Talukder and Das, *K. fici* (Green), *K. lacca* (Kerr), *K. maduraiensis* Ahmad and Ramamurthy and *K. pusana* (Misra). The family Kerriidae includes 27 species worldwide including 23 species from India. The identification of lac insect is based on the slide mounted globose adult female involving complex morphological characters. *Kerria destructor* differ from related *Kerria* spp. in having circular brachial

* Author for correspondence

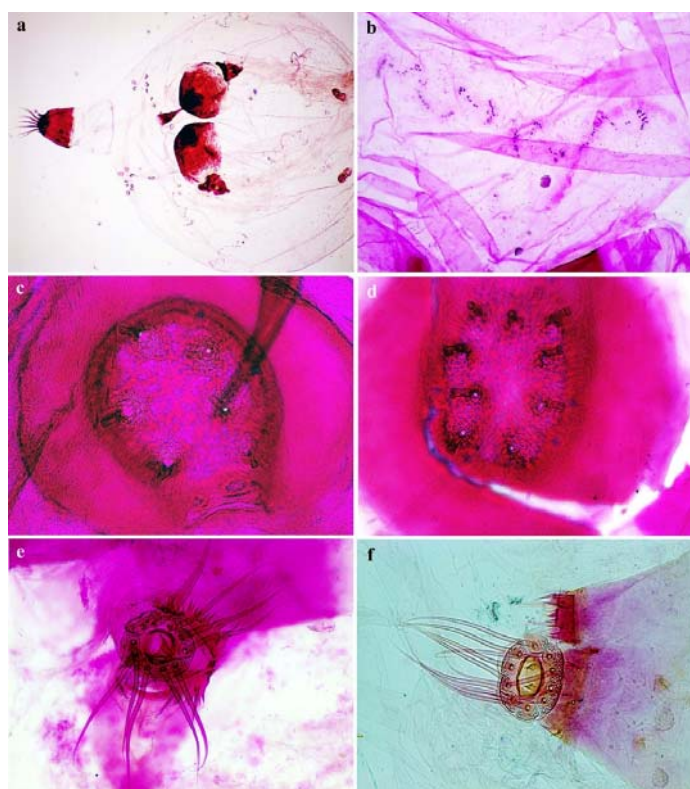


Fig. 1. *Kerria destructor*, female: **a**- adult female, **b**- marginal duct clusters, **c**- brachial plate with six dimples, **d**- brachial plate with nine dimples, **e**- anal ring with 10 setae, **f**- anal ring with 11 setae, intraspecific variation

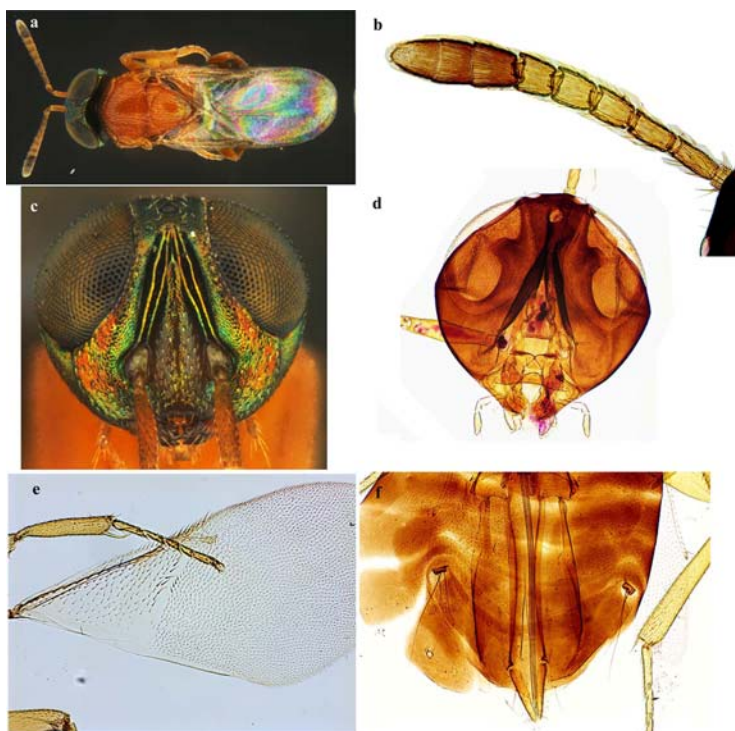


Fig. 2 *Tachardiaephagus tachardiae*: **a**. habitus, female; **b**. antenna; **c**. head, frontal view; **d**. head, ventral view; **e**. fore wing; **f**. ovipositor

plate with 6-9 dimples and in lacking quinquelocular pores near mouth parts. Intraspecific variation was noticed in the number of setae on anal ring being 10 or 11 in a female.

Lac insects are beneficial Hemiptera pests of tree species, and are host specific, mainly *Butea monosperma*, *Schleichera oleosa* and *Ziziphus mauritiana*. They are commercially cultivated in Central to Central-East Indian states Chhattisgarh, Madhya Pradesh, Odisha, Jharkhand and West Bengal. Of these, Jharkhand produces nearly 71 per cent of the total Lac produced in the country (Yogi *et al.*, 2014). However, they spread in to non-commercial crops outside the range of agricultural fields is of concern and great loss of avenue trees. Recently, Lac insect encrustation were noticed on twigs of *Annona squamosa* in Guntur Dist. of Andhra Pradesh, *Albizia saman* in Khammam Dist. and *Peltophorum pterocarpum* in Hanamkonda Dist. of Telangana States. So far, *K. destructor* was known from the *A. saman* only, and restricted to West Bengal. Here, *Annona squamosa* and *Peltophorum pterocarpum* are reported as new host plants for this pest, with its extended distribution range in Andhra Pradesh and Telangana. A newspaper reported death of over 2000 rain trees around Kolkata (Anonymous in 2015 in Talukder and Das, 2020), and also the invasive lac species is severely affecting rain trees in rural areas. The spread of *K. destructor* in Andhra Pradesh and Telangana is of concern specially for the fruit plant, *A. squamosa*, and an ornamental tree, *P. pterocarpum*.

The Lac insect encrusted twigs were cut and placed in plastic tubes for parasitoid emergence, later filled with alcohol, and sent to the Zoological Survey of India, Kolkata by Prof. S.R. Koteswar Rao for identification. A few female lac insects and emerged parasitoids were mounted on glass slides following standard mounting methods. The Lac insects were identified using the key of Ahmead *et al.* (2013) and Talukder and Das (2020).

Material examined. *K. destructor*: INDIA: Telangana, Chennur, Manchiryal, 34 ♀ on *Albizia saman*, 06.iv.2025, S.R.K. Rao; Manchiryal,

Chennur, 25 ♀ on *Annona squamosa*, 21.x.2024, S.R.K. Rao; Telangana, Hanamkonda Dist., 12 ♀ on *Peltophorum pterocarpum*, 25.i.2025, S. R. K. Rao; Khammam, 11 ♀ on *Albizia saman*, 5.xi.2024, S.R.K. Rao.

Majority of Encyrtidae are primary parasitoid of larvae of Hemiptera. *Tachardiaephagus tachardiae* is known to parasitise *K. lacca*, however it is the first time the parasitoid is recorded from the invasive Lac insect, *K. destructor* from Andhra Pradesh and Telangana.

Tachardiaephagus tachardiae (Howard, 1896) (Hymenoptera, Chalcidoidea, Encyrtidae)

Encyrtus tachardiae Howard, in Howard & Ashmead, 1896: 641, male. Sri Lanka, Pundaluoya (USNM)

Tachardiaephagus thoracicus Ashmead, 1904: 303, 390, female. Synonymy by Ferrière, 1928: 171.

Lissencyrtus troupi Cameron, 1913; *Lissencyrtus troupi* Cameron: Mahdihassan, 1925; *Tachardiaephagus flavipodus* Kaul & Agarwal, 1986.

Tachardiaephagus hyderabadensis Kaul & Agarwal, 1986.

Tachardiaephagus kashmirensis Kaul & Agarwal, 1986.

Adult female parasitoid is metallic green with orange yellow mesosoma; antennae and legs yellowish, antennal club brown and scrobes long, impressed deeply and reaching nearly three quarters distance from toruli to anterior ocellus, inter-torular prominence triangular, separated from frontovertex. Males are similar to female, except dark brown flagellomeres (personal observation by Rameshkumar).

Parasitoid: INDIA: Telangana, Chennur, Manchiryal, 1 ♀, 06.iv.2025, ex *K. destructor* on *Albizia saman*, Coll. S.R.K. Rao (Deposited in NZC, ZSI, Kolkata).

Remarks. The record of the parasitoid

T. tachardiae from *K. destructor* indicates that it could be a promising biocontrol agent to minimize pest population in avenue host tree.

ACKNOWLEDGEMENT

The authors are thankful to the Director, ZSI, Kolkata for the facilities provided.

REFERENCES

- Ashmead (1904) Classification of the chalcid flies of the superfamily Chalcidoidea, with descriptions of new species in the Carnegie Museum collected in South America by Herbert H. Smith. Memoirs of the Carnegie Museum 1: i-xi. 225–551.
- Ahmad A., Ramamurthy V.V., Sharma K.K., Mohanasundaram A., Vidyarthi A.S. and Ramani R. (2013) Three new species of *Kerria* (Hemiptera: Coccoidea: Tachardiidae) from India. Zootaxa 3734 (4): 442–452. doi: 10.11646/zootaxa.3734.4.2.
- Cameron P. (1913) On some new and other species of Hymenoptera in the collections of the Zoological Branch of the Forest Research Institute, Dehra Dun. Part I. On the parasitic Hymenoptera reared at Dehra Dun, northern India, from the lac (*Tachardia*) and sal insects. Indian Forest Records 4: 91–110.
- Ferriere C. (1928) Notes on some chalcidoid parasites of Lac insects. Bulletin of Entomological Research, 19: 171–176.
- Howard L.O. and Ashmead W.H. (1896) On some parasitic hymenopterous insects from Ceylon. Proceedings of the United States National Museum 18: 633–648.
- Kaul K. and Agarwal M.M. (1986) Taxonomic studies on encyrtid parasitoids (Hymenoptera: Chalcidoidea) of India. Aligarh Muslim University Publications (Zoological Series) on Indian Insect Types 13: viii+89pp.
- Mahdihassan S. (1925) Some insects associated with lac and symbolic representation of their relationship. Journal of the Science Association of the Maharaja's College, Vizianagram 2: 64–87.
- Sandilyan S., Meenakumari B., Babu C.R. and Mandal R. (2019) Invasive Alien Species of India. National Biodiversity Authority, Chennai. 62pp.
- Sarvade S., Panse R.K., Rajak S.K. and Upadhyay B. (2018) Impact of biotic and abiotic factors on lac production and peoples' livelihood improvement in India-An overview. Journal of Applied and Natural Science 10(3): 2231–5209. doi: 10.31018/jans.v10i3.1761
- Talukder B. and Das B.K. (2020) A new invasive species of *Kerria* Targioni-Tozzetti (Hemiptera: Coccoomorpha: Kerriidae) on rain tree, *Albizia saman* (Fabaceae) from India. Oriental Insects 55(2): 176–190. doi: 10.1080/00305316.2020.1759467.
- Yogi R.K., Bhattacharya A. and Jaiswal A.K. (2014) Lac, Plant Resins and Gums. Statistics at a Glance 2013. ICAR-Indian Institute of Natural Resins and Gums, Ranchi (Jharkhand), India. Bulletin (Technical) No. 06/2014. 38pp.

(Received May 24, 2025; revised ms accepted August 04, 2025; published September 30, 2025)