Lycaenidae parasitoids from peninsular India with description of four new species of microgastrine wasps (Hymenoptera: Braconidae) along with new insights on host relationships

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Abstract

In the comprehensive rearing of lepidopterans from peninsular India, eleven species of Lycaenidae were parasitized by ten species of wasps. Four new taxa of lycaenid associated microgastrine wasps Parapanteles eros Gupta n. sp., P. arka Gupta n. sp., P. esha Gupta n. sp., and P. regale Gupta n. sp. reared from Chilades pandava (Horsfield), Curetis thetis (Drury), Prosotas dubiosa (Semper), Tajuria cippus (Fabricius), respectively, are described with diagnostic details and illustrations along with documentation of six species of wasps viz., Apanteles folia, Apanteles sp., Protapanteles sp. 01 & 02 (Braconidae), Charops obtusus obtusus Morley (Ichneumonidae), and Brachymeria lasus (Walker) (Chalcididae). This is the first record of host-parasitoid association of lycaenid butterflies with Parapanteles. Wasps from three different families were recorded: Braconidae, Ichneumonidae, and Chalcididae. The parasitoid species were reared from the following Lycaenidae hosts: Anthene lycaenina (Felder), Arhopala amantes Hewitson, Chilades pandava (Horsfield), Curetis thetis (Drury), Jamides celeno (Cramer), Prosotas dubiosa (Semper), Rathanida amor (Fabricius), Spindasis vulcanus (Fabricius), Tajuria cippus (Fabricius), Tarucus balkanicus nigra Bethune-Baker, and Tarucus callinara Butler. All lycaenids were collected from peninsular India, except T. callinara (central India). A comparative account of all newly described species is provided along with the detailed illustrated description and differences vis-à-vis its closely allied Indian species. Also a comprehensive table comprising parasitoid species, associated host, stage of parasitism, and nature of cocoon is provided.

Key words: Parapanteles, parasitoid wasps, Microgastrinae, Lycaenidae, new species

Introduction

The genus Parapanteles was proposed by Ashmead (1900) with the type species, Parapanteles aletiae (Riley). From India, the genus has been documented with just two described representatives, P. sireeshaae Ahmad & Akhtar (Akhtar et al. 2010) and P. echeriae Gupta, Pereira & Churi (2013). Parapanteles has served as a model in developing phylogenetic patterns with multiple genetic markers across three trophic levels for understanding the relation between host shifts in resource use and diversification (Wilson et al. 2011).

In this study four new species of specific larval parasitoids are formally described Parapanteles eros Gupta n. sp., P. arka Gupta n. sp., P. esha Gupta n. sp., and P. regale Gupta n. sp. along with their host relationships. All new species are parasitic on Lycaenidae caterpillars: Parapanteles eros n. sp., a sexually dimorphic solitary parasitoid of Chilades pandava (Horsfield); P. arka n. sp., a gregarious parasitoid of Curetis thetis (Drury); P. esha n. sp., a solitary parasitoid of Prosotas dubiosa (Semper), and P. regale n. sp., a solitary parasitoid of Tajuria cippus (Fabricius). In addition, six species of wasps, namely Apanteles folia, Apanteles sp., Protapanteles sp. 01 & 02 (Braconidae), Charops obtusus obtusus Morley (Ichneumonidae), and Brachymeria lasus (Walker).

Remarks. Both the species were different but species identity could not be ascertained as single wasps were reared from their respective hosts.

*Apanteles* (Hymenoptera: Braconidae)

Plate. XVIII (Figs 65–66).

Brief diagnosis. The genus can be identified with following characters: fore wing with second r-m vein absent, small areolet (second submarginal cell) open distally; hind wing with vannal lobe distally flattened and with reduced fringe of hairs; propodeum with oval, pentagonal, hexagonal or anteriorly open medial areola; first metasomal tergite usually with medial subapical depression and second metasomal tergite strongly transverse, often with convex or sinuate posterior margin; ovipositor and sheaths long and exserted; desclerotized hypopygium easily visible in some species.

Host. *Jamides celeno* (Cramer) on the host plant *Milletia (= Pongamia) pinnata* (L.) Panigrahi.


Remarks. Indian *Apanteles* needs thorough revision hence the species identity could not be confirmed, specimen being a singleton.

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