BioOne COMPLETE

First Report of Cotesia dictyoplocae (Hymenoptera: Braconidae), a Larval Parasitoid of Antheraea assamensis (Lepidoptera: Saturniidae), from India

Authors: Gupta, Ankita, Das, Arpan Kumar, Neog, Kartik, and Verghese, Abraham

Source: Florida Entomologist, 99(3) : 541-543

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/024.099.0330

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Scientific Notes

First report of *Cotesia dictyoplocae* (Hymenoptera: Braconidae), a larval parasitoid of *Antheraea assamensis* (Lepidoptera: Saturniidae), from India

Ankita Gupta[1,], Arpan Kumar Das[2], Kartik Neog[3], and Abraham Verghese[1]*

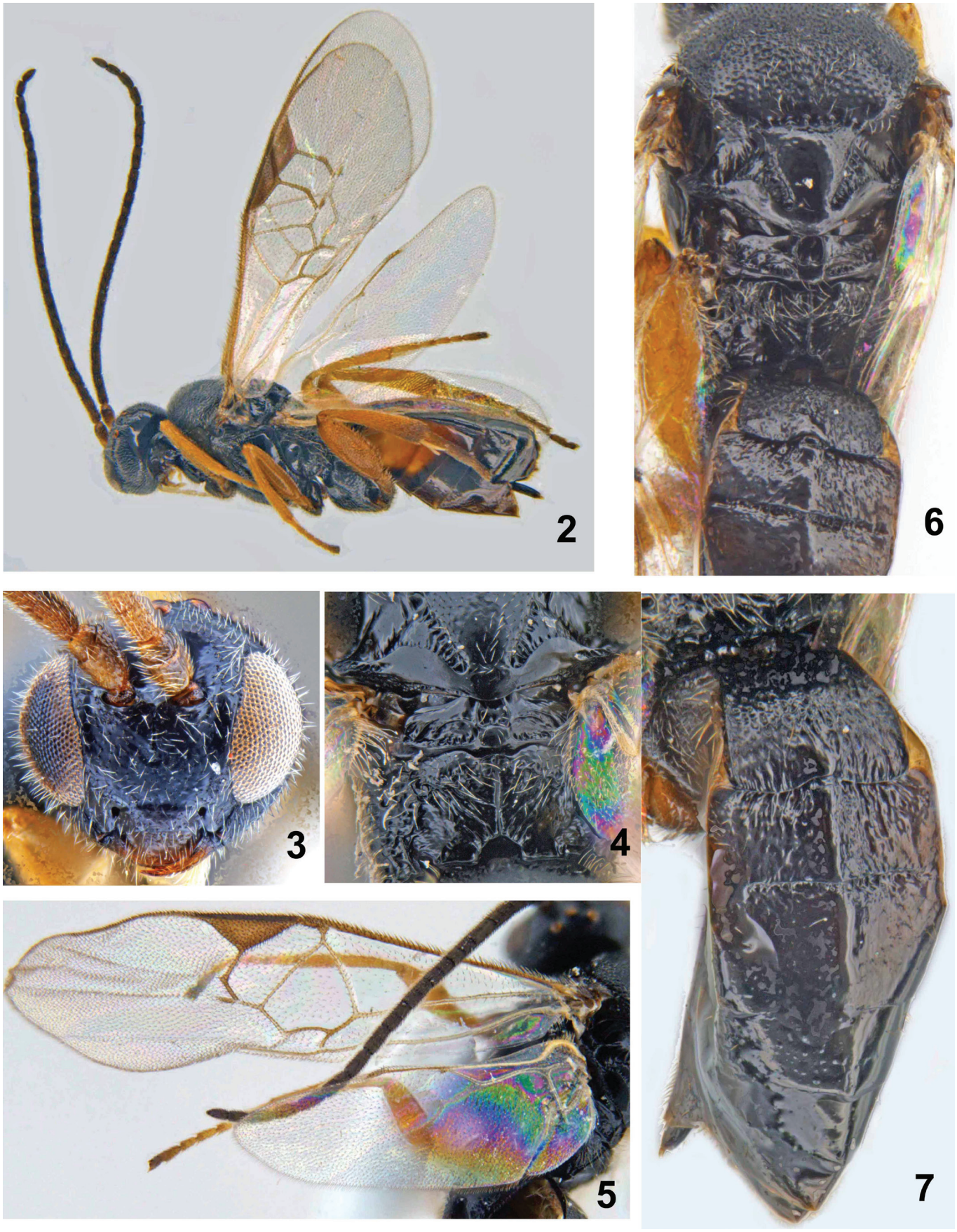
Antheraea assamensis Helfer (Lepidoptera: Saturniidae), commonly known as the Muga silkworm, is known from the Oriental and the Indo Australian regions (geographical range: India, Burma, and Sundaland). In India it is endemic to Assam and adjoining areas in northeastern India. Muga silkworm is known for its magnificent natural golden-colored silk and hence is of economic value. The Hymenoptera parasitoid complex of *Antheraea* species includes: *Anastatus* spp. (Eupelmidae); *Apanteles angaleti* Muesebeck (Braconidae); *Brachymeria alternipes* Walker, *Brachymeria lasus* Walker, *Brachymeria lugubris* Walker (Chalcididae); *Eupelmus* sp. (Eupelmidae); *Neotoxeumorpha exoristae* Narendran (Pteromalidae); *Nesolynx thymus* (Girault) (Eulophidae); *Perilampus nesiotes* Crawford (Perilampidae); *Pimpla rufipes* (Miller) (Ichneumonidae); *Trichogramma* spp. (Trichogrammatidae); *Trichomalopsis apanteloctena* (Crawford) (Pteromalidae); *Xanthopimpla pedator* (F.) (Ichneumonidae); and *Zele albiditarsus* Curtis (Braconidae) (Noyes 2015; Yu et al. 2012). The following host-plant genera



Fig. 1. Parasitized larva of *Antheraea assamensis*.

[1]ICAR-National Bureau of Agricultural Insect Resources, Post Bag No. 2491, H. A. Farm Post, Bellary Road, Hebbal, Bangalore, Karnataka, 560024, India; E-mail: drankitagupta7@gmail.com (A. G.), abraham.avergis@gmail.com (A. V.)
[2]Dept. of Zoology, Gauhati University, Assam, India; E-mail: arpandas2008@gmail.com (A. K. D.)
[3]Central Muga Eri Research & Training Institute, Central Silk Board, Govt. of India, Lahdoigarh, Jorhat, Assam, India; E-mail: kartik_neog@rediffmail.com (K. N.)
*Corresponding author; E-mail: drankitagupta7@gmail.com (A. G.)

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use



Figs. 2–7. *Cotesia dictyoplocae*. 2, Body in habitus; 3, head in frontal view; 4, propodeum; 5, wings; 6, mesosoma with metasoma in part; 7, metasoma with propodeum.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

are recorded for *A. assamensis*: *Cinnamomum*, *Laurus*, *Litsea*, *Persea* (Lauraceae); *Magnolia*, *Michelia* (Magnoliaceae); *Quercus* (Fagaceae); *Sarcostemma* (Asclepiadaceae); and *Symplocos* (Symplocaceae) (Arora & Gupta 1979).

Recently, *Cotesia dictyoplocae* (Watanabe) (Hymenoptera: Braconidae) was fortuitously reared from *A. assamensis* in Assam, India, on the host plant *Persea bombycina* (King ex Hook. f.) Kosterm. (Lauraceae) (Fig. 1). *Cotesia dictyoplocae* was originally placed in the genus *Apanteles* and described from specimens reared from *Dictyoploca japonica* Butler (Lepidoptera: Saturniidae). This is the first report of *C. dictyoplocae* parasitizing larvae of *A. assamensis* in India. Previously, *C. dictyoplocae* was known from China, Japan, and Korea. *Cotesia dictyoplocae* is a gregarious larval parasitoid, and females lay on an average 30 eggs per host larva.

The parasitized larvae were collected from Jorhat, Kamrup (Gauhati), Sivasagar, and Lakhimpur districts in Assam on the host plant *P. bombycina*, commonly known as "Som". Six females reared from a larva of *A. assamensis* on 14 May 2015 in Jorhat, Assam (specimen code: NBAIR/14515) were examined. A macro image of the parasitized larva was taken using a Nikon Coolpix L820 camera. Photographs of the wasps were taken using a stereozoom Leica M 205 microscope with a Leica DC 420 camera and using Automontage software (version 3.8). Abbreviations used: metasomal/abdominal tergites 1–3 (T1–T3). Voucher specimens were deposited in the ICAR-National Bureau of Agricultural Insect Resources (NBAIR), Bangalore, India.

Cotesia dictyoplocae belongs to the *glomeratus*-subgroup of the genus *Cotesia* and is characterized by the following features: outer side of hind coxa glossy with fine and disperse punctations; mesonotum punctate, notauli absent; scutellum smooth; antennae about as long as body; first tergite broadening posteriorly; head, mesosoma, and metasoma black; legs reddish yellow except: coxae black, hind femora at extreme apices, apical third of tibia, and tarsi dark brown.

This species is difficult to identify using the key to the Chinese Microgastrinae (Chen & Song 2004) and keys only to the *glomeratus*-subgroup in Papp (1987); however, specimens could be identified using Watanabe (1940). The following combination of characters separates it from closely allied species: face with weak, median, longitudinal carina; propodeum reticulate-rugose, with strong median longitudinal carina from which arise oblique carinae directed upwards on each side; T1 widened at apex, about 2 times as long as wide at apex; T2 2.4 to 2.5 times wider at apex than median length; T2 shorter than T3, both reticulate-rugose; T3 rugosity confined to basal region.

Diagnosis—female (Figs. 2–7): Body size 2.87 to 3.00 mm (in profile). Body color black. Antennae dark brown; legs red testaceous; all coxae black; hind leg with upper trochanter, femora at extreme apices, apical third of tibia, and tarsi fuscous; basal ventrites of metasoma yellowish-red. Head with minute punctations, face with weak median longitudinal carina, posterior ocelli closer to each other than to eye. Antenna little longer than body. Mesosoma closely punctate, scutellum sparsely and shallowly punctate. Propodeum reticulate-rugose; strong median longitudinal carina present, from which oblique carinae run upwards on each side. Pterostigma length shorter than metacarp. First abscissa of radius slightly longer than pterostigma width and twice as long as intercubitus; recurrent veins slightly longer than intercubitus. Hind coxa minutely punctate; hind tibial spurs subequal, half the length of the metatarsus. First metasomal tergite widened at apex, twice as long as wide at apex, excavated at base, smooth and shiny at the excavated portion, remaining reticulate-rugose; T2 shorter than T3, reticulate-rugose, sulci wanting; third tergite with rugosity at basal region; second and following tergites with median longitudinal ridge. Ovipositor sheath short.

The parasitism observed was occasional in nature and appeared at the time not to warrant control measures. We thank the Indian Council of Agricultural Research (ICAR) for research facilities. Literature aid from Dicky Sick Ki Yu, Canada, is kindly acknowledged. We are also thankful to Umesh C. Goswami, Gauhati University, Assam.

Summary

A gregarious larval parasitoid, *Cotesia dictyoplocae* (Watanabe) (Hymenoptera: Braconidae: Microgastrinae), is reported for the first time from the host *Antheraea assamensis* Helfer (Lepidoptera: Saturniidae) from Assam, India. This wasp is a gregarious larval parasitoid and produces on an average 30 cocoons per host larva. Parasitized larvae are easily identified by the aggregation of exposed yellowish white cocoons on the body. Larval parasitism in natural conditions was low. Removal of parasitized larvae by hand is suggested.

Key Words: gregarious parasitoid; new record; Assam

Sumario

Se informe por primera vez una larva parasitoide gregario, *Cotesia dictyoplocae* (Watanabe) (Hymenoptera: Braconidae: Microgastrinae) de su hospedero *Antheraea assamensis* Helfer (Lepidoptera: Saturniidae) de Assam, India. Esta avispa es un parasitoide de larvas gregarias y produce en un promedio de 30 capullos por larva. Se identifica las larvas parasitadas fácilmente por la agregación de los capullos de color blanco amarillento expuestos sobre el cuerpo. El parasitismo de larvas en condiciones naturales fue bajo. Se sugiere la eliminación de las larvas parasitadas con la mano.

Palabras Clave: parasitoide gregario; nuevo registro; Assam

References Cited

Arora GS, Gupta IJ. 1979. Taxonomic studies of some of the Indian non-mulberry silk moths (Lepidoptera: Saturniidae). Memoirs of Zoological Survey of India 16: 1–63.

Chen JH, Song DB. 2004. Systematic Studies on Microgastrinae of China (Hymenoptera: Braconidae). Fujian Publishing House of Science and Technology, Fuzhou, China.

Noyes JS. 2015. Universal Chalcidoidea Database. World Wide Web electronic publication. http://www.nhm.ac.uk/chalcidoids (last accessed 20 May 2016).

Papp J. 1987. A survey of the European species of *Apanteles* Först (Hymenoptera, Braconidae: Microgastrinae) X. The *glomeratus*-group 2 and the *cultellatus*-group. Annales Historico-Naturales Musei Nationalis Hungarici 79: 207–258.

Watanabe C. 1940. Description of a new *Apanteles*-species bred from *Dictyoploca japonica* (Moore) Butler (Hymenoptera: Braconidae). Insecta Matsumurana 15:51–52.

Yu DSK, van Achterberg C, Horstmann K 2012. Taxapad 2012, Ichneumonoidea 2011. Database on flash-drive. www.taxapad.com, Ottawa, Ontario, Canada.

Downloaded From: https://complete.bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use