Zootaxa 5660 (2): 293–296
https://www.mapress.com/zt/

Correspondence

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)
https://doi.org/10.11646/zootaxa.5660.2.11
http://zoobank.org/urn:lsid:zoobank.org:pub:DD8D4C9F-AD60-4EE0-AF2A-81AF8135DB8A

Cotesia ginginensis sp. nov., a new species of parasitoid wasp (Braconidae: Microgastrinae) from Queensland, Australia

ERINN. P. FAGAN-JEFFRIES[1,2*], EMILY DAVIES[1] & ANDY G. HOWE[3]
[1]*School of Biological Sciences, The University of Adelaide, Adelaide, Australia.*
erinn.fagan-jeffries@adelaide.edu.au; *https://orcid.org/0000-0002-3322-6255*
emily.davies@student.adelaide.edu.au; *https://orcid.org/0009-0004-6031-4762*
[2]*South Australian Museum, Adelaide, Australia*
[3]*Forest Research Institute, University of the Sunshine Coast, Sippy Downs, Australia*
ahowe@usc.edu.au; *https://orcid.org/0000-0002-7460-5227*
**Corresponding author*

Cotesia Cameron, 1891 is the third largest genus of the braconid subfamily Microgastrinae, both in terms of described species (>320 worldwide) and estimated true diversity (1500+ species) (Fernández-Triana *et al*. 2020). The genus is cosmopolitan and has a broad host range, with 30 different families of Lepidoptera recorded as hosts, and with many species acting as important biological control agents of pest lepidopterans (Fernández-Triana *et al*. 2020). The Australian *Cotesia* fauna was recently reviewed; there are 22 species currently known from the country, including several species introduced for biological control (Fagan-Jeffries *et al*. 2024; Fagan-Jeffries & Austin 2020).

Whilst there are likely to be many undescribed species of *Cotesia* in Australia and surrounding regions, we take the opportunity to add a single new species to the list of named biodiversity that was collected as part of a citizen science project, *Insect Investigators.* This citizen science project (insectinvestigators.com.au) ran in 2022 and involved 50 regional schools in Queensland, South Australia, and Western Australia (Howe *et al*. 2025; insectinvestigators.com.au). Students and teachers ran Malaise traps on or near their school property, the samples were sorted and DNA barcoded, and a selection of specimens were sent to taxonomists to identify or include in current taxonomic projects. Two Queensland schools, Gin Gin State High School and Prospect Creek State School, each caught a single female specimen of a species in the genus *Cotesia*. Students and teachers at Gin Gin State High School collaborated with the authors to name the new species in 2023, and we here formally describe the species and raise the number of *Cotesia* from Australia to twenty-three.

Two specimens of the new species were collected in Malaise traps in March 2022, and stored in 80% propylene glycol prior to being transferred to 100% ethanol after 2–3 weeks. Specimens underwent whole-body non-destructive DNA lysis, and the standard COI barcoding region was sequenced (vouchers then retained and used as the type series) by the Canadian Centre for DNA Barcoding at the Centre for Biodiversity Genomics.

Cotesia ginginensis was identified as potentially an undescribed species initially through comparison of the COI barcodes to those available on public databases (Genbank and BOLD) as of October 2023, and then a second comparison was conducted on 17 March 2025. After determining that the sequences were not closely related (i.e., had ≥2% divergence) to any existing public sequences, the holotype was morphologically compared to all described species known from Australia using the key, images and diagnoses in Fagan-Jeffries & Austin (2020).

Measurements were taken of the holotype and paratype with an Olympus SZX16 microscope with a DP23 camera through the cellsSense imaging software. Images for the figure plate were taken on a Canon EOS 5DSR with a MP-E 65 mm lens, and stacked in Zerene Stacker (zerenesystems.com). Paratype measurements, where different to the holotype, are given in brackets after those of the holotype. Terminology and measurements follow Slater-Baker *et al*. (2025).

Gin Gin State High School students from the Agricultural Science program (year 11/12, n=15) were responsible for running the Malaise trap. In late 2023, we engaged the class online to outline background information on the genus *Cotesia*, morphological features related to the undescribed species, and rules and instructions for scientific naming. Subsequently, the class teacher facilitated name brainstorming with Agricultural Science students. This list was offered to school teaching staff (n=35) for further input and short-listing. Finally, the shortlist was shared with each of twenty-four student "care classes" (n=420 students) who collectively decided the final species epithet. As our contact teacher noted,

Accepted by J. Jennings: 3 Jun. 2025; published: 9 Jul. 2025

"...It was a whole school adventure!" We are grateful to the teachers at Gin Gin State High School, particularly Karyn Goodman, Head of Science, for her instrumental role organising schoolwide involvement in the description of this species and in the Insect Investigators project.

Taxonomy

BRACONIDAE Latreille, 1829

MICROGASTRINAE Foerster, 1862

Cotesia Cameron, 1891

See diagnosis in Fagan-Jeffries & Austin (2020). *Cotesia* can be recognised amongst the other genera of Microgastrinae found in Australia by "the absence of a fore wing areolet; possessing a short inflexible hypopygium and a short ovipositor; T1 generally parallel-sided or broadening posteriorly (occasionally T1 narrowing posteriorly but never to the extent as in *Glyptapanteles*) and T2 normally broad and rectangular. Often species have the propodeum with a medial carina, and the propodeum, T1 and T2 coarsely sculptured."

Cotesia ginginensis Fagan-Jeffries & Davies, sp. nov.

urn:lsid:zoobank.org:act:4A5A4D0A-18EC-4978-8F64-90D451077C33

(Fig. 1)

Diagnosis. *Cotesia ginginensis* can be separated from all other species of *Cotesia* currently described from Australia and Papua New Guinea by the following combination of characters: mesosoma not dorsal-ventrally flattened (i.e., not as in *Cotesia nonagriae* (Olliff, 1893)); fore wing r vein clearly longer than 2RS (r length >1.4 × length of 2RS); centre of the medial band of the mesoscutellar disc smooth; propodeum strongly sculptured with the medial carina clearly distinct for the whole length; T1 slightly broadening posteriorly but not strongly wedge-shaped (i.e., not as in *C. ruficrus* (Haliday, 1834)); T2 not strongly sculptured and T3 not densely setose (i.e., not as in *C. rubecula* (Marshall, 1885)).

Material examined. Holotype. AUSTRALIA • ♀; Queensland, Gin Gin; -24.989, 151.968; 22–29 Mar. 2022; Malaise Trap, Gin Gin State High School Students, Insect Investigators; Sampe ID: BIOUG82735-E04, Process ID: ASMII4974-22. QM: T262276, T262277. **Paratype.** AUSTRALIA • ♀; Queensland, Prospect; -24.42, 150.43; 22 Mar.–1 Apr. 2022; Malaise Trap, Prospect Creek State School students, Insect Investigators; Process ID: BIOUG85138-F03, Sample ID: ASMII7948-22. QM: T262277. **Other material.** AUSTRALIA • ♀; Queensland, Townsville, Hermit Park; -19.28279, 146.80067; 10 m; 16 Apr. 2010; G. Cocks; Process ID: HYQT528-10, Sample ID: gvc14224-1L. We assign this specimen to *Cotesia ginginensis* based on the COI barcode (100% identical to the holotype) and the inspection of the dorsal habitus image available on the BOLD portal (https://portal.boldsystems.org/result?query=HYQT528-10[ids]).

Description

FEMALE. *Colour:* head, antenna and mesosoma black, dorsal metasoma mostly dark brown, paler than mesosoma, other than T3 which is yellowish and paler than T1–2 and T4–6 (Fig. 1D); (fore-, mid-, hind coxa) dark, dark, dark; femora (fore-, mid-, hind femur) pale, light brown, light brown; tibiae (fore-, mid-, hind tibia) pale, light brown, light brown; tegula and humeral complex: dark, humeral complex paler than tegula; pterostigma dark; fore wing veins dark brown (Fig. 1B).

Body length (head to apex of metasoma) 2.7 (2.8) mm.

Head: antenna slightly longer than body length; OOL/posterior ocellus diameter 2.9 (2.8); POL/posterior ocellus diameter 2.6; antennal flagellomere 2 length/width 2.8; antennal flagellomere 14 length/width 2.8 (2.5).

Mesosoma: anteromesoscutum reticulate rugose, finer in anterior half; number of pits in scutoscutellar sulcus 8; scutellar disc with numerous shallow punctures; maximum height of mesoscutellum lunules/maximum height of lateral face of mesoscutellum 0.6 (0.7).

Wings: fore wing length 2.7 mm; length of veins r/2RS 1.6 (1.7); length of veins 2RS/2M 1.4; length of veins 2M/(RS+M)b 1.1; pterostigma length/width 2.9 (2.8).

Legs: hind tibia inner spur length/metabasitarsus length 0.7 (0.5).

Propodeum: strongly and irregularly sculptured, medial carina complete and distinct (Fig. 1G).

Metasoma: T1 length / T1 width at posterior margin 1.3 (1.2); almost parallel sided slightly widening posteriorly with curved posterior corner, scattered punctures, denser in posterior half (Fig. 1F); T2 width at posterior margin / T2 length 1.6 (1.7), slightly trapezoid (almost rectangular) with curved lateral sides, smooth with irregular shallow sculpturing,

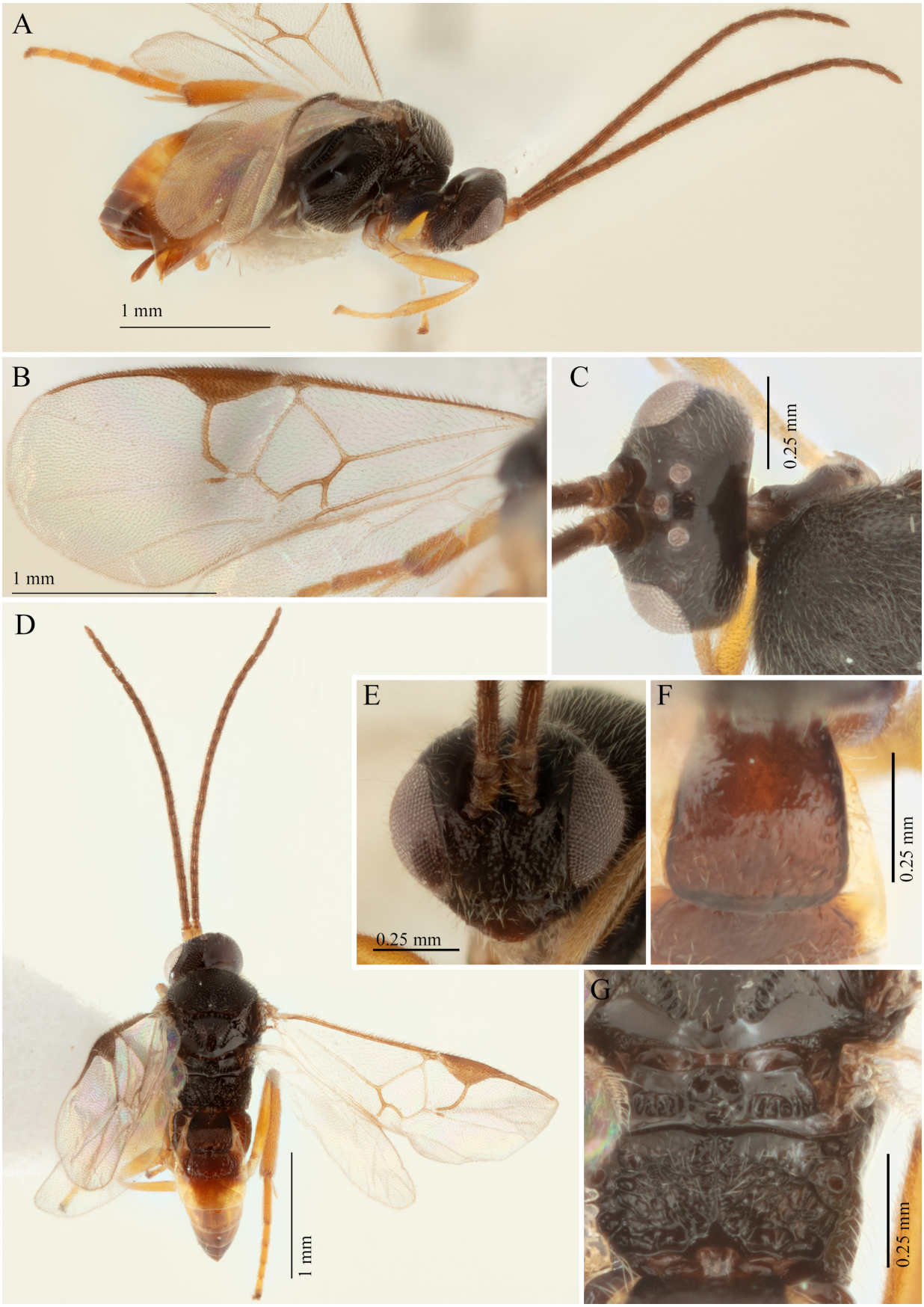

FIGURE 1. *Cotesia ginginensis*; holotype. A. lateral habitus B. fore wing C. dorsal head D. dorsal habitus E. anterior head F. T1 G. metanotum and propodeum.

distinct furrow at posterior border; T2 length / T3 length 0.8; T3 sculpture smooth and shiny; ovipositor sheaths length/ hind tibial length 0.24 (0.26), barely extruding from hypopygium.

MALE. Unknown.

Distribution. Currently only known from eastern Queensland. The Gin Gin specimen was collected in (remnant) broad vegetation group (BVG, Nelder *et al.* 2023) 11a, i.e. moist to dry open forests to woodlands dominated by *Eucalyptus crebra* (regional ecosystem ID 12.8.17, Queensland Government 2025). The specimen from Prospect Creek was collected in (remnant) broad vegetation group 16c, woodlands/open woodlands (potentially *Eucalyptus tereticornis* and/or *Eucalyptus* spp. woodland, e.g. *E. populnea*) on alluvial plains (regional ecosystem ID 11.3.4, 11.3.2). Both BVGs characterise open eucalypt woodland/forest, absence of a shrub layer.

Host. Unknown.

Etymology. This species was named by students at Gin Gin State High School in Queensland, who collected the holotype as part of the Insect Investigators Citizen Science Project in 2022. The species epithet is an adjective meaning 'of/from Gin Gin'.

Molecular data. This species is currently in BIN BOLD:AAA7143, an extremely large BIN with nearly 2000 individual records and COI divergences of up to 7.6%, with multiple different described species falling within the single BIN. The three known specimens of *Cotesia ginginensis* produced identical COI barcodes, which are ≥2% divergent to other members of the BOLD BIN.

References

Cameron, P. (1891) Hymenopterological Notices. On some Hymenoptera parasitic in Indian injurious insects. *Memoirs and Proceedings of the Manchester Literary & Philosophical Society*, 4, 182–194.

Fagan-Jeffries, E.P. & Austin, A.D. (2020) Synopsis of the parasitoid wasp genus *Cotesia* Cameron, 1891 (Hymenoptera: Braconidae: Microgastrinae) in Australia, with the description of seven new species. *European Journal of Taxonomy*, 667, 1–70.
https://doi.org/10.5852/ejt.2020.667

Fagan-Jeffries, E.P., Miles, M.M., Atkin-Zaldivar, T.C.C., Howe, A.G., Subramaniam, S., Chambers, D.M., Tadle, F.P.J., Adnan, S.M., Sivasubramaniam, V. & Woodward, A. (2024) Hymenopteran parasitoids of fall armyworm (*Spodoptera frugiperda* (J.E. Smith) (Lepidoptera: Noctuidae)) in Australia, with the description of five new species in the families Braconidae and Eulophidae. *Austral Entomology*, 63 (2), 136–174.
https://doi.org/10.1111/AEN.12682

Fernández-Triana, J., Shaw, M.R., Boudreault, C., Beaudin, M. & Broad, G.R. (2020) Annotated and illustrated world checklist of Microgastrinae parasitoid wasps (Hymenoptera, Braconidae). *ZooKeys*, 920, 1–1089.
https://doi.org/10.3897/zookeys.920.39128

Haliday, A.H. (1834) Essay on the Classification of Parasitic Hymenoptera, &c. *The Entomological Magazine*, 2 (3), 225–259.

Howe, A.G., Nguyen, T.T.T., O'Connor, P., Woodward, A., Clarke, S., Ducker, N., Dilger, K. & Fagan-Jeffries, E.P. (2025) Catching 'the bug': Investigating insects through school-based citizen science increases intentions for environmental activities in students and teachers. *Austral Entomology*, 64 (2), e70004.
https://doi.org/10.1111/aen.70004

Marshall, T.A. (1885) Monograph of British Braconidae Part I. *Transactions of the Royal Entomological Society of London*, 33 (1), 1–208.
https://doi.org/10.1111/j.1365-2311.1885.tb00886.x

Neldner, V.J., Niehus, R.E., Wilson, B.A., McDonald, W.J.F., Ford, A.J. & Accad, A. (2023) The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 6.0. Queensland Herbarium and Biodiversity Science, Department of Environment, Science and Innovation.

Olliff, A.S. (1893) Report on a visit to the Clarence River District for the purpose of ascertaining the nature and extent of insect ravages in the sugar cane crops. *Agricultural Gazette of New South Wales*, 4, 373–389.

Queensland Government (2025) Regional Ecosystem Description Database (REDD). Department of Environment, Science and Innovation. Available from: https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions (accessed 23 March 2025)

Slater-Baker, M.-R., Fagan-Jeffries, E.P., Oestmann, K.J., Portmann, O.G., Bament, T.M., Howe, A.G., Guzik, M.T., Bradford, T.M., McClelland, A.R., Woodward, A., Clarke, S., Ducker, N. & Fernández-Triana, J. (2025) DNA barcoding, integrative taxonomy, citizen science, and Bush Blitz surveys combine to reveal 34 new species of *Apanteles* (Hymenoptera, Braconidae, Microgastrinae) in Australia. *ZooKeys*, 1227, 1–128.
https://doi.org/10.3897/zookeys.1227.130467