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Review of the encyrtid (Hymenoptera, Chalcidoidea, Encyrtidae) parasitoids of Dryinidae (Hymenoptera, Chrysidoidea, Dryinidae): second contribution and description of a new species of *Cheiloneurus*

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Review of the encyrtid (Hymenoptera, Chalcidoidea, Encyrtidae) parasitoids of Dryinidae (Hymenoptera, Chrysidoidea, Dryinidae): second contribution and description of a new species of *Cheiloneurus*

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Abstract

Further taxonomic notes are given on the genera and species of Encyrtidae attacking Dryinidae. One lectotype designation and four new synonymies are proposed in *Cheiloneurus*. *Cheiloneurus caesar* sp. nov. is described

Keywords: *Saronotum australiae*, *Cheiloneurus javanus*, *Ooencyrtus destructor*, *Cheiloneurus caesar*, *Cheiloneurus boldyrevi*

Introduction

In a recently published review of the genera of Encyrtidae (Hymenoptera, Chalcidoidea) that attack Dryinidae (Hymenoptera, Chrysidoidea) (Guerrieri and Viggiani 2005), some notes on primary types were incorrect and three lectotype designations were overlooked. In the interests of nomenclatural stability, these errors are corrected here. The opportunity is also taken to add two more species to the former list of Encyrtidae attacking Dryinidae, propose three new synonymies (one generic and two specific) and describe a new species of *Cheiloneurus* from Mozambique. Abbreviations in the text include: F1, F2, etc., first funicle segment, second funicle segment, etc.; FV, minimum frontovertex width; FWL, maximum length of fore wing; FWW, maximum width of fore wing; GL, gonostylus (=third valvula) length; HW, maximum head width; MT, mid tibia length; MV, maximum length of marginal vein of fore wing; OCL, ocular-ocellar line (=the shortest distance between posterior ocellus and adjacent eye margin); OL, ovipositor length; OOL, occipital-ocellar line (=the shortest distance between posterior ocellus and occipital margin); PMV, maximum length of postmarginal vein of fore wing; POL, the minimum distance between posterior ocelli; SL, scape length (excluding radicle); SMV, maximum length of

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submarginal vein of fore wing; SV, maximum length of stigmal vein of fore wing; SW, maximum scape width. Abbreviations for depositories that house the material examined in the study include: BBMH, Bishop Museum, Honolulu, Hawaii, USA; BMNH, The Natural History Museum, London, UK; DEZA, Dipartimento di Entomologia e Zoologia agraria “Filippo Silvestri” Università degli Studi di Napoli, Italy.

Genus *Ooencyrtus* Ashmead

Ooencyrtus Ashmead, 1900. Type species: *Encyrtus clisiocampae* Ashmead

This genus includes about 200 species that are mainly ooparasitoids of Lepidoptera and Hemiptera. One species, i.e. *Ooencyrtus destructor* (Perkins) (Perkins 1906), has been reared from dryinids. This species, initially described under *Echthrodryinus*, was extensively described and figured by Gordh and Trjapitzin (1978) and, eventually, transferred to *Ooencyrtus* by Noyes and Hayat (1984). *Ooencyrtus* can be readily separated from *Cheiloneurus* by a number of characters, including the marginal vein of fore wings that is never more than $2\times$ as long as broad (at least $4\times$ in *Cheiloneurus*). On the other hand, *Ooencyrtus* is very similar to *Helegonatopus*, from which it can be separated by having a posteriorly expanded mesospleuron and axillae separated medially. However, even these features sometimes fail, suggesting that further taxonomic study is needed to verify the status of these genera.

Genus *Cheiloneurus* Westwood

Cheiloneurus Westwood, 1833. Type species *Encyrtus elegans* Dalman.

Aulonops Timberlake, 1922. Type species *Aulonops bifasciata* Timberlake. **syn. nov.**

The genus *Aulonops* was synonymized with *Hypergonatopus* by Noyes and Hayat (1984). Guerrieri and Viggiani (2005) synonymized *Hypergonatopus* with *Cheiloneurus* but failed to list *Aulonops* as a new synonym of *Cheiloneurus*. In the interest of nomenclatural stability, I hereby amend this error.

Cheiloneurus caesar sp. nov.

(Figure 1)

Description

Female. Holotype: length 1.23 mm

Head orange with green reflections on frontovertex; antenna (Figure 1(1)) with scape orange, a narrow brown stripe along basal half of its ventral margin, pedicel orange with basal half brown, F1 and a basal stripe on F2 brown, remaining part of funicle white, clava black; thorax dark orange, posterior half of mesoscutum metallic green, apex of scutellum brown, metanotum and propodeum brown, tegula dark orange with brown apex, fore wing strongly infuscated except basal third, a small area past PMV and a crescent-like area at apex hyaline, legs yellow with apex of tarsi brown; gaster brown, with green reflections at base.

Head about $5\times$ as wide as frontovertex; ocelli forming a strongly acute angle of less than 30° ; antenna (Figure 1(1)) with scape about $4\times$ as long as broad, F1 subquadrate and about $0.36\times$ as long as pedicel; remaining funicular segments all broader than long, clava obliquely truncate at apex. Relative measurements: HW 42, FV 8, OOL 1.5, OCL 4, POL 4, SL 24, SW 6.

Fore wing about $3.2\times$ as long as broad, venation as in Figure 1(2). Relative measurements: FWL 110, FWW 34, SMV 40, MV 14, PMV 3, SV 5

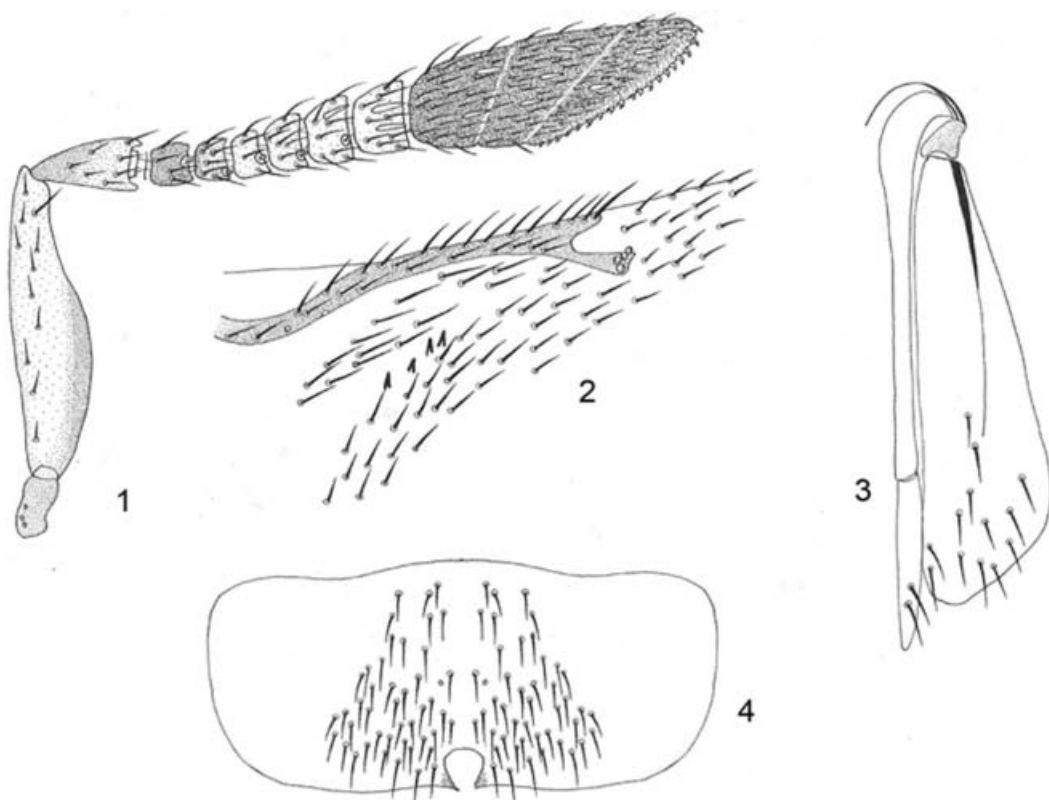


Figure 1. *Cheiloneurus caesar* ♀: (1) antenna, (2) fore-wing venation, (3) ovipositor and (4) hypopygium.

Gaster with ovipositor (Figure 1(3)) slightly exerted.

Paratype: Ovipositor (Figure 1(3)) about as long as mid tibia. Hypopygium as in Figure 1(4). Relative measurements: MT 86, OL 91, GL 28.

Male. Length 0.98 mm. Body black with green metallic reflections especially on head, antenna dark yellow with base of pedicel and clava somewhat darker, fore wing hyaline, legs yellow with joints slightly darker.

Head about $2.6\times$ as wide as frontovertex, scape $4\times$ as long as broad, all funicular segments longer than broad, F1 $1.3\times$ as long as pedicel, clava $4\times$ as long as broad, a little longer than F5+F6 (16:14), pointed at apex.

Variation

None in the material at hand.

Hosts

Cheiloneurus caesar is recorded below from *Dryinus orophilus* Benoit (Hymenoptera: Dryinidae) parasitic in a planthopper (Hemiptera: Delphacidae)

Distribution

Mozambique.

Material examined

Holotype: ♀, Maputo, Mozambique, xii.1993 ex *Dryinus orophilus* Benoit parasitic in a planthopper, T7120 (M. Olmi); Paratypes: 1♀, 1♂ same data as holotype. Holotype and paratypes deposited in DEZA, Portici (Naples), Italy

Comments

Cheiloneurus caesar is extremely close to *C. boldyrevi* Trjapitzin for body colour and fore wing pattern of hyaline and infusate areas (see Figures 23–25 and key couplet 10 in Guerrieri and Viggiani 2005). Females of the two species can be separated by the antenna, fore wing venation and ovipositor. In *C. caesar*, F2–F6 are distinctly broader than long, the clava is longer than the funicle and obliquely truncate at the apex, while in *C. boldyrevi* F2–F6 are subquadrate, the clava is distinctly shorter than the funicle and transversely truncate at the apex. In *C. caesar*, the PMV is $0.21 \times$ as long as the MV, while in *C. boldyrevi* it is $0.15 \times$. Finally, the ovipositor is about as long as the mid tibia in *C. caesar* ($1.4 \times$ in *C. boldyrevi*). The species is named after my father.

***Cheiloneurus bonariensis* De Santis**

Guerrieri and Viggiani (2005) failed to indicate that *Cheiloneurus cristatus* (Girault) remains a valid species, while *C. bonariensis* is a replacement name for *C. cristatus* De Santis 1957 nec Girault 1915. In the interest of nomenclatural stability I hereby correct this error.

***Cheiloneurus quadricolor* (Girault)**

Cheiloneurus brevipennis Fatima and Shafee, 1994. **syn. nov.**

C. brevipennis Fatima and Shafee (1994) was synonymized with *C. yasumatsui* Trjapitzin (1971) by Anis and Hayat (2002). Guerrieri and Viggiani (2005) synonymized *C. yasumatsui* with *C. quadricolor* but failed to indicate *C. brevipennis* as a junior synonym of *C. quadricolor*. In the interest of nomenclatural stability, I hereby correct this error.

***Cheiloneurus flaccus* (Walker)**

Cheiloneurus australiae Perkins, 1906: 260. Lectotype ♀, USA (BBMH), here designated, examined. **syn. nov.**

I have examined a card-mounted specimen from BBMH that bears a note handwritten by Perkins on its inferior side with the following indications: “Budenberg -illegible sign - xi.04” and a label handwritten by Perkins with the name: “Saronotum australiae type”. On the card, two dryinids (presumably *Pseudogonatopus*, that is indicated as the host of this species), four remnants (two adults and two young instars) of what seems to be a Fulgoroidea and one encyrtid, which is the type species, are mounted. As in the original description, the author did not mention how many specimens of this species he collected; in the interest of nomenclatural stability I here designate this specimen as the LECTOTYPE of *C. australiae*. I have mounted on a slide one fore wing and one antenna of the lectotype and found no reliable differences between this species and *C. flaccus*, especially in the distinctive shape of antenna and in the fore wing pattern of hyaline and infuscated areas

(see Figures 10–12 in Guerrieri and Viggiani 2005). I, therefore, propose the synonymy of *C. australiae* with *C. flaccus*.

***Cheiloneurus javanus* Perkins**

(Figure 2)

Cheiloneurus javanus Perkins, 1912:17. Lectotype ♀, USA (BBMH), here designated, examined.

Redescription

Female. Lectotype: length 1 mm. Head yellow, frontovertex brown with faint metallic lustre; antenna (Figure 2(5)) with scape and pedicel light brown, funicle white and clava black; mesoscutum brown with metallic reflections, axillae, scutellum (except brown apex), tegulae, metanotum and propodeum yellow; fore wing strongly infusate save speculum and a band running from postmarginal vein to posterior margin of wing; legs yellow, apex of tarsi brown; gaster brown, paler in the middle. Head $5\times$ as broad as frontovertex; ocelli forming a strongly acute angle of about 30° ; antenna (Figure 2(5)) with scape $6\times$ as long as broad; F1 subquadrate and $0.5\times$ as long as pedicel; clava obliquely truncate at apex (truncation $0.5\times$ as long as clava length); linear sensilla on F4–F6 and on clava. Relative measurements: HW 35, FV 7, OOL 1, OCL 4.5, POL 3, SL 24, SW 4.

Fore wing about $3\times$ as long as broad, venation as in Figure 2(6). Relative measurements: FWL 91, FWW 30, SMV 35, MV 19, PMV 5, SV 7. Gaster with ovipositor

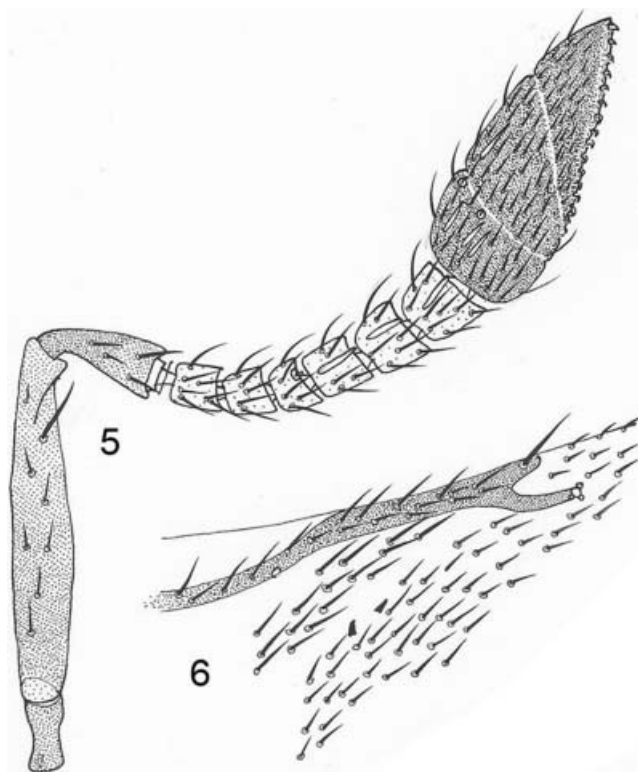


Figure 2. *Cheiloneurus javanus* ♀: (5) antenna and (6) fore wing venation.

slightly exerted, a little longer than mid tibia. Relative measurements: MT 102, OL 90, GL 26.

Material examined

Lectotype: ♀, Java, Pekalogan F. M., 1907, here designated (BBMH). Paralectotypes: 4♀ same data as lectotype.

Comments

I have examined a card-mounted specimen from BBMH that bears the number “352” handwritten on it, a label handwritten by Perkins with the name: “*Cheiloneurus javanus* type” and a typewritten label with the following indications: “Java Pekalogan F. M. 1907”. On the card, five encyrtids (arranged in two rows) and the remnants of what seems to be an adult of Membracidae are mounted. As the card data and those reported in the original description are coherent, in the interest of nomenclatural stability, I designate the first specimen top left as the LECTOTYPE of *C. javanus*. The female of *C. javanus* is extremely similar to that of *C. gonatopodis* with which it shares the pattern of hyaline and infusate areas on the fore wing (see Figure 14 in Guerrieri and Viggiani 2005). Females of the two species can be separated by the distribution of linear sensilla on the funicle and by the structure of the clava. In *C. javanus*, linear sensilla are present on F4–F6 and the clava is obliquely truncate at the apex (for nearly half of its length) and nearly as long as the funicle. In *C. gonatopodis*, linear sensilla are present only on F5 and F6 and the clava is transversely truncate at apex and it is clearly shorter than the funicle.

***Cheiloneurus chlorodryini* Perkins**

Guerrieri and Viggiani (2005) stated that they examined the holotype of this species deposited at the BBMH. In fact, the only specimen under this name in that collection bears a Perkins’ handwritten label with the word “type”. Since Perkins (1906) did not indicate the number of specimens collected or that the species was described from a single specimen, in the interest of nomenclatural stability, this specimen is here designated LECTOTYPE.

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