

7-2007

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Michael S. Caterino

*Clemson University, mcateri@clemson.edu*

Alexey K. Tishechkin

*Louisiana State University and Agricultural & Mechanical College*

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## Description of the first Chlamydopsinae (Coleoptera: Histeridae) from the Philippines

ALEXEY K. TISHECHKIN<sup>1</sup> & MICHAEL S. CATERINO<sup>2</sup>

<sup>1</sup>Louisiana State Arthropod Museum, Department of Entomology, Louisiana State University Agricultural Center, 404 Life Sciences Building, Baton Rouge, LA 70803-1710, USA. E-mail: atishe1@lsu.edu. Corresponding author

<sup>2</sup>Department of Invertebrate Zoology, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Road, Santa Barbara, CA 93105, USA

### Abstract

The first two species of the obligate inquiline subfamily Chlamydopsinae (Coleoptera: Histeridae) from the Philippines, *Eucurtiopsis ashei* (Luzon Island) and *E. avis* (Negros Island), are described and illustrated. Positions of the new species within the genus and potential biogeographic connection of the Philippine chlamydopsine fauna are discussed.

**Key words:** Coleoptera, Histeridae, Chlamydopsinae, *Eucurtiopsis*, new species, Philippines, myrmecophily

### Introduction

The Chlamydopsinae is an exclusively inquiline subfamily of histerid beetles. It presently comprises 174 species (Caterino & Dégallier 2007) collectively ranging throughout Australia and Indomalaysia, as well as scattered localities in southeast Asia. Where hosts are known, all species are obligate associates of various species of ants (Formicidae) and termites (Isoptera). The group has received considerable recent attention, having tripled in described diversity over the past seven years (Caterino 2000, 2003, 2006; Dégallier & Caterino 2005a, b). These studies have filled in many large distributional gaps and extended the known morphological variability greatly. One of the most significant remaining distributional gaps has been the Philippine Islands, with species previously known from neighboring Indonesian Islands and Taiwan. Here we describe the first two species from the Philippines, both belonging to the genus *Eucurtiopsis* Silvestri, 1926, and discuss their positions in the genus.

*Eucurtiopsis* is known from 18 described species. The earliest of these were described from Taiwan and Japan (Silvestri 1926; Sawada 1991; Nishikawa 1995) and the genus was considered an outlying northern component of Chlamydopsinae. However, typical representatives, as well as a surprising diversity of atypical members, have since been described from Indonesia and Malaysia. These northern members are distributional outliers belonging to well established clades with a more typical Australasian origin. Caterino & Dégallier (2007) recently provided a more precise definition of the genus, adding several species from the still poorly delimited *Orectoscelis* Lewis, 1903. The resulting *Eucurtiopsis* is defined by transversely incised trichomes, presence of paired dorsal tubercles at or near the pronotal margin, a pronotum which is narrower than the elytra, and the presence of branched setae on at least some parts of the body. The genus appears monophyletic. The two quite different species described here both have near relatives among more southern *Eucurtiopsis*, and will help to clarify biogeographic and phylogenetic relationships across the genus as a whole.

## Material and Methods

This study is based on the material from the Snow Entomology Collections, Natural History Museum, University of Kansas, Lawrence (SEMC) and Field Museum of Natural History, Chicago (FMNH). Terminology, body part measurement conventions and abbreviations follow Caterino (2003, 2006). Methods of specimen dissection and illustration preparation follow Tishechkin (2007).

### *Eucurtiopsis ashei* Tishechkin & Caterino, sp. n.

(Figs. 1–3, 7)

**Holotype.** Female labeled “PHILLIPINES: Naga City BGY. Panicuason Camarines Sur Feb 1992. D. General / HOLOTYPE *Eucurtiopsis ashei* sp. n. A. Tishechkin & M. Caterino des. 2006” (SEMC).

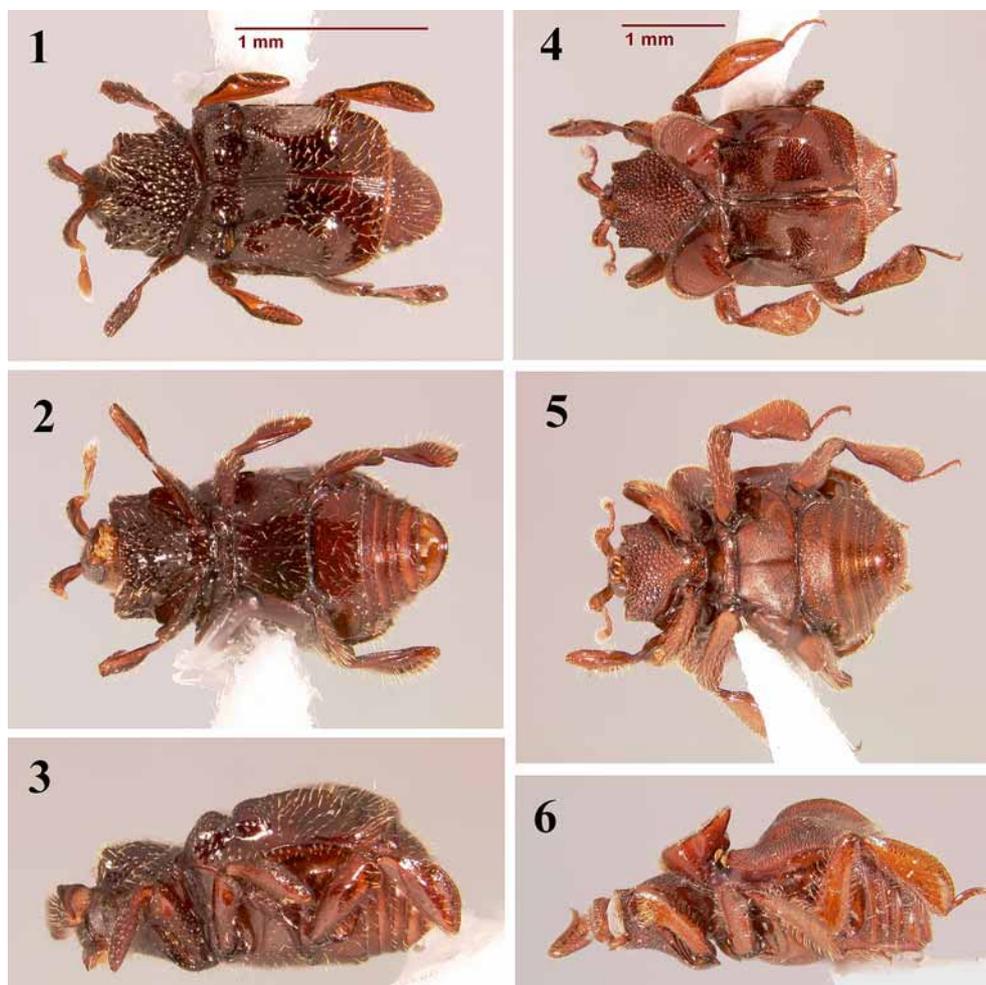
**Description.** L: 1.45 mm; W: 0.89 mm; E/Pn L: 1.95; E/Pn W: 1.47; Pn W/L: 1.33; E L/W: 1.15; Pr/Py: 0.92; Sterna: 0.50, 0.08, 0.37; Tibiae: 0.42, 0.40, 0.54. Body dark rufescent brown, with elytra and legs slightly lighter, most of body surfaces covered with erect yellow setae. Frons slightly longer than wide, with sides subparallel, bordered by costate marginal striae, not indented at antennal insertions, with large deep punctures and fine alutaceous background microsculpture; labrum short, arcuate, with the same type of microsculpture; mandibles strongly bent, with long narrow tips, without setae; antennal scape about half as broad as long, arcuate, widest at about midpoint, punctuation and microsculpture similar to those of frons, but punctures smaller; antennal funicle (of female) collectively slightly shorter than scape; antennal club (of female) oval, as long as funicle, glabrous in basal fifth, otherwise densely covered with setae.

Pronotum (Fig. 1) with posterior margin obtusely angulate, sides widest at about midpoint, bisinuate; marginal striae visible from above in basal half, then abruptly descend downwards to meet supracoxal striae; anterior margin straight; most of pronotal disk occupied by bifid anteromedian elevation, abruptly lowering towards anterior margin and laterally and smoothly descending towards basal margin; disk surface smooth, completely covered with large, dense, deep punctures and long erect setae; antennal cavities largely open above.

Scutellum not visible. Elytra (Figs. 1, 3) with conspicuous small humeral trichomes; anterior and posterior elevations completely separated by deep transverse incision; outer corners of both their apices slightly projected closing incision externally; anterior elevation with anteromedian groove indistinct, marked as shallow broad sulcus along the middle of elevation, its apex straight, bearing dense tight fringe of short setae; posterior elevation also with straight anterior edge bearing slightly wider corresponding fringe of setae; posterior elevation broadening posteriorly and descending rather abruptly to elytral middle; elytral disk in posterior half (Fig. 3) with obtuse conical elevation gradually descending towards elytral apices; elytral disc moderately transversely depressed in anterior half between trichomes; elytral surface with numerous setae throughout, shorter, stouter and denser on anterior depression and trichome elevations; punctures of elytral disc small and sparse, less conspicuous on anterior depression and much denser on trichome elevations; elytral marginal stria complete, departing conspicuously from margin above metathoracic leg; epipleuron (Fig. 3) smooth and glossy, bearing numerous upward pointing setae.

Prosternum (Fig. 2) long; prosternal leg depression margined by raised carina; prosternal keel almost straight, with the marginal stria distinct, thin and carinate; prosternal disk punctate throughout with irregularly spaced deep large, mostly elongate punctures; posterior part of prosternum shortly ascending and overhanging anterior part of mesoventrite; mesoventrite short, about six times as wide as median length; straight at middle, anteriorly bordered by a thin carinate stria; mesoventral disc slightly concave, with row of large deep punctures; mesepimeron prominent, impunctate, with dense alutaceous microsculpture; mesometaventral suture well impressed, continuous at side with stria delimiting the mesothoracic leg depression (lateral metaventral

stria); metaventral disk glossy and smooth, with scattered small punctures and few fine setae; median metaventral suture distinct, well impressed, complete from anterior to posterior margin; posterior margin with transverse stria going laterally along anterior margin of metacoxa, then angling towards metepisternum, near which it is arched continuously with lateral metaventral stria; 1st abdominal ventrite similar in texture and setation to metaventrite, with raised stria delimiting depression for reception of metathoracic leg.



**FIGURES 1–6.** Habitus of *Eucurtiopsis ashei*, **sp. n.** (1–3) and *E. avis*, **sp. n.** (4–6). 1, 4—dorsal view; 2, 5—ventral view; 3, 6—lateral view.

Femora (Figs. 2, 3) rather stout, especially pro- and metafemora, edges of profemora weakly arcuate, edges of meso- and metafemora ascending posteriad, all margined along anterior and posterior sides; protibia smoothly angulate about one-third from base, arcuate to narrow rounded apex; meso- and metatibia with marginal angulation less pronounced, almost symmetrically rounded, widest near middle, mesotibia clearly narrower than metatibia; tarsi slightly laterally compressed, about 0.6–0.7 times length of corresponding tibiae; tarsal claws simple, divergent, weakly arcuate, about 0.3 times length of corresponding apical tarsomere.

Propygidium not carinate transversely, with disc slightly elevated, deeply punctate, punctures separated by about their widths, intervening spaces weakly alutaceous; pygidium similarly textured and punctured, but with punctures smaller and becoming progressively sparser towards apex. Right valvifer and coxite as figured (Fig. 7).

**Etymology.** The species is dedicated to the memory of the late J. S. Ashe, curator of the Natural History Museum, University of Kansas, in appreciation of our long-term cooperative relationship and his contributions to collecting tropical inquiline beetles.

***Eucurtiopsis avis* Tishechkin & Caterino, sp. n.**

(Figs. 4–6, 8)

**Holotype.** Female labeled “PHILIPPINES: Negros Oriental Is. August 26–28, 1987 Lynn Carroll / HOLOTYPE *Eucurtiopsis avis* sp. n. A. Tishechkin & M. Caterino des. 2006” (FMNH).

**Description.** L: 2.31 mm; W: 1.91 mm; E/Pn L: 1.84; E/Pn W: 1.54; Pn W/L: 1.14; E L/W: 0.82; Pr/Py: 1.17; Sterna: 0.79, 0.14, 0.58; Tibiae: 0.87, 1.08, 1.14. Body rufescent brown, most of body surfaces covered with yellow setae. Frons slightly longer than wide, with sides parallel, bordered by costate marginal striae, not indented at antennal insertions, completely covered with large shallow reticulate punctures; labrum short, trapezoidal, smooth and glossy, with few erect setae; mandibles strongly bent, with long narrow tips, with numerous setae along outer margins; antennal scape about half as broad as long, wide triangular, widest at about midpoint, its punctuation similar to frons, with numerous erect setae; antennal funicle (of female) collectively slightly shorter than scape; antennal club (of female) oval, slightly longer than funicle, densely covered with setae.

Pronotum (Fig. 4) with posterior margin almost rectangularly angulate, sides widest at about basal third, subparallel in basal two thirds, then somewhat abruptly narrowed and again subparallel in apical fourth; marginal striae visible from above in basal two thirds, then abruptly descend to meet supracoal striae; anterior margin shallowly bisinuate, with two small conical elevations on either side of midpoint; pronotal disk weakly convex, completely covered with continuous reticulate punctuation similar to frons, but with punctures larger and bearing long erect setae; antennal cavities largely open above appearing as anterolateral semicircular emarginations of anterior margin.

Scutellum not visible. Elytra (Fig. 4, 6) with small humeral trichomes hidden from above by drastically modified anterior elevations, large, wing-shaped, their major plane running posteriorly at about 45° angle and their bases occupying entire basal margins of elytra; modified anterolateral groove of trichome represented apparently by distinct thin stria running from the middle of elytral anterior margin semicircularly along the leading edge of the “wing,” shallow circular fossa present posteriorly next to that stria approximately around its midpoint; surface of the “wing” projection smooth and glossy, with scattered erect small setae, area around the leading edge, anterior and laterad of anterolateral stria, covered with dense short appressed setae; trichome incision transverse, deep, rather wide and open on both sides; trichome setal fringes composed of short, dense yellow setae, posterior fringe slightly wider than anterior one; apex of posterior elevation (Fig. 4) occupies about a third of elytron width at the end of elytron basal fourth, limited by lateral edge of elytron externally and elevated costate ridge internally; the latter ridge runs to posterior third of elytron; anterior depression of elytral disc absent, posterior halves of elytron transversely elevated, giving lateral profile of elytra abruptly humpbacked shape; posterior two thirds of presutural area raised as another, higher costate keel; elytral disc glossy, impunctate, except within presutural area in anterior third, where several large shallow punctures are present; elytral setae mostly short and tightly appressed, except in parascutellar area and posterior margins, where some long erect setae are present; elytral marginal stria complete, departing conspicuously from margin above metathoracic leg; epipleuron (Fig. 6) smooth and glossy, glabrous.

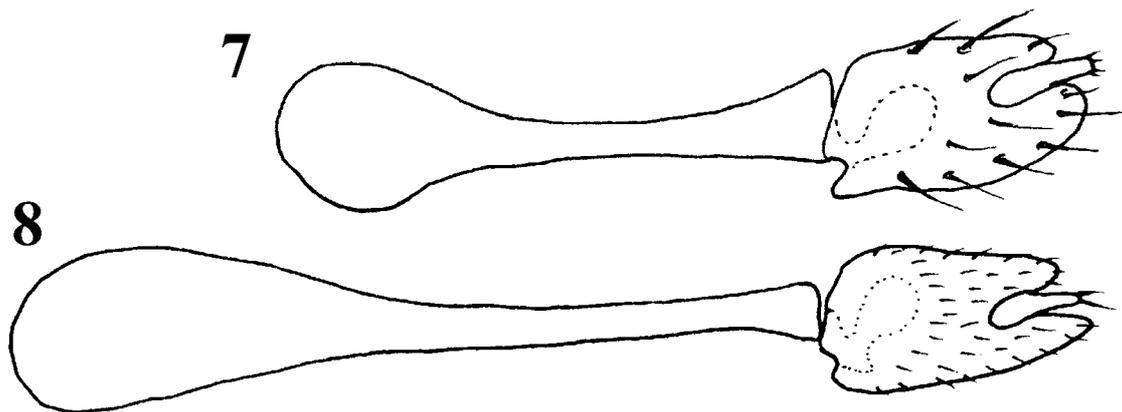
Prosternum (Fig. 5) long; prosternal leg depression margined by raised carina; prosternal keel almost straight, with the marginal stria very thin and inconspicuous; punctuation and texture of prosternal disk as on pronotum; posterior part of prosternum overhanging over anterior part of mesoventrite; mesoventrite short, about six times as wide as median length; shallowly concave at middle, anteriorly bordered by a thin carinate stria; mesoventral disc slightly concave, impunctate, with small dense isodiametric alutaceous microsculpture; mesepimeron prominent, impunctate, with irregular circular excavation and dense alutaceous microsculpture; mesometaventral suture well impressed, continuous at sides with stria delimiting the mesothoracic leg depression (lateral metaventral stria); texture of metaventral disk as on mesoventrite, with scattered tiny setae; median metaventral suture distinct, well impressed, complete from anterior to posterior margin; posterior mar-

gin with transverse stria going laterally along anterior margin of metacoxa, than angling towards metepisternum, near which it is connected at an acute angle with lateral metaventral stria; 1st abdominal ventrite similar in texture and setation to metaventrite, with raised stria delimiting depression for reception of metathoracic leg.

Femora (Figs. 5, 6) elongate, setose; apical parts of profemora (Fig. 6) widely roundly expanded, each with large subapical setose patch; edges of meso- and metafemora arcuate, all margined along anterior and posterior sides; protibia smoothly angulate about one-third from base, arcuate to narrow rounded apex; meso- and metatibia with marginal angulation less pronounced, almost symmetrically rounded, widest near middle, mesotibia slightly narrower than metatibia; tarsi slightly laterally compressed, about 0.4–0.6 times length of corresponding tibiae; tarsomeres 1–4 with long (1.8–2 times corresponding tarsomere length) setae ventrally and a pair of short setae dorsally; tarsomere 1 in addition with three short setae ventrally; tarsal claws simple, divergent, weakly arcuate, about 0.5 times length of corresponding apical tarsomere.

Propygidium shallowly concave, with disc flat, glossy, densely setose, shallowly punctate punctures separated by about twice their widths, with a pair of pointed conical projections near posterolateral angles, bearing tufts of short, apparently glandular setae on their apices; pygidium with low basal marginal keel, its setiferous punctures small and sparse, intervening spaces weakly alutaceous. Right valvifer and coxite as figured (Fig. 8).

**Etymology.** The specific epithet refers to bird wing-like modifications of anterior elytral elevations in this species.



**FIGURES 7–8.** Ovipositor of *Eucurtiopsis ashei*, **sp. n.** (7) and *E. avis*, **sp. n.** (8)

## Discussion

The described species fill one of the last gaps in distribution of the Chlamydopsinae, which has been known so far from all regions around the Philippine Archipelago (Caterino & Dégallier 2007). Apparently, these two species represent only the tip of an iceberg of the Philippine fauna. The sheer size of the land mass and numerous islands of the archipelago suggest the existence of a diverse fauna, presumably of many tens of species. In that respect, worthy of mention is the fact that both species came from localities outside the major islands' land masses, from the narrow southeastern peninsula of Luzon Island and smaller Negros Island. Flight intercept trapping in relatively large and less disturbed forest patches across the archipelago would likely yield many additional species of chlamydopsines.

With regard to known species of *Eucurtiopsis*, these newly described species occupy quite different positions. *Eucurtiopsis avis* seems to be quite distinct and has several characters unique in the genus, *i.e.*, trichomes with modified wing-like anterior elevations each bearing a fossa, long and narrow conical propygidial projections with apical trichomes, and apically expanded profemora with setose patches. On the other hand,

the general appearance of *E. avis* is rather similar to several species from Borneo and Sulawesi, *E. carinatus* Dégallier & Caterino, 2005 and especially *E. gomyi* Dégallier & Caterino, 2005 (down to major features of elytral shape, minus the wing-like processes of *E. avis*, in the case of the latter species). *Eucurtiopsis ashei* belongs to a group of generalized smaller species, *E. zecki* Dégallier & Caterino, 2005 from Borneo being the most superficially similar. However, *E. ashei* may be easily told apart from those similar species by very weak development of the pronotal disc elevation.

At the present level of knowledge of chlamydopsine distribution, the question of route for *Eucurtiopsis* colonization of the Philippines remains open. The genus has representatives in nearby land masses both to the north and south, Taiwan (and Japan), and Borneo and Sulawesi, respectively. Judging by overall external similarity of species studied and increasing chlamydopsine diversity southwards to Australia, a southern connection seems to be more plausible, especially for the more specialized *E. avis*. However, northern and even western routes can not be excluded. Although, remarkably, only one chlamydopsine is known from mainland southeast Asia, the Indian *Ceratohister pheidoliphilus* Reichensperger, 1924 this is probably due to insufficient collecting rather than a true distributional pattern, and the mainland could easily prove to be a major source for the Philippine chlamydopsine fauna.

## Acknowledgements

We extend our thanks to E. G. Riley, who made one of the specimens available for study, and J. S. Ashe and Z. Falin for the loan of the SEMC material. Funding for this study came in part from Schlinger Foundation and National Science Foundation (grants DEB-9815394 to M. S. Caterino and DEB-0516311 to C. E. Carlton and V. M. Bayless). C. E. Carlton, V. I. Gusarov, S. Mazur and anonymous reviewer provided helpful comments on earlier drafts of the manuscript. The paper is published with the approval of the Director of the Louisiana Agricultural Experiment Station as manuscript number 07-26-0119.

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