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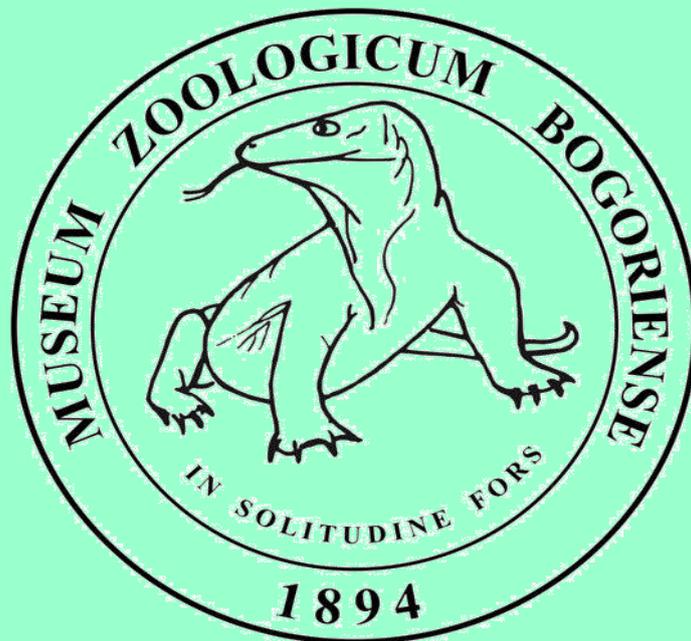
# TREUBIA

*A JOURNAL ON ZOOLOGY  
OF THE INDO-AUSTRALIAN ARCHIPELAGO*

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Vol. 46, pp. 1-113

December 2019



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## TREUBIA

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CONTENT

<b>Yaheita Yokoi, Hiroshi Makihara and Woro A. Noerdjito</b> Callidiopini beetles (Coleoptera: Cerambycidae) in the collection of Museum Zoologicum Bogoriense, Indonesia .....	<b>1–20</b>
<b>R.I. Vane-Wright</b> The identity of <i>Euploea tulliolus goodenoughi</i> Carpenter, 1942, a crow butterfly (Lepidoptera: Nymphalidae, Danainae) from Papua New Guinea .....	<b>21–34</b>
<b>Raden Pramesa Narakusumo and Michael Balke</b> Four new species of <i>Epholcis</i> Waterhouse (Coleoptera: Scarabaeidae: Melolonthinae: Maechidiini) from the Moluccas, Indonesia .....	<b>35–50</b>
<b>Mediyansyah, Amir Hamidy, Misbahul Munir and Masafumi Matsui</b> A new tree frog of the genus <i>Kurixalus</i> Ye, Fei & Dubois, 1999 (Amphibia: Rhacophoridae) from West Kalimantan, Indonesia .....	<b>51–72</b>
<b>Mulyadi</b> New records and redescription of <i>Labidocera rotunda</i> Mori, 1929 (Copepoda, Calanoida, Pontellidae) from Sebatik Island, North Kalimantan, Indonesia, with notes on its species-group ....	<b>73–84</b>
<b>Djunijanti Peggie</b> Biological aspects of <i>Papilio peranthus</i> (Lepidoptera: Papilionidae) as observed at Butterfly Research Facility - LIPI, Cibinong, Indonesia .....	<b>85–102</b>
<b>Susan M. Tsang and Sigit Wiantoro</b> <b>Review</b> - Indonesian flying foxes: research and conservation status update .....	<b>103–113</b>



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Yaheita Yokoi

**Callidiopini beetles (Coleoptera: Cerambycidae) in the collection of Museum Zoologicum Bogoriense, Indonesia**

TREUBIA, December 2019, Vol. 46, pp. 1–20.

Callidiopini species in the collection of Museum Zoologicum Bogoriense, Indonesian Institute of Sciences (LIPI) were examined. Three new species of the genus *Ceresium* Newman, 1842, are described, i.e. *C. clytinioides* sp. nov., *C. sugiartoi* sp. nov., both from Kalimantan, and *C. emarginatum* sp. nov. from Papua. One new species of the genus *Examnes* Pascoe, 1869, from Kalimantan, *E. subvermiculatus* sp. nov. is described.

(Yaheita Yokoi, Hiroshi Makihara and Woro A. Noerdjito)

**Keywords:** Asia, Kalimantan, longhorn beetle, New Guinea, taxonomy

UDC: 595.78.001.03(594.81)

R.I. Vane-Wright

**The identity of *Euploea tulliolus goodenoughi* Carpenter, 1942, a crow butterfly (Lepidoptera: Nymphalidae, Danainae) from Papua New Guinea**

TREUBIA, December 2019, Vol. 46, pp. 21–34.

The nominal taxon *Euploea tulliolus goodenoughi* Carpenter, 1942, based on a unique crow butterfly collected on Goodenough Island in 1913, is shown to represent a small, aberrant female of the locally common *Euploea leucostictos eustachius* (Kirby, 1889). This new synonymy invalidates the only previous record of the Purple Crow, *Euploea tulliolus* (Fabricius, 1793), from the islands of Milne Bay Province, Papua New Guinea. However, two female *Euploea tulliolus* collected from islands in the Louisiade Archipelago during 2010 are reported here, constituting the first valid records of the Purple Crow from the Milne Bay islands.

(R.I. Vane-Wright)

**Keywords:** *tulliolus* species complex, new synonymy, new records, Milne Bay islands, *Euploea leucostictos*

UDC: 595.762(594.31)

Raden Pramesa Narakusumo

**Four new species of *Epholcis* Waterhouse (Coleoptera: Scarabaeidae: Melolonthinae: Maechidiini) from the Moluccas, Indonesia**

TREUBIA, December 2019, Vol. 46, pp. 35–50.

Here, we provide the first record of the chafer beetle genus *Epholcis* Waterhouse, 1875 from the Moluccas, Indonesia. We describe four new species: *E. acutus* sp. nov., *E. arcuatus* sp. nov., *E. cakalele* sp. nov., and *E. obiensis* sp. nov. A lectotype is designated for *Maechidius moluccanus* Moser, 1920, which is redescribed and transferred to the genus *Epholcis* as *E. moluccanus* (Moser) comb. nov.

(Raden Pramesa Narakusumo and Michael Balke)

**Keywords:** Coleoptera, *Epholcis*, Maechidiini, Melolonthinae, Moluccas

UDC: 597.82(594.17)

Mediyansyah

**A new tree frog of the genus *Kurixalus* Ye, Fei & Dubois, 1999 (Amphibia: Rhacophoridae) from West Kalimantan, Indonesia**

TREUBIA, December 2019, Vol. 46, pp. 51–72.

*Kurixalus absconditus* sp. nov., a new species of tree frog of the genus *Kurixalus*, described from West Kalimantan on the basis of molecular phylogenetic and morphological evidence. The new species can be distinguished from its congeners by a combination of following morphological characters: having smaller body size, more prominent of mandibular symphysis, skin smooth on throat, vomerine odontophores two oblique series touching anterior corner of choanae and widely separated, vomerine teeth thick, buccal cavity narrow and deep, choanae with teardrop shaped, single vocal slit, weakly crenulated dermal fringe on fore- and hindlimbs.

(Mediyansyah, Amir Hamidy, Misbahul Munir and Masafumi Matsui)

**Keywords:** *Kurixalus absconditus* sp. nov., new species, West Kalimantan

UDC: 594.34.001.03(594.11)

Mulyadi

**New records and redescription of *Labidocera rotunda* Mori, 1929 (Copepoda, Calanoida, Pontellidae) from Sebatik Island, North Kalimantan, Indonesia, with notes on its species-group**

TREUBIA, December 2019, Vol. 46, pp. 73–84.

During a plankton trip around Sebatik Island, North Kalimantan, a copepod *Labidocera rotunda* Mori, 1929 (Calanoida, Pontellidae) was collected for the first time in Indonesian waters. Both sexes are redescribed and compared to previous descriptions. The geographical distribution of the species confirms that it is of Indo-Pacific origin. There has been a mix-up between *L. rotunda* described by Mori (1929) from Pusan, Korea and *L. bipinnata* from Sagami Bay, described by Tanaka (1936). Fleminger et al. (1982) have argued that the minor difference is based on the presence or absence of cephalic hooks and had synonymized *L. bipinnata* with *L. rotunda*.

(Mulyadi)

**Keywords:** copepods, Indonesia, *Labidocera rotunda*, new record, Pontellidae

UDC: 595.78:57.01(594.53)

Djunijanti Peggie

**Biological aspects of *Papilio peranthus* (Lepidoptera: Papilionidae) as observed at Butterfly Research Facility - LIPI, Cibinong, Indonesia**

TREUBIA, December 2019, Vol. 46, pp. 85–102.

*Papilio peranthus* is endemic to Indonesia, where it occurs on several islands and island groups. This beautiful butterfly is extensively traded, thus efforts to breed this species are very desirable. Captive breeding research was conducted on *P. peranthus* during September 2016 to December 2018. In total, 221 individuals were available for observation. Data on the life cycle of the species, together with observations on females being approached for mating, and female oviposition after mating, are presented. The result demonstrate that *P. peranthus* is not monogamous. Observations on other biological aspects are also reported.

(Djunijanti Peggie)

**Keywords:** egg-laying, mating, life cycle, *Papilio peranthus*, parent stocks

UDC: 599.41:001.891(594)

Susan M. Tsang

**Review - Indonesian flying foxes: research and conservation status update**

TREUBIA, December 2019, Vol. 46, pp. 103–113.

Flying foxes are important ecological keystone species on many archipelagoes, and Indonesia is home to over a third of all flying fox species globally. However, the amount of research on this clade belies their importance to natural systems, particularly as they are increasingly threatened by anthropogenic development and hunting. Here, we provide a review of the literature since the publication of the Old World Fruit Bat Action Plan and categorize research priorities as high, medium, or low based on the number of studies conducted. A majority of the research priorities for Indonesian endemics are categorized as medium or high priority. Low priority ratings were in multiple categories for widespread flying fox species found throughout Southeast Asia, though much of the data were from outside of the Indonesian extent of the species range. These research gaps tend to highlight broader patterns of research biases towards western Indonesia, whereas significant research effort is still needed in eastern Indonesia, particularly for vulnerable island taxa.

(Susan M. Tsang and Sigit  
Wiantoro)

**Keywords:** bats, conservation, Pteropodidae, *Pteropus*, threats

## CALLIDIOPINI BEETLES (COLEOPTERA: CERAMBYCIDAE) IN THE COLLECTION OF MUSEUM ZOOLOGICUM BOGORIENSE, INDONESIA

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### ABSTRACT

Callidiopini species in the collection of Museum Zoologicum Bogoriense, Indonesian Institute of Sciences (LIPI) were examined. Three new species of the genus *Ceresium* Newman, 1842, are described, i.e. *C. clytinioides* sp. nov., *C. sugiartoi* sp. nov., both from Kalimantan, and *C. emarginatum* sp. nov. from Papua. One new species of the genus *Examnes* Pascoe, 1869, from Kalimantan, *E. subvermiculatus* sp. nov. is described.

**Keywords:** Asia, Kalimantan, longhorn beetle, New Guinea, taxonomy

### ABSTRAK

Spesies Callidiopini di dalam koleksi Museum Zoologicum Bogoriense, Lembaga Ilmu Pengetahuan Indonesia (LIPI) diteliti. Tiga spesies baru dari marga *Ceresium* Newman, 1842, dipertelakan, yaitu *C. clytinioides* sp. nov., *C. sugiartoi* sp. nov., keduanya dari Kalimantan, dan *C. emarginatum* sp. nov. dari Papua. Satu spesies baru dari marga *Examnes* Pascoe, 1869, dari Kalimantan, *E. subvermiculatus* sp. nov. dipertelakan.

**Kata kunci:** Asia, Kalimantan, kumbang sungut panjang, Nugini, taksonomi

### INTRODUCTION

Several research projects on the rainforests in East Kalimantan have been implemented by the Indonesian Institute of Sciences (LIPI) and its Japanese partners. During these projects and in subsequent programs, many cerambycid beetles were collected by the second and third authors of this publication. Many cerambycids have also been collected elsewhere in Indonesia in the course of expeditions under the auspices of LIPI. Based on these materials, particularly those acquired in East Kalimantan, four new species belonging to *Examnes* Pascoe, 1842, Callidiopini, or *Pelossus* Thomson, 1864, Pelossini, were described in our previous publication.

Our study has been extended to specimens of other genera, including those collected in other parts of Indonesia. The present publication is based on this extended observation.

In our previous paper, the male genital organs were closely examined, including median lobe, tegmen and 8<sup>th</sup> abdominal segment. Whereas the first and second parts are

commonly observed in other publications, importance of 8<sup>th</sup> sternites was only recently revealed, so far as the tribe Callidiopini is concerned. Comparison of these terminal segments proved to be an important key for taxonomy of the tribe and for the genus *Ceresium* Newman, 1842 in particular (Holzschuh, 2011, 2015, 2017; Yokoi, 2015, 2019; Yokoi et al., 2016). Even though these abdominal segments are often referred to as parts of “terminalia”, they seem to play a certain role for copulation, as their apices in particular are often elaborate in structure and well diversified. Thus, they are included in the sections of genital organs in this publication.

Even more intricate, manifold and diversified are the endophalli, with apical sclerotizations in some Callidiopini species. Extensive sclerotization of endophallus was already observed in other tribes of Cerambycidae. For instance, it was closely described for species and genera of the Callichromatini (Skale & Weigel, 2017; Skale, 2018a, 2018b, 2019). However, it was not known for the Callidiopini until recently (Yokoi, 2019). For this publication, endophalli of the newly described species, their apical parts in particular, were carefully examined.

In addition, the median lobe and tegmen were observed. They often manifest significant differences, though not so marked as 8<sup>th</sup> sternites or endophalli. For *Ceresium emarginatum* sp. nov., the female genital organs were examined.

## MATERIALS AND METHODS

The methods were described in our previous publication (Yokoi et al., 2016). However, the materials for this publication include more specimens collected in various parts of Indonesia under the auspices of LIPI. The holotypes and some paratypes will be preserved in Museum Zoologicum Bogoriense (MZB), Cibinong, Indonesia, the remaining paratypes are deposited in the National Museum of Nature and Science, Tsukuba, Japan or in Forestry and Forest Products Research Institute, Tsukuba, Japan (FFPRI).

The abbreviations used for the ratio of the measurement in the descriptions are as follows: BLe– body length measured from apical margin of clypeus to elytral apices; HW– head width across eyes, PL– length of pronotum, PW– maximum width of pronotum, PA– apical width of pronotum, PB– basal width of pronotum, EL– length of elytra, EW– humeral width of elytra, M– arithmetic mean.

In this publication, the apically sclerotized complex of the endophallus is referred to as the 'ejaculatory duct complex', as it surrounds the ejaculatory duct. Expressions as “dorsal” or “apical” used in the descriptions of this complex are rather arbitrary, yet necessary for orientation. The side to which the ejaculatory duct is attached is 'dorsal' and to which it is pointed is 'apical'.

## RESULTS

As a result of the above research works, we describe three new species of the genus *Ceresium* and one from *Examnes* in the following. An interesting example of mimicry, *Ceresium clytinioides* sp. nov. from Borneo is included. *Ceresium sugiartoi* sp. nov., another new species from Borneo, is comparable to two known species. *Ceresium emarginatum* sp. nov. from Papua is morphologically peculiar with its elytral apices emarginated. *Examnes subvermiculatus* sp. nov. is in turn more similar in appearance to a Continental Asian species than to sympatric ones.

As to genitalia, the above mentioned observation of male 8<sup>th</sup> sternites as well as of ejaculatory duct complexes was underlined by the new observation, supplemented by additional examples. The examined species manifested a high degree of diversity among themselves in this regard. Their genital organs differ also from those of already described species. Regarding the female genital organs of *Ceresium emarginatum* sp. nov., a few interesting morphological aspects were registered.

These results are described and illustrated in detail in the following "Taxonomy". A comparative note is added to each description of new species for taxonomical consideration.

## TAXONOMY

### *Ceresium clytinioides* sp. nov.

(Figs.1A–D; 2A–I)

**Material examined.** Holotype ♂: "Bukit Soeharto, East Kalimantan 60–45 LT, 26.iv.2000, H. Makihara leg. Paratypes: 1♂ 1♀, ditto, except "v.1999; 1♀, ditto, except "22.iii.1999".

**Diagnosis.** Resembles some species of the tribe Clytini. Elytron black with two white tomentose vittae. Pronotum large and convex, with surface reticulate.

**Etymology.** The name refers to its superficial resemblance to some Clytini species.

**Description.** Measurements. BLe, ♂ =8.0–9.2mm, ♀ = 8.0–11.6. EL/EW=2.70 for ♂; 2.63 for ♀. HW/PW=0.86–0.90 (M 0.88) for ♂; 0.82–0.85 (M 0.84) for ♀. PL/PW=0.92–0.94 (M 0.93) for ♂; 0.92–0.96 (M 0.94) for ♀. PA/PW=0.67–0.70 (M 0.69) for ♂; 0.70–0.72 (M 0.71) for ♀. PB/PW=0.82 for ♂; 0.82– 0.84 (M 0.83) for ♀.

Color almost universally pitch-black; abdomen, coxae, trochanters and undersides of femoral peduncle brownish in two individuals.

Head densely and regularly provided with medium-sized punctures; nearly reticulate on vertex and occiput; clothed with pale, stout, curved, recumbent hairs pointing in the directions of vertex or antennal supports. Frons almost squarish in outline; flattened, though slightly elevated in middle. Vertex broad and weakly concave; with a feeble median groove. Occiput moderately convex. Eyes separated from each other by 2/3 the width of occiput or half the width of upper eye-lobes. Antennal supports moderately raised near vertex. Antennae surpassing elytral apices by the last two articles for male and by the last article for female. Scape feebly arcuate and clavate; integument analogous as on head, though punctures and

setae smaller. Antennomeres III, IV, V and VI each  $9/10$ ,  $8/10$ ,  $5/4$  and  $11/10$  the length of scape respectively; VII–XI sub-equal, a little longer than VI; V–XI flattened; V–X slightly expanded to apex; II–V densely provided with punctures which are apically reduced in size, fringed with short hairs on undersides.

Pronotum as Fig. 1B; voluminous, convex and rounded; a little shorter than broad; apex narrower than base; broadest near apical  $1/4$  for male and  $1/2$  for female. Sides strongly constricted toward apex; tapering sub-linearly toward base; weakly constricted near base. Disk raised in middle. Surface universally reticulate; clothed with pale, short, adpressed hairs pointing toward middle. Basal margin fringed with white tomentose vittae near sides. Scutellum bell-shaped, with white tomentose setae.

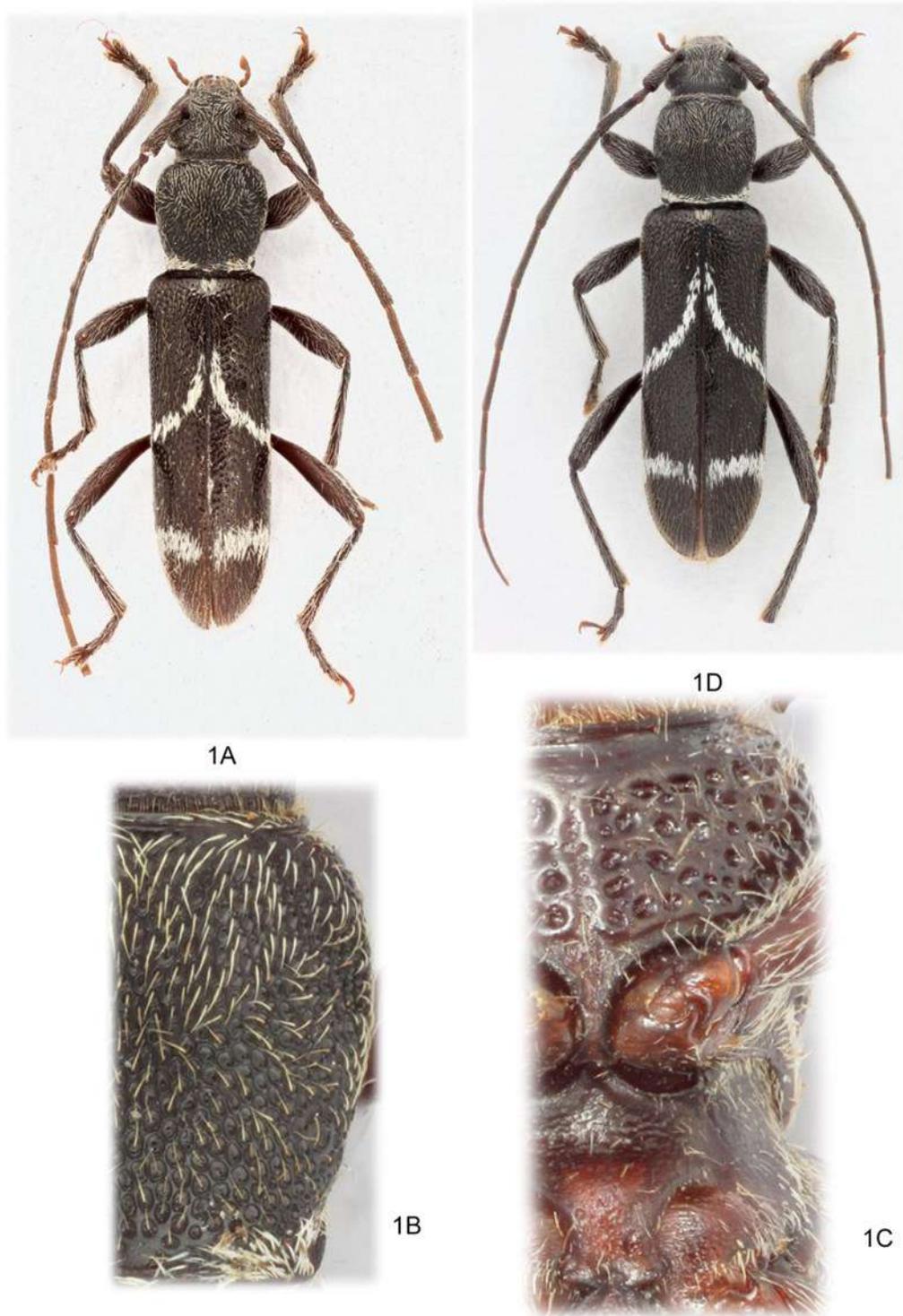
Elytra feebly tapering toward apices, rounded in apical  $1/4$ ; apices separately rounded; with dense, deep, setiferous punctures which are reduced in size toward apices. Each elytron provided with two pairs of white tomentose vittae; the median vitta oblique and arcuate from suture at the level of basal  $1/4$  toward middle of sides; the broader irregular apical vitta almost horizontal at the level of apical  $1/4$ .

Legs rather long as a *Ceresium* species. Profemora moderately clavate; mesofemora weakly and metafemora feebly so. Tibiae more or less keeled on the external sides; provided with setiferous punctures on dorsum.

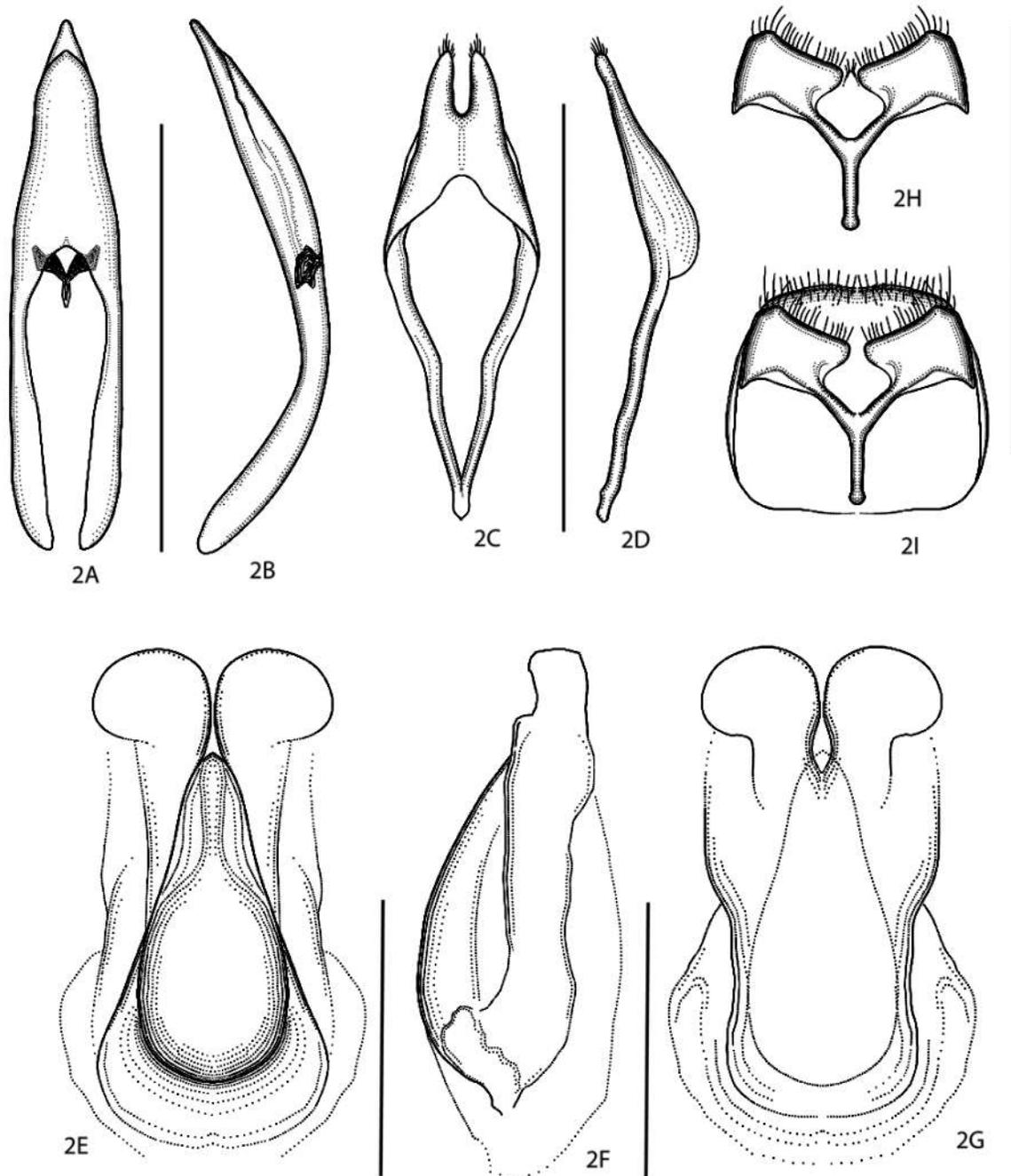
Venter. Prosternum convex; a rhomboidal area on each side of midline raised; furnished with large, deep setiferous punctures (Fig. 1C). Prosternal process narrow; thickly bordered; apically widened; weakly emarginated on apex. Mesosternum obscurely punctured. Mesosternal process broad; well bordered; apically raised, almost circularly emarginated on apex. Metasternum strongly convex; moderately though shallowly punctured in middle; setae denser than those of pro- and mesosternum.

Abdomen shiny; sides clothed with short, recumbent hairs; 7<sup>th</sup> sternite arcuate on apex.

Male genitalia as in Figs. 2A–I. Median lobe nearly  $2/5$  the length of abdomen; bullet-shaped in dorsal view; strongly arcuate in lateral view; dorsal plate dehiscent in basal  $11/20$ ; ventral plate a little longer than the dorsal, dehiscent in basal  $3/4$ . Tegmen more than  $7/8$  the length of median lobe, moderately curved in profile. Parameres about half the length of tegmen; dehiscent in apical  $3/10$ ; each lobe tapering towards apex, which is rounded and furnished with several short setae. Ejaculatory duct complex as Figs. 2E–G; less sclerotized than comparable species; ejaculatory duct itself placed in a prominent horn-like apical sclerite, which in turn is connected and anchored to a monolithic latero-basal sclerite; provided additionally with a large, bi-lobed, feebly sclerotized membrane appendix on apex. 8<sup>th</sup> sternite as Figs. 2H–I; stout with a short peduncle; shallowly emarginated on apex; strongly narrowed at the middle; as wide as 8<sup>th</sup> tergite.



**Figure 1A–D.** *Ceresium clytinoidum* sp. nov. 1A, Holotype male; 1B, ditto, pronotum; 1C, ditto, venter; 1D, paratype female.



**Figure 2A–I.** *Ceresium clytinioides* sp. nov., holotype male. Genital organs. 2A, Median lobe, dorsal view; 2B, ditto, lateral view; 2C, tegmen, dorsal view; 2D, ditto, lateral view; 2E, endophallus, ejaculatory duct complex, dorsal view; 2F, ditto, lateral view; 2G, ditto, ventral view; 2H, 8<sup>th</sup> sternite, ventral view; 2I, ditto, with 5<sup>th</sup> tergite in the background. Scale bar: 0.2mm for 2E, 2F, 2G; 1mm for the others.

**Distribution.** Borneo, East Kalimantan, lowland

**Comparative Notes.** The white vittae on black-colored elytra and the rounded, swollen, densely punctured pronotum, this new species resembles superficially some species of the tribe Clytini Mulsant, 1839. In other respects, however, it doubtlessly belongs to the genus *Ceresium*. Its eyes are, for example, coarsely faceted, and mid-coxal cavities are closed externally. It is another interesting example of inter-tribal mimicry, with parallels to species of several genera of the Clytini, including *Chlorophorus* Chevrolat, 1863, *Demonax* Thomson, 1864, *Rhaphuma* Pascoe, 1858, and *Perissus* Chevrolat, 1863 of Oriental Region or *Clytus* Laicharting, 1784 of the Palaearctic Region. No particular species or genus is preferred for this mimicry. The model for this mimicry is unknown.

Of similar *Ceresium* species, *C. aethiops* Newman, 1842 shares the black body color, whitish setae on elytra and partly apically expanded antennomeres. However, in *C. aethiops*, the structure and integument of its prothorax, pattern of white setae on elytra and the length of antennae are obviously different, and it does not resemble a Clytini species.

Compared with other species, the male genital organs of *C. clytinioides* are noteworthy, especially the endophallus with, large, bi-lobed apical appendix, and the medially strongly narrowed 8<sup>th</sup> sternite.

### ***Ceresium sugiartoi* sp. nov.**

(Figs. 3A–D; 4A–J)

**Type series.** Holotype ♂: “INDONESIA, Kalimantan Timur, Bukit Bangkirai, Alt. 100+– m, 22. viii. 2002, Woro. A. N., Makihara., Sugiarto, Beating”. Paratype ♀: “INDONESIA, Kalimantan Timur, Balikpapan, Bukit Suharto, Tgl. 28, xii. 2005, Makihara & Sugiharto. LT (60–20)”.

**Diagnosis.** Body colour and maculae on pronotum as *Ceresium striatocolle* Holzschuh, 2011, but pronotum less swollen and surface punctate instead of striate.

**Etymology.** The name of this new species is dedicated to Dr. Sugiarto of East Kutai Agricultural Scientific College, Indonesia, for his engagement and assistance during various field research programs in Indonesia.

**Description.** Measurements. BL<sub>e</sub>=10.3mm for ♂, 9.8mm for ♀; EL/EW=2.66 for ♂, 2.63 for ♀; HW/PW=0.92 for ♂ ♀; PL/PW=1.10 for ♂, 1.06 for ♀; PA/PW=0.76 for ♂, 0.72 for ♀; PB/PW=0.90 for ♂ ♀.

Color testaceous; pronotum, head and venter darker.

Head clothed with yellowish stout hairs pointing in different directions; with dense, large, deep punctures on frons and vertex. Frons almost square; weakly concave though slightly raised in the apical middle. Vertex broad; weakly concave; with a narrow median furrow stretching onto occiput. Eyes separated from each other by 2/5 the width of occiput or twice the width of upper lobes. Antennae surpassing elytral apices by the last two articles in male and by the last in female. Scape moderately clavate and arcuate. Antennomere III about

2/3 the length of scape; IV a little shorter than III; V–VIII each 9/10 as long as scape; IX–XI each 4/5 so. Antennomeres I–V provided more or less with shallow punctures and whitish stout hairs; additionally fringed with longer hairs on the undersides.

Pronotum as Fig. 3B; longer than broad; apex narrower than base; widest near apical 1/3; apicad dilated; sides weakly sinuate, constricted strongly toward apex and moderately so in basal 1/4. Disc provided with a nitid median stripe tapering from base to middle; regularly and densely punctured; clothed with a pair of pale-yellow tomentose, longitudinal lateral maculae, each thinned near middle

Elytra tapering from base to apices; apices feebly rounded; sparsely and shallowly punctured as a *Ceresium* species; setiferous hairs longer and stouter.

Legs moderate in length, femora clavate.

Venter. Prosternum moderately convex; shiny; coarsely punctured near middle; sparsely furnished with short, curly, disorderly hairs. Prosternal process narrow; thickly bordered; apicad sharply bent downward; thinned near and emarginated on apex; clothed with fine hairs in middle. Mesosternum concave; lustreless and impunctate in the basal half; sides more densely setose than on those of prosternum. Mesosternal process broad; well bordered; bi-lobed, each lobe with two sharp corners; sparsely and shallowly punctured; clothed sparsely with short recumbent hairs. Metasternum shiny; nitid in middle; shallowly punctured around the middle; setae as mesosternum.

Abdomen. Sternite VII a little longer than VI. VI feebly and VII weakly emerginated on apex. Apex of VII densely clothed with a row of short hairs (Fig. 3C).

Male genital organs as Figs. 3C; 4A–J. Median lobe nearly 2/5 the length of abdomen; bullet-shaped in dorsal view; strongly arcuate in profile; dorsal plate dehiscent in basal 11/20; ventral plate longer, dehiscent in basal 4/5. Tegmen more than 9/10 as long as median lobe; profile double-sinuuous. Paramere 9/20 the length of tegmen; dehiscent in apical 1/4; with each lobe apicad rounded and furnished with short to long hairs. Ejaculatory duct complex as in Figs. 4B; 4G–I; basal sclerite gradually narrowed and thinned toward apex; lateral sclerites apicad produced and acute; ejaculatory duct placed in a horn-like apical sclerite; supplemented by a less sclerotized, multi-curved apical appendix which is loosely connected to the apical and lateral sclerites. 8<sup>th</sup> sternite as Figs. 3C; 4J; apicad narrowed; apex emarginated; provided with a pair of prominent, sword-like extensions on each latero-apical corners with their inner sides thickly clothed with medium to long setae. 8<sup>th</sup> tergite broader than the sternite; truncated on apex; furnished with a row of medium to long hairs on sides and apex (Fig. 3C).

**Distribution.** Borneo, East Kalimantan, lowland.

**Comparative notes.** *Ceresium sugiartoi* sp. nov. is similarly punctured on pronotum as *C. mediocre* Holzschuh, 2011. However, its shape and setae are different. The new species is more similar to *C. striatocolle* in this regard, though the lateral maculae on pronotum not wholly interrupted and elytra more sparsely and shallowly punctured; setiferous hairs longer and stouter.

As to genital organs, the multi-winding apical appendix to the ejaculatory complex has not been observed before in *Ceresium* species.

***Ceresium emarginatum* sp. nov.**

(Figs. 5A–E; 6A–D)

**Holotype** ♀, “INDONESIA, Papua, Freeport Concession, Timika, 6 May 1998, R. Ubaidillah, Peggie 97046” (Now Irian Jaya is known as Papua)

**Diagnosis.** Elytra apically narrowed; apices emarginated. Frons short and moderately steep.

**Etymology.** The name refers to the elytral apices.

**Description.** Measurements. BLe=16.5mm; EL/EW=2.86; HW/PW=0.85; PL/PW=1.0; PA/PW=0.74; PB/PW=0.90.

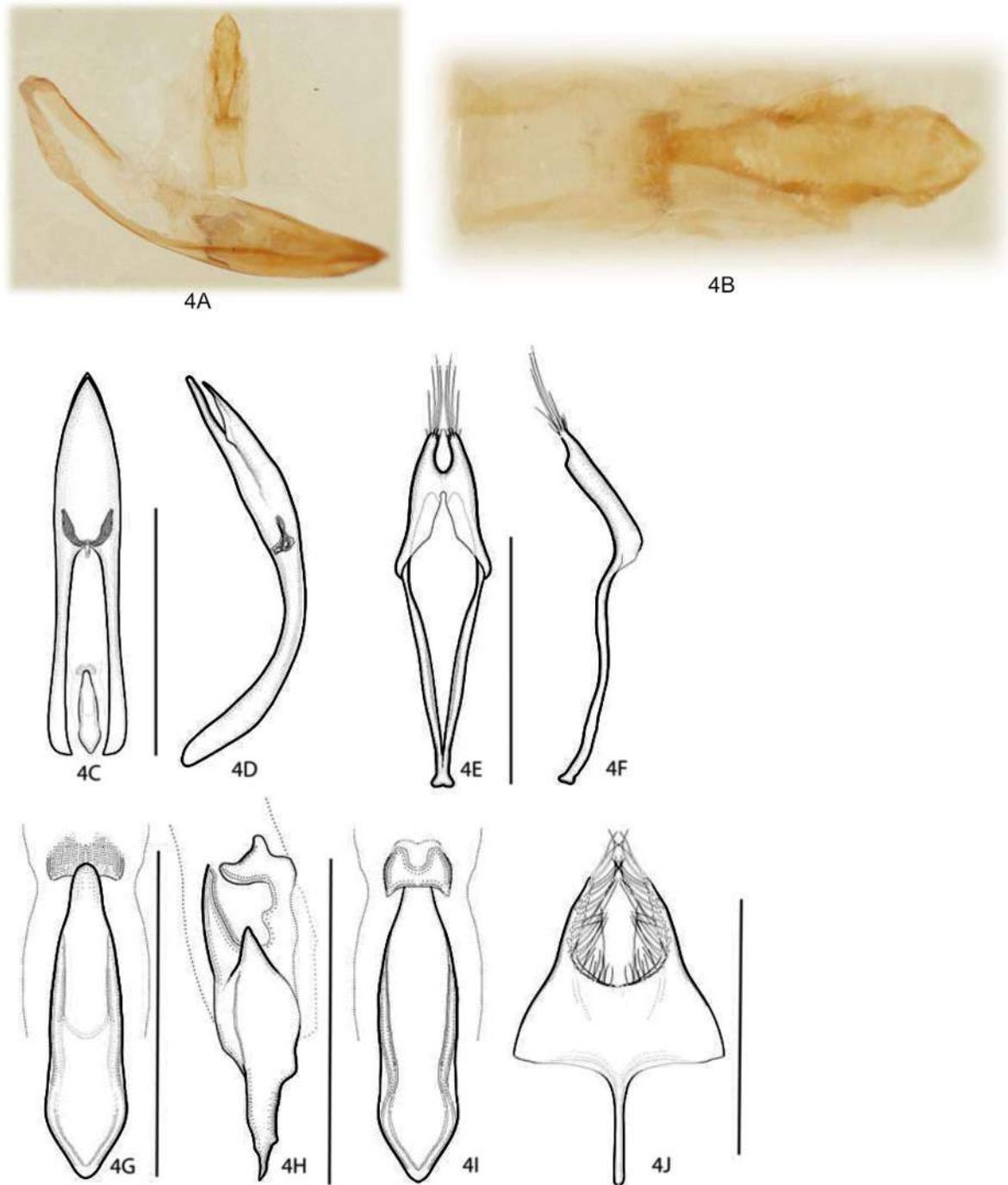
Color yellowish brown; head, thoraces and elytral base reddish brown.

Head narrower than pronotum; almost impunctate except for several obtuse punctures near vertex and clypeus; more or less clothed with pale-yellow, short, stout and curved hairs pointing to different directions. Frons sub-rectangular; short; moderately steep (Figs. 5D; 5E); deeply depressed near latero-apical corners; with two horizontal furrows near fronto-clypeal suture; provided with a deep, well-bordered median groove stretching beyond vertex, where it is deepest. Vertex weakly concave. Occiput well convex. Eyes separated from each other by about 1/3 the width of occiput or twice the width of upper eye-lobes. Antennal supports flattened (Figs. 5D; 5E). Antennae surpassing elytral apices by the last two articles. Scape clavate and arcuate. Antennomere III about 6/5 the length of scape; IV about 4/5 so; V the longest with 3/2; VI–XI very gradually reducing in length; II–V fringed with pale-yellow short hairs on undersides; V–XI moderately flattened.

Pronotum as Figs. 5A; 5D; analogous as of *Examnes philippensis* Newman, 1842 in outline; as long as broad; apex narrower than base; widest near middle; sides almost evenly arcuate. Disk shiny; provided with a broad nitid median stripe stretching from apex almost to base; punctured coarsely in the apical half, rugose in the basal half and near sides, granulate near latero-basal corners; clothed with a pair of pale-yellow tomentose, longitudinal lateral vittae with irregular boundaries, each of which interrupted near middle; sparsely clothed with short, curved, recumbent hairs otherwise. Scutellum sub-triangular; pale-yellowish tomentose.



**Figure 3A–D.** *Ceresium sugiartoi* sp. nov. 3A, Holotype male; 3B, ditto, pronotum; 3C, ditto, 8<sup>th</sup> sternite and tergite, ventral view; 3D, paratype female.



**Figure 4A–I.** *Ceresium sugiartoi* sp. nov., holotype male. Genital organs. 4A, Median lobe and endophallus; 4B, endophallus, ejaculatory duct complex, ventral view; 4C, median lobe, dorsal view; 4D, ditto, lateral view; 4E, tegmen, dorsal view; 4F, ditto, lateral view; 4G, endophallus, ejaculatory duct complex, dorsal view; 4H, ditto, lateral view; 4I, ditto, ventral view; 4J, 8<sup>th</sup> sternite, ventral view. Scale bar: 0.5mm for F, G, H; 1mm for the others.

Elytra tapering sub-linear towards apical 1/5, then strongly narrowed to apex; a little dehiscent in apical 1/5; apices each widely emarginated (Fig. 5C). Each elytron provided with a pair of irregular costae stretching in parallel, a little oblique to suture, from basal 1/7 toward apical 3/10, gradually weakening; densely provided with punctures reducing from large and deep near base to diminutive and shallow toward apex; humeri and base additionally granulose.

Venter as Fig. 5B; clothed sparsely with pale-yellow, curved, disorderly hairs near middle; more densely so with recumbent hairs near sides. Prosternum uneven; coarsely punctured, partly rugose. Prosternal process broad; well bordered; densely punctured; apicad widened and thinned in middle. Mesosternum rugose on surface. Mesosternal process broad; well bordered; widely bi-lobed with each lobe apicad raised; densely, coarsely punctured. Metasternum densely though shallowly punctured near middle.

Abdomen shiny; similarly though more weakly setose than the undersides of thoraces.

Legs. Fore femora distinctly clavate; mid femora moderately and hind femora weakly so. Peduncles short or not clearly distinguishable. Mid and hind femora moderately flattened.

Female. Genital organs as in Figs. 6A–D. 8<sup>th</sup> sternite and tergite almost squarish. 8<sup>th</sup> sternite acute at the latero-basal corners; with a long peduncle. Coxite thinned in apical middle. Coxite lobes and stilli each furnished with short fine setae. Paraproct rather short. Vagina arcuate in profile; partly shagreened; with several winding flagelli stretching further onto median oviduct. Bursa copulatrix approximate to median oviduct, partly shagreened; supported by a pair of curved, sclerotized flagelli which are apicad united and connected to an elongated rod-like appendix. Spermatheca large, oval in form, well sclerotized. Spermathecal gland kidney-shaped.

Note: ten large eggs, each as long as 0.5mm, were counted in the abdomen. Position and form of the above organs was possibly influenced under their pressure.

**Distribution.** Indonesia, Papua.

**Comparative Notes.** This new species can be distinguished from comparable species on account of its elytra. Above all, their apices are each distinctly emarginated, which is peculiar as a *Ceresium* species. They are also more strongly narrowed toward apices than usual.

As to female genital organs of the new species, they are, spermatheca in particular, more shagreened and sclerotized than usual. Elongated flagelli of bursa copulatrix have not been observed in the Callidiopini.

***Examnes subvermiculatus* sp. nov.**

(Figs. 7A–D; 8A–I)

**Holotype** ♂, "Bukit Bangkirai, Kalimantan Timur, Indonesia, 14.XI, 2000, H. Makihara leg."

**Diagnosis.** Dark brown in color, large and stout. Pronotum sub-vermiculate to granulate. Frons short and steep. Antennal supports moderately produced.

**Etymology.** The name refers to the pronotal surface of the new species.

**Description.** Measurements. BL=22.3mm; EL/EW=2.60; HW/PW=0.90; PL/PW=1.04; PA/PW=0.84; PB/PW=0.92.

Color dark brown; apical half of elytra, abdomen and femora reddish dark brown.

Head sparsely clothed with yellowish, curved, stout hairs. Frons as *Examnes versutus* Pascoe, 1866 in outline; short and steep (Fig. 7C); less than half as long as wide; coarsely, densely and shallowly punctured, more deeply so or rugose near middle; depressed near latero-apical corners. Clypeus very short. Eyes separated from one another by 1/3 the width of occiput or twice the width of upper lobes. Vertex concave; deeply rugose with a deep median furrow. Antennal supports broad and flattened; though each moderately produced posteriorly to form a tubercle; densely and coarsely punctured. Antennae about 3/2 as long as body, reaching elytral apices by 7<sup>th</sup> article. Scape feebly clavate and arcuate; punctured densely and shallowly. Antennomeres III, IV, V and VI each 3/2, 9/10, 5/3 and 5/3 as long as scape respectively; VII–XI gradually reducing in length; V–VIII keeled; VI–X a little flattened.

Pronotum as Figs. 7B; 7C. Well convex; slightly longer than broad; widest near middle; with sides almost evenly arcuate. Surface irregularly sub-vermiculate; vermiculations varying in size, form and density; clothed irregularly and sporadically with yellowish, disorderly, recumbent hairs. Scutellum bell-shaped; well-bordered.

Elytra. Sides gradually tapering toward apices which are separately rounded. Surface densely furnished with setiferous punctures, each bearing a pale, short, curved hair; punctures gradually reducing in size toward apices. Basal 1/4 additionally granulate.

Venter as Fig. 7D. Prosternum concave in the apical middle; irregularly vermiculate or rugose; clothed sparsely with short, yellowish, curved, stout hairs. Prosternal process rather narrow; well bordered; apical gradually bent downward; apex distinctly arcuate. Mesosternum flattened or slightly depressed on dorsum; irregularly rugose or vermiculate there; clothed with pale-yellow, short, recumbent hairs. Mesosternal process broad; well bordered; bi-lobed in apical third. Metasternum shallowly rugose or vermiculate in middle; more densely setose than mesosternum.

Abdomen shiny; setose as metasternum; sternite VII widely arcuate on apex.

Legs. Fore femora strongly clavate without a peduncle; mid and hind femora less so, each with a short peduncle. Tibiae keeled in the basal halves.



5A



5B



5C

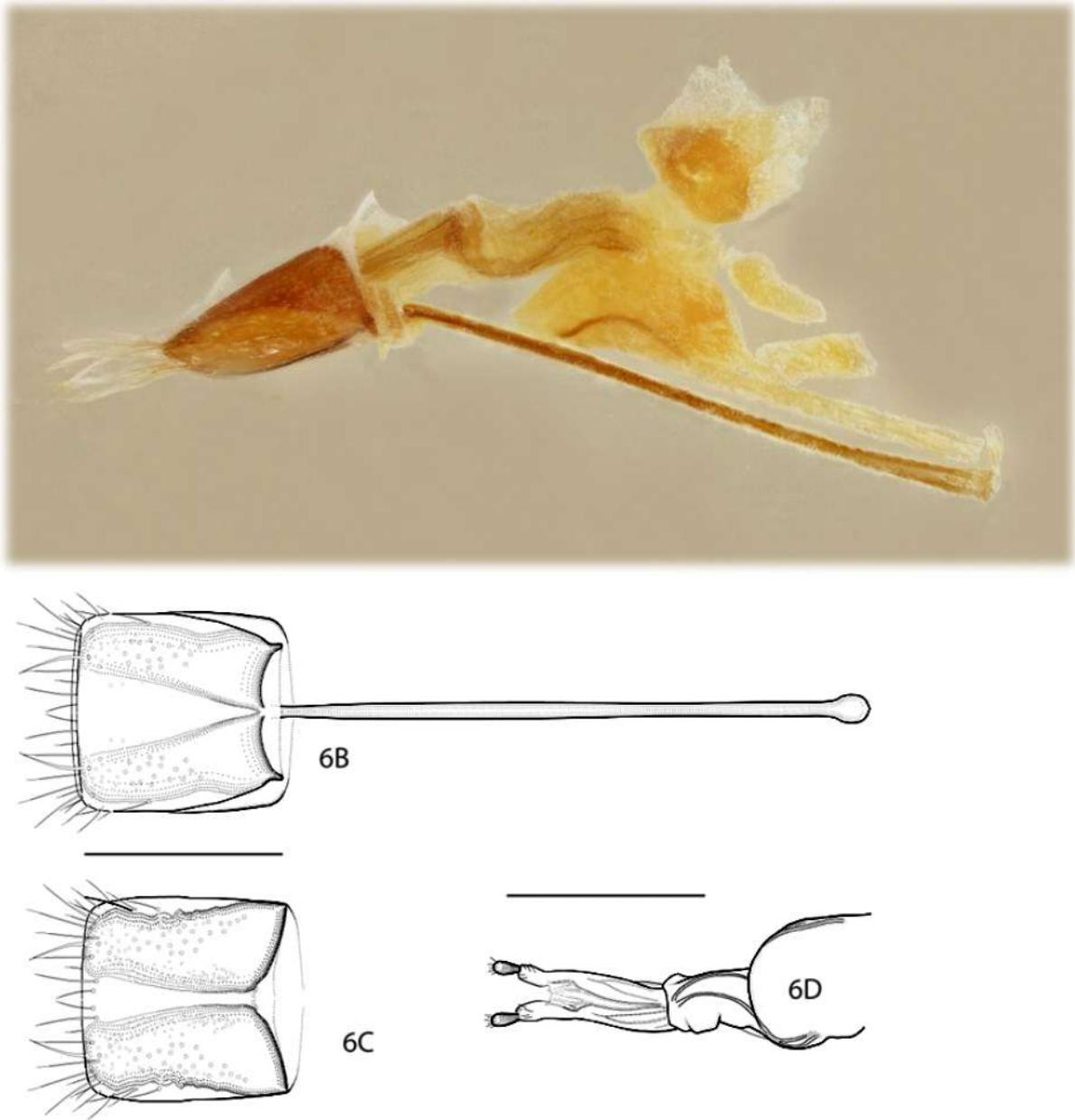


5D



5E

**Figure 5A–E.** *Ceresium emarginatum* sp. nov., holotype female. 5A, Habitus; 5B, venter; 5C, elytral apices; 5D, head and pronotum; 5E, head, lateral view.



**Figure 6A–D.** *Ceresium emarginatum* sp. nov., holotype female. Genital organs. 6A, Overview; 6B, 8<sup>th</sup> sternite, ventral view; 6C, 8<sup>th</sup> tergite, dorsal view; 6D, 9<sup>th</sup> sternite, dorsal view. Scale bars: 1mm for 6B–D.

Male genital organs as Figs. 8A–I. Median lobe nearly 1/4 the length of abdomen; bullet-shaped in dorsal view; strongly arcuate in profile; dorsal plate dehiscent in basal 1/2; ventral plate longer, dehiscent in basal 4/5. Tegmen nearly 9/10 as long as median lobe; in profile strongly curved near middle. Paramere 1/2 the length of tegmen; dehiscent in apical 1/10; with each lobe apicad rounded and furnished with short to medium setae. Ejaculatory duct complex as in Figs. 8E–G; basal sclerite gradually narrowed and thinned toward apex; lateral sclerites curved, bent downward with apices acute; ejaculatory duct placed in a horn-like apical sclerite. 8<sup>th</sup> sternite as Fig. 8H; apicad narrowed; latero-apical corners well rounded; apex shallowly emarginated; widely thinned in middle; clothed with long hairs on apex and shorter hairs near there. 8<sup>th</sup> tergite as Fig. 8I; broader than the sternite; slightly emarginated on apex which is setose as of the sternite.

**Distribution.** Indonesia, Borneo, East Kalimantan.

**Comparative Notes.** This new species shares short, abruptly elevated frons and vermiculate-granulose pronotum with *Examnes granulosis* Pic 1931 from Indochina or with *E. versutus* from Malay Peninsula and Borneo. However, *E. granulosis* differs by its longer antennae, flattened and rounded antennal sockets without any tubercle, and grayish pubescence on pronotum. *E. versutus* differs in turn with its long, erect body hairs as well as with its distinctly more prominent antennal supports. Further, its pronotum is much more densely and deeply vermiculate. Both *E. granulosis* and *E. versutus* are more densely clothed with finer, recumbent hairs on head. Overall, however, the new species from Borneo can be allied to *E. granulosis* and, to a lesser degree, to the sympatric *E. versutus*.

The parameres of the new species are much less dehiscent than those of comparable species. The outline of 8<sup>th</sup> sternite is typical of the genus. No substantial difference to *Ceresium* species is observable in the ejaculatory complex, which is thickly and intricately sclerotized.

## DISCUSSION

### On genitalia

The 8<sup>th</sup> abdominal segments of nearly 30 species of *Ceresium* and 3 of *Examnes* have been observed (Hozschuh, 2011, 2015, 2016, 2017; Yokoi 2015, 2019; Yokoi et al., 2016). Most of them are diagnostic and some are elaborate in structure.

In contrast, only a limited number of species of these genera have been examined regarding the endophallus. Including the 3 species newly described in this publication, altogether 11 species of *Ceresium* and 1 of *Examnes* have been described in this regard. The endophalli have revealed a high degree of elaboration and diversification. This morphological aspect is significant not only for the taxonomy of the Callidiopini but also for



7A



7B

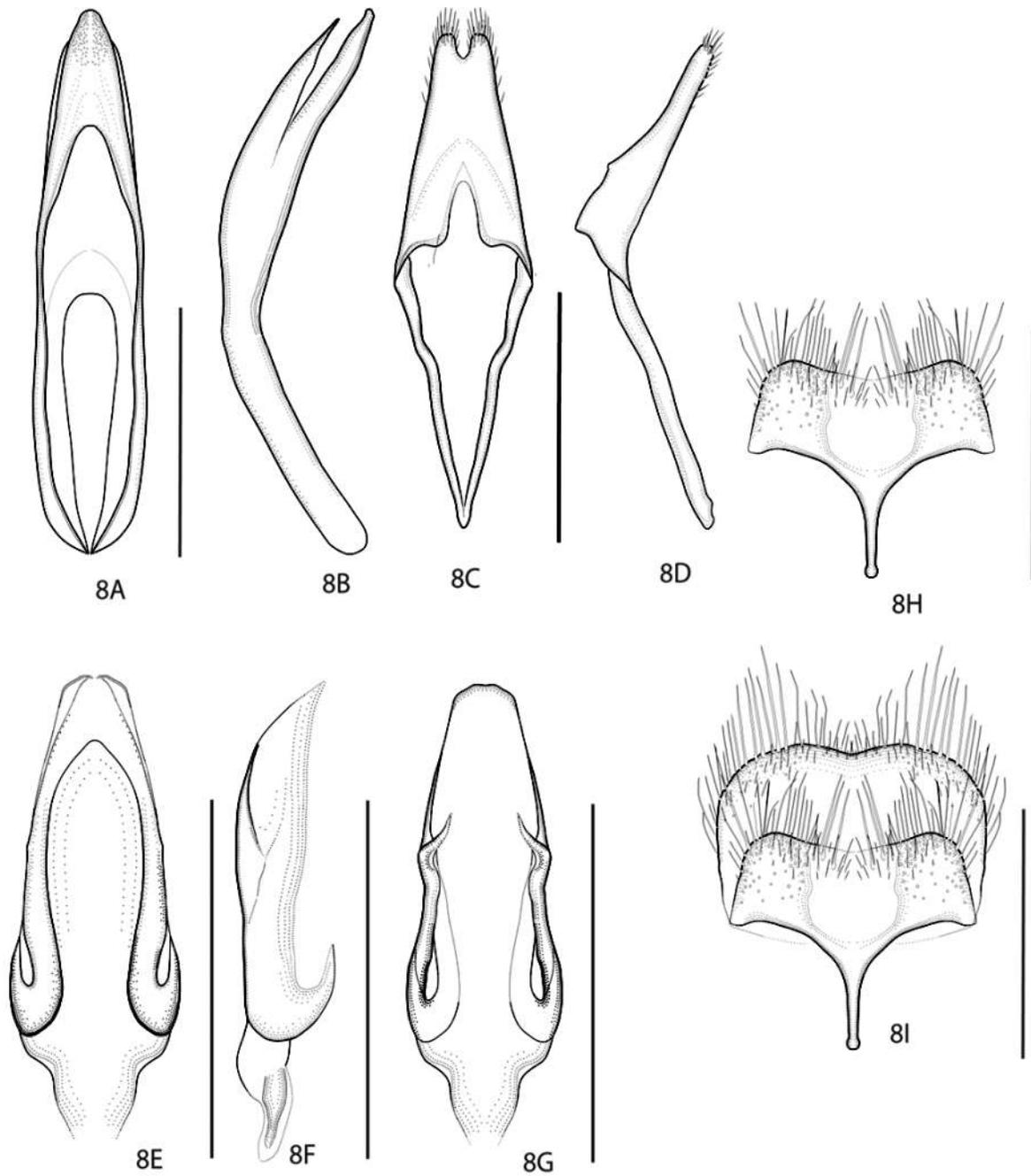


7C



7D

**Figure 7A–D.** *Examnes subvermiculatus* sp. nov., holotype male. 7A, Habitus; 7B, pronotum; 7C, head and pronotum, latero-dorsal view; 7D, pro- and mesosternum.



**Figure 8A–I.** *Examnes subvermiculatus* sp. nov., holotype male. Genital organs. 8A, Median lobe, dorsal view; 8B, ditto, lateral view; 8C, tegmen, dorsal view; 8D, ditto, lateral view; 8E, endophallus, ejaculatory duct complex, dorsal view; 8F, ditto, lateral view; 8G, ditto, ventral view; 8H, 8<sup>th</sup> sternite, ventral view; 8I, ditto, with the 8<sup>th</sup> tergite in the background. Scale bar: 0.5mm for 8E, 8F, 8G; 1mm for the others.

the sub-family Cerambycinae as a whole. Comparison of endophalli of different tribes may facilitate better understanding of their taxonomical interrelationships.

As for female genitalia, remarkable structures of bursa copulatrix, spermatheca and vaginal plates were observed for the female holotype of a *Ceresium emarginatum* sp. nov.

### **On *Ceresium* and *Examnes***

In the description of *Ceresium emarginatum* sp. nov., its short frons is identified. It is an essential characteristic of species belonging to the genus *Examnes*, according to the original definition of the genus (Pascoe, 1869). Further, the new species is rather stout in body structure. In addition, surface and integument of its pronotum is more comparable to that of *Examnes philippensis* Newman, 1842, nominotype of *Examnes*, than to those of other *Ceresium* species. All these features suggest its affiliation with *Examnes*.

On the other hand, the antennal supports of the new species are flattened as in most *Ceresium* species, in contrast to the more prominent ones of *Examnes* species. Although its frons is steeper than those of *Ceresium* species, it is more moderately so than of typical *Examnes* species. These observations are in turn more suggestive of its classification as *Ceresium*.

Thus, the new species embodies morphologically an intermediate form, combining characteristics of two genera *Ceresium* and *Examnes*. Presence of species in such an intermediate position, on the peripheries of these two genera, has been already referred to in a recent publication (Yokoi, 2019). In this connection, it should be noted that genital organs of *Ceresium* and *Examnes* manifest no substantial difference. This observation indicates a rather close mutual affiliation of the both genera. Therefore, their taxonomical positions to each other should be carefully reconsidered. This aspect will be treated separately, as it is beyond the scope of this publication. Again, more taxa must be examined for further consideration.

The new species was temporarily described as a species of *Ceresium* in this publication.

### **ACKNOWLEDGMENTS**

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**Acknowledgments.** Acknowledgments of grants, assistance and other matters can be written in one paragraph.

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For example:

Eaton, J.A., van Balen, B., Brickle, N.W. & Rheindt, F.E. 2016. *Birds of the Indonesian Archipelago: Greater Sundas and Wallacea*. 1st ed. Barcelona: Lynx Edicions.

LaSalle, J. & Schauff, M.E. 1994. Systematics of the tribe Euderomphalini (Hymenoptera: Eulophidae): parasitoids of whiteflies (Homoptera: Aleyrodidae). *Systematic Entomology*, 19: 235–258.

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VOL. 46, DECEMBER 2019

CONTENT

<b>Yaheita Yokoi, Hiroshi Makihara and Woro A. Noerdjito</b> Callidiopini beetles (Coleoptera: Cerambycidae) in the collection of Museum Zoologicum Bogoriense, Indonesia .....	<b>1–20</b>
<b>R.I. Vane-Wright</b> The identity of <i>Euploea tulliolus goodenoughi</i> Carpenter, 1942, a Crow Butterfly (Lepidoptera: Nymphalidae, Danainae) from Papua New Guinea .....	<b>21–34</b>
<b>Raden Pramesa Narakusumo and Michael Balke</b> Four new species of <i>Epholcis</i> Waterhouse (Coleoptera: Scarabaeidae: Melolonthinae: Maechidiini) from the Moluccas, Indonesia .....	<b>35–50</b>
<b>Mediyansyah, Amir Hamidy, Misbahul Munir and Masafumi Matsui</b> A new tree frog of the genus <i>Kurixalus</i> Ye, Fei & Dubois, 1999 (Amphibia: Rhacophoridae) from West Kalimantan, Indonesia .....	<b>51–72</b>
<b>Mulyadi</b> New records and redescription of <i>Labidocera rotunda</i> Mori, 1929 (Copepoda, Calanoida, Pontellidae) from Sebatik Island, North Kalimantan, Indonesia, with notes on its species-group .....	<b>73–84</b>
<b>Djunijanti Peggie</b> Biological aspects of <i>Papilio peranthus</i> (Lepidoptera: Papilionidae) as observed at Butterfly Research Facility - LIPI, Cibinong, Indonesia .....	<b>85–102</b>
<b>Susan M. Tsang and Sigit Wiantoro</b> <b>Review</b> - Indonesian flying foxes: research and conservation status update .....	<b>103–113</b>