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# Four New Species of the Genus *Gauromaia* PASCOE (Coleoptera, Tenebrionidae), with a New Combination

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**Abstract** Four new species of the genus *Gauromaia*, *G. maruyamai* n. sp. (Malay Peninsula), *G. micans* n. sp. (Thailand), *G. mindoroensis* n. sp. (the Philippines), and *G. morimotoi* n. sp. (Borneo), are described. *Gauromaia rufithorax* PIC, 1922 is transferred to the genus *Thesilea* HAAG-RUTENBERG, 1878.

## Introduction

The genus *Gauromaia* PASCOE, 1866 is known from the Oriental Region and comprises 36 species. After the catalogue by GEBIEN (1941), three species were added by ANDO (1989), MASUMOTO (1981) and SCHAWALLER (2006), respectively; two species were transferred to the genus *Phaedis* by ANDO (2019). However, detailed observations of the genus are not enough yet and the systematic arrangement of the included species is not yet clear. In addition, the geographical distribution of the genus is insufficiently known, and further reports are required. In this paper I describe four new species of the genus through the courtesy of sending important material by Dr. Munetoshi MARUYAMA and Dr. Junsuke YAMASAKO, and transfer a species, *Gauromaia rufithorax* PIC, 1922 to the genus *Thesilea* HAAG-RUTENBERG, 1878 by close examination of the type specimen deposited in the Muséum National d'Histoire Naturelle, Paris.

I would like to dedicate this short paper to the memory of the excellent coleopterologist, the late Dr. Katsura MORIMOTO, in recalling a pleasant time spent with him.

# **Material and Methods**

The specimens used in this study belong to the following institutes or private collections:

CKAO — Collection of Kiyoshi ANDO, Osaka, Japan; EUMJ — Ehime University Museum, Matsuyama, Japan; KUMF — Kyushu University Museum, Fukuoka, Japan; MNHN — Muséum National d'Histoire Naturelle, Paris, France.

The specimens were observed with a Leica MZ16 stereomicroscope. Male and female terminalia were dissected from specimens relaxed in hot water for about one hour, then cleared in hot KOH solution, neutralized with weak acetic acid, and rinsed with water. The illustrations of genitalia, ventral parts, and legs were drawn with a Leica drawing tube attached to the microscope. Photographs of specimens were taken with a Canon EOS 7D reflex camera with two macro lenses (Canon macro photo lens MP-E 65 mm and EF 100 mm), and combined using a digital auto-montage software (Helicon Focus, v. 7.5.1 Pro).

Label data of the examined types are quoted verbatim, attached labels are separated by double slash (//), separate lines of the same label are demarcated by a slash (/).

"Body length" refers to the midline length from the apex of labrum to the apices of elytra. Abbreviations of body parts in the descriptions are as follows: EL — length of elytra along midline, from anterior margin of scutellum to elytral apices; EW — maximum width of elytra; IE — distance between eyes; mCG — anterior margin of head between clypeus and genae; PL — length of pronotum along midline; PW — maximum width of pronotum; TD — transverse diameter of an eye in dorsal view.

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## Taxonomy

# Gauromaia morimotoi n. sp.

(Figs. 1-3 & 9)

*Type specimen.* Holotype: ♂, Nr. Keningau, Sabah, N. Borneo, 14.III.1988, M. ITO leg. (KUMF). *Description.* M a l e. Body length: 10.8 mm. Proportions: Male (n = 1): IE/TD 4.17; PW/PL 1.39; EL/EW 1.80.

Elongate, iridescent. Colour dark reddish brown; head violet, greenish on clypeus and labrum, with metallic green tint on vertex; pronotum deep violet; elytra brassy-purple, with a pair of large basal fasciae, the basal fascia reddish purple, margined by brassy and bluish green, in contact with suture and lateral margins, undulate posteriorly, the bluish green border produced along sutural interval and running towards elytral apex, thence turned back to basal fascia running on lateral bead; legs and venter with metallic sheen in part; mouthparts and antennae reddish brown.

Head very transverse, almost flat, finely microsculptured, with mCG weakly notched; clypeus depressed, very slightly emarginate at apex, with punctures fine and sparse, slightly denser laterally; frontoclypeal suture obsolete, evenly arcuate; weakly convex, coarsely and densely punctate; frons unevenly depressed, slightly elevated along eyes, with punctures fine and minute in middle, coarse and dense laterally, of which median ones are smaller than lateral ones; lateral punctures distinctly larger than on clypeus; eyes distinctly convex, not produced. Antennae short, reaching middle of pronotum; distal five antennomeres moderately dilated and forming a weak club; 11th antennomere linguiform. Ultimate maxillary palpomere moderately securiform; ecto-apical corner acute and endo-apical one rectangular. Mentum (Fig. 1) obtrapezoidal, flat, densely microsculptured and coarsely rugose.

Pronotum subquadrate, widest at middle; disc gently convex, steeply descendent laterally, weakly depressed along lateral margins, and not sulcate in front of base, with punctures coarse and dense, larger than on head; anterior margin almost straight, obscurely beaded; lateral margins weakly rounded, slightly narrowed forwards and so backwards from the widest point, narrowly beaded; basal margin arcuate, scarcely bisinuate, thickly beaded; anterior corners obtusely rounded, posterior ones obtusely angulate. Scutellum flat, finely microsculptured and sparsely punctate.

Elytra elongate, subparallel-sided, moderately convex, slightly divergent posteriorly, widest at apical third; striae finely impressed, scarcely so in part; strial punctures coarse and dense, sparse on 3rd to 5th striae, minute on apical declivity; intervals slightly convex, becoming flat on apical declivity, finely and sparsely punctate; humeral calli oval, distinctly humped; epipleura unevenly flat and weakly oblique, finely microsculptured and very sparsely punctate, reaching behind middle of 5th abdominal ventrite.

Prothoracic hypomera weakly depressed, finely microsculptured, with fine and sparse piligerous punctures. Prosternum scarcely beaded at apex; prosternal process (Fig. 2) adunc behind coxae, rounded at apex. Mesoventro-ridge moderately raised. Abdomen densely punctate.

Aedeagus (Fig. 3) short, scarcely incurved; basale subparallel-sided, 1.33 times as long as apicale; apicale weakly convex dorsad, distinctly dilated before base, acutely pointed at apex.

Legs short. Femora without any appendages. Tibiae robust, slightly incurved.

Female. Unknown.

Distribution. Borneo.

*Etymology.* The specific epithet is cordially dedicated to the late Dr. Katsura MORIMOTO, Emeritus Professor of Kyushu University, who was not only an excellent taxonomist, but also always generously guided young researchers.



Figs. 1–3. *Gauromaia morimotoi* n. sp. — 1, Mentum; 2, prosternal process; 3, aedeagus (right: lateral; left: dorsal). Scales: 0.3 mm for 1; 0.5 mm for 2 & 3.

*Diagnosis*. The new species is similar to *Gauromaia bella* PIC, 1925 from "Basilan", but is readily separable from the latter in having the obscure inner ocular sulci, depressed clypeus, elytra without distinct apical fasciae, and with basal fascia in contact with suture and prolonged posteriorly along sutural intervals, with bicolored borders.

## Gauromaia mindoroensis n. sp.

(Figs. 4-8 & 10)

*Type specimens*. Holotype:  $\Diamond$ , Mt. Halcon, Arangin, Naujan, Mindoro Is., Philippines, 25–27. IV.2008, J. YAMASAKO leg. (EUMJ). Paratypes: 1  $\Diamond$ , 1  $\bigcirc$ , same data as for the holotype (CKAO).

*Description.* Body length: 10.9–11.0 mm in male, 12.0 mm in female. Proportions: Male (n = 2): IE/TD 3.81–4.60; PW/PL 1.43–1.59; EL/EW 1.70–1.71; female (n = 1): IE/TD 4.82; PW/PL 1.54; EL/EW 1.70.

Oblong fusiform, weakly convex above, shiny. Colour dark reddish brown; head with frons and vertex reddish purple, greenish brassy behind vertex; pronotum brassy, with purplish ambiguous tinge in middle; elytra brassy, with a pair of greenish brassy basal fasciae, the basal fascia in contact with lateral margin and almost free from suture, undulate and bordered posteriorly by bicolored, metallic blue and violet line; femora and tibiae with metallic green sheen; and antennae dull.

M a l e. Head transversely elliptical, depressed, very finely microsculptured, with piligerous punctures; mCG weakly notched; clypeus entirely flattened, weakly produced forwards, and truncate at apex in median six-eighths, coarsely and densely punctate; frontoclypeal suture fine and tenuous, clearly arcuate; genae slightly convex, coarsely punctate anteriorly and finely so posteriorly, with



Figs. 4–8. Gauromaia mindoroensis n. sp. — 4, Mentum; 5, prosternal process; 6, mesotibia; 7, metatibia; 8, aedeagus (right: lateral; left: dorsal). Scales: 0.3 mm for 4; 0.5 mm for 5–8.

sides subparallel in basal three-sevenths, thence distinctly bent inwards; frons unevenly depressed, coarsely punctate, the punctures sparse and nearly as large as on median portion of clypeus, dense and larger on lateral portions; eyes moderate in size, not transverse in dorsal view; inner ocular sulci shallow and obscure; tempora roundly convex, not produced. Antennae reaching basal third of pronotum; distal five antennomeres distinctly dilated and forming a compact club; 11th antennomere oval. Ultimate maxillary palpomeres right-angled triangular. Mentum (Fig. 4) obtrapezoidal, finely microsculptured, coarsely punctate, irregularly rugulose laterally.

Pronotum subquadrate, widest at middle, finely microsculptured; disc weakly convex, gently sloping laterally, neither sulcate nor depressed along lateral margins, with punctures piligerous, coarse and dense, slightly larger than on lateral portions of frons, and becoming slightly smaller laterad and apicad; anterior margin almost straight, finely beaded in lateral fifth; lateral margins weakly rounded, slightly sinuate before base, finely beaded; basal margin weakly bisinuate, thickly beaded; anterior corners obtusely rounded, posterior ones rectangular, pointed. Scutellum depressed, compactly microsculptured, impunctate.

Elytra elongate, distinctly convex, widest behind middle; striae fine, interrupted in part; strial punctures coarse and dense though irregular in density, constantly becoming minuter apically; intervals weakly convex, flattened on apical declivity, finely and sparsely punctate; humeral calli oblong, moderately humped; epipleura flat and not oblique, finely microsculptured, very sparsely with microscopic punctures.

Prothoracic hypomera slightly depressed, with very sparse piligerous punctures on fine isodiametric microsculpture. Prosternum finely microsculptured and sparsely punctate, narrowly beaded at apex; prosternal process (Fig. 5) curved inwards behind coxae, dilated before apex. Mesoventro-ridge strongly oblique forwards, scarcely raised. Abdomen moderately densely punctate.

Aedeagus (Fig. 8) short, scarcely incurved; basale short and weakly convex dorsad, 1.02 times as long as apicale in holo- and paratypes; apicale dilated basally, steeply convergent apicad from basal



Figs. 9–13. Gauromaia spp. — 9, G. morimotoi n. sp., holotype; 10, G. mindoroensis n. sp., holotype; 11, G. rufithorax Pic, 1922 = Thesilea rufithorax (Pic, 1922), one of the syntypes; 12, G. maruyamai n. sp., holotype; 13, G. micans n. sp., holotype.

third, sparsely punctate.

Legs rather slender. Femora distinctly dilated to apical third. Tibiae slender and weakly incurved; inner margin of mesotibiae (Fig. 6) with an oblong fovea filled with tuft of long hairs at apical third; that of metatibiae (Fig. 7) bearing same fovea and tuft behind middle. Tarsi long.

F e m a l e. Body larger; pronotum widest at base; elytra widest at middle; inner margins of meso- and metatibiae without foveae and tufts of pubescence.

Distribution. The Philippines (Mindoro Island).

*Etymology*. This new species is named after Mindoro Island where the type specimens were collected.

*Diagnosis.* The new species is similar to *Gauromaia morimotoi* n. sp., but is clearly different from the latter in having the basal fasciae on elytra without branch on sutural intervals; distinctly clubbed antennae; horizontal elytral epipleura; right-angled triangular ultimate maxillary palpomeres; mentum coarsely punctate, irregularly rugulose laterally; inner margins of meso- and metatibiae each armed with a tuft of long pubescence in male; and different dorsal colour.

# Gauromaia maruyamai n. sp.

# (Figs. 12 & 14-16)

*Type specimen.* Holotype: ♀, Malaysia: Selangor, Ulu Gombak (Univ. Malaya Field Studies Centre, 250 m), 13–17.XI.2009, M. MARUYAMA leg. (KUMF).

*Description*. F e m a l e. Body length: 12.0 mm. Proportions: Female (n = 1): IE/TD 2.72; PW/ PL 1.44; EL/EW 1.53.

Oblong, weakly convex, finely microsculptured dorsally, shiny. Colour dark reddish brown; head blackish brown, metallic green about in posterior half; pronotum metallic green; elytra dark purple, with metallic green sheen; mouthpart, gula, and coxae reddish brown.

Head rounded, weakly convex, feebly microsculptured; mCG not sinuate; punctures piligerous, fine and dense, those on median portion of frons slightly larger than on clypeus; clypeus weakly convex, strongly produced forwards and deeply notched at apex in V-shape; frontoclypeal suture tenuous, deeply impressed, entirely rounded posteriorly; genae weakly depressed, with outer margins weakly rounded in basal third and steeply so in apical two-thirds; frons weakly and unevenly convex, flattened along eyes; eyes fairly convex, transverse in dorsal view; inner ocular sulci weak and shallow; tempora short, weakly convex, not reaching lateral end of eyes. Antennae robust, reaching behind middle of pronotum; distal five antennomeres distinctly dilated and forming a compact club; 11th circular. Ultimate maxillary palpomere small, weakly dilated securiform; endo-apical angles slightly obtuse than rectangular; ecto-apical angle rectangular. Mentum (Fig. 15) linguiform, broadly elevated and coarsely punctate in middle, deeply excavate at sides, with long setae along anterior margin.

Pronotum transverse, widest behind middle, finely microsculptured; disc weakly convex, gently sloping laterally, not sulcate along lateral margins and in front of basal margin; punctures piligerous, fine and rather dense, finer than on head and slightly obscure by microsculpture; anterior margin truncate, finely beaded laterally; lateral margins steeply narrowed forwards and weakly so backwards from the widest point, not sinuate before base, finely beaded; basal margin weakly bisinuate, thickly beaded; anterior corners obtusely rounded and posterior ones obtusely angulate, not produced. Scutellum small and flat, finely microsculptured and sparsely punctate.

Elytra moderately convex, distinctly divergent posteriorly, widest at apical third, distinctly wider at base than that of pronotum, feebly microsculptured; striae weakly impressed, scarcely so on apical declivity; strial punctures large, dense and coarse, larger than on head and becoming smaller posteriorly; intervals weakly convex, finely and sparsely punctate; humeral calli short, moderately humped;



Figs. 14–16. *Gauromaia maruyamai* n. sp. — 14, Prosternal process; 15, mentum; 16, fifth abdominal ventrite. Scales: 0.3 mm for 15; 0.5 mm for 14; 1.0 mm for 16.

epipleura depressed and oblique, reaching behind middle of fifth abdominal ventrite, with piligerous, sparse and microscopic punctures.

Prothoracic hypomera weakly convex, irregularly rugulose and punctate on fine microsculpture. Prosternum moderately convex, irregularly punctate, distinctly beaded at apex; prosternal process (Fig. 14) steeply curved inwards behind coxae, rounded at apex, with distinct median sulcus. Mesoventro-ridge oblique forwards, weakly raised, without anterior angles. Abdomen finely punctate and longitudinally rugose on basal three ventrites, densely punctate on apical two; fifth ventrite (Fig. 16) with densely piligerous circulate area at middle.

Legs rather short. Femora not ancipital at anterior margins of profemora and at posterior margins of meso- and metafemora. Tibiae weakly incurved; inner margins of meso- and metafibiae densely pubescent in apical half. Tarsi robust, compactly articulate.

Male. Unknown.

Distribution. Malay Peninsula.

*Etymology.* The specific epithet is cordially dedicated to the Dr. Munetoshi MARUYAMA, who collected the holotype of this species.

*Diagnosis*. The new species resembles *Gauromaia viridijanthina* FAIRMAIRE, 1882 from Sumatra, but is different from the latter in having the deeply notched clypeus, wider frons, weak inner ocular sulci, not paler apical part of ultimate antennomeres, and metallic green posterior part of head.

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## Gauromaia micans n. sp.

(Figs. 13 & 17-21)

*Type specimen.* Holotype: ♂, Thai: Petchaburi, Kaeng Krachan N. P., Ban Krang – 17 km Point, 6–11.V.2013, LT, M. MARUYAMA leg., 320–350 m, 12°47'58"N, 99°27'15"E (KUMF).

*Description.* M a l e. Body length: 16.4 mm. Proportions: Male (n = 1): IE/TD 3.77; PW/PL 1.40; EL/EW 1.63.

Oblong-elongate, distinctly convex in posterior body, dull, covered with fine isodiametric microsculpture. Colour black; elytra dark blackish green; mouthparts, gula, and coxae dark reddish brown.

Head hexagonal, unevenly depressed in forehead, densely microsculptured; punctures fine and dense though irregular in density; clypeus flat, distinctly produced forwards, roundly emarginate at apex; frontoclypeal suture fine, rounded at posterior corners; genae subparallel-sided in basal two-thirds; frons broadened, with punctures slightly sparser on middle; tempora distinctly convex, not reaching lateral end of eyes; eyes transverse in dorsal view, rather small, with inner ocular sulci vesti-gial. Antennae slender; distal five antennomeres dilated and loosely articulate, forming a weak club. Ultimate maxillary palpomere moderately securiform. Mentum (Fig. 17) short linguiform, broadly elevated in middle and shallowly excavate along sides, with fine piligerous punctures.

Pronotum obtrapezoidal, widest at apical fourth; disc weakly convex, steeply sloping laterally, finely sulcate along lateral margins and very narrowly so in front of basal bead, with punctures dense and very fine, smaller than on head; anterior margin subtruncate, finely beaded laterally in a short distance; lateral margins tapering basad, weakly sinuate in middle and before base, weakly beaded; anterior corners obtusely rounded and posterior ones rectangular. Scutellum large and flat, with fine microscopic punctures.

Elytra elongate, distinctly convex, moderately divergent posteriorly, widest before apical third; striae very fine, almost vestigial; strial punctures fine, rather dense but irregular in density, gradually becoming smaller on apical declivity; intervals almost flat, finely and sparsely punctate, the punctures obsolete by dense microsculpture; humeral calli elongate, weakly humped; epipleura almost flat, impunctate, reaching middle of 5th abdominal ventrite.

Prothoracic hypomera moderately depressed, finely microsculptured, with very sparse, microscopic piligerous punctures. Prosternum abbreviate before coxae, distinctly beaded at apex; prosternal process (Fig. 18) lanceolate, weakly descendent posteriorly, turned up near acute apex. Mesoventro-ridge distinctly raised, slightly sloping forwards. Abdomen finely and densely punctate.

Aedeagus (Fig. 21) slender, weakly curved ventrad; basale weakly divergent posteriorly, 1.91 times as long as apicale; apicale weakly convex and scarcely curved, roundly convergent to apical tenth, then steeply narrowed to apex.

Legs slender. Profemora curved inwards, meso- and metafemora nearly straight. Protibiae (Fig. 19) very long, incurved in apical half, with inner margin depressed and setiferous in apical third; mesotibiae distinctly incurved, with inner margin densely pubescent in apical half; metatibiae (Fig. 20) nearly straight, inner margin with elongate tuft of short and dense pubescence between apical two-fifths and apical fifth.

Female. Unknown.

Distribution. Thailand.

*Etymology*. This new species is named after the silky body surface owing to the compact microsculpture.

*Diagnosis*. The new species resembles *Gauromaia altaceiceps* PIC, 1923 from "Tonkin", but is different from the latter in having the more produced and more deeply notched clypeus, dark blackish green elytra, more loosely articulate antennal club, and pronotum widest at apical fourth, with lateral margins weakly sinuate in middle and before base.



Figs. 17–21. Gauromaia micans n. sp. — 17, Mentum; 18, prosternal process; 19, protibia; 20, metatibia; 21, aedeagus (right: lateral; left: dorsal). Scales: 0.5 mm for 17; 1.0 mm for 18–21.

## Gauromaia alternata FAIRMAIRE, 1882

Gauromaia alternata FAIRMAIRE, 1882: 241. Type locality. "Atjeh" in Sumatra.

## Type specimen. Not examined.

*Notes.* In the original description of this species, FAIRMAIRE (1882) described "femoribus anticis dente acuto subtus armatis" and also mentioned in the diagnosis as "La suture clypéale, effaée au milieu, la dent des femurs antérieurs et la coloration font reconnaitre facilement cette espèce, que je ne crois pas devoir éloigner des *Gauromaia* malgré l'épine des femurs antérieurs, caractère qui rapprocherait cet insect des *Pseudeumolpus* de Mr. KRAATZ".

Recently, ANDO (2016, 2017, 2019) dealt with some species as the *mantillerii* species group in the genus *Phaedis* after close examination of their types. This species group has characteristics in common with the species of the genus *Gauromaia* PASCOE except the presence of femoral teeth. The taxonomic importance of the femoral teeth and relation between the both genera were already discussed by ANDO (2008). Therefore, this species probably should be transferred to the *mantillerii* species group of the genus *Phaedis* by the presence of distinct profemoral teeth mentioned in FAIRMAIRE (1882).

I refrain to establish the position of this species since I have not examined the type specimens which were not found in Rijksmuseum van Natuurlijke Historie, Leiden and Muséum National d'Histoire Naturelle, Paris.

# Thesilea rufithorax (PIC, 1922), comb. nov.

(Fig. 11)

Gauromaia rufithorax PIC, 1922: 209. Type locality. Tonkin: Hoa Binh.

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*Type specimen examined.* 1 ex., Hoo-Binh / Tonkin // *Gauromaia* / *rufithorax* / n sp // TYPE // Muséum Paris / Coll. M. Pic (MNHN).

*Notes.* After close examination of type specimen, I recognised that this species should be assigned to the genus *Thesilea* HAAG-RUTENBERG by the scarcely dilated head, especially in clypeus, not broadened frons and subcylindrical pronotum.

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# 要 約

安藤清志: Gauromaia 属 (鞘翅目ゴミムシダマシ科)の4新種と1既知種の所属変更. — 東南アジ アに広く分布する Gauromaia 属4新種をそれぞれG. morimotoi n. sp. (ボルネオ),G. mindoroensis n. sp. (フィ リピン・ミンドロ島),G. maruyamai n. sp. (マレー半島),G. micans n. sp. (タイ)と命名し記載した.また, ベトナムで記載された Gauromaia rufithorax Pic, 1922のタイプを検討し,その外部形態の特徴から Thesilea 属 に移すこととした.スマトラで記録された Gauromaia alternata FAIRMAIRE, 1882 については,原記載に記述さ れた内容から Phaedis 属に移行すべき種であると類推したが,本種の模式標本の所在が不明であり確認がで きないことから,知見として報告するにとどめた.

なお、この小文を故森本 桂博士に献じ、謹んでご冥福をお祈りする次第である.

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