

## Notes on the Coprophagous Scarab-beetles (Coleoptera, Scarabaeidae) from Southeast Asia

(XXVII) Three New Species of the Genus *Parascatonomus*

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**Abstract** Three new species of the genus *Parascatonomus* are described from Southeast Asia: *P. paramairuu* sp. nov. from Laos, *P. semintasensis* sp. nov. from Sumatra, *P. balikpapanensis* sp. nov. from Borneo.

The genus *Parascatonomus* was erected by PAULIAN (1932), and afterward downgraded to a sub-genus of the genus *Onthophagus* by PAULIAN (1945). Many subsequent authors have followed PAULIAN'S (1945) treatment (BALTHASAR, 1963; OCHI *et al.*, 2008; KRIKKEN & HUIJBREGTS, 2008, 2009, etc.). On the other hand, KABAKOV (2006) regarded *Parascatonomus* as an independent genus of the tribe Onthophagini, again, and some authors such as OCHI *et al.* (2012) have followed this treatment. In the present paper, we also regard *Parascatonomus* as an independent genus. Up to the present, more than 80 species of this genus have been known from Southeast Asia (MASUMOTO & OCHI, 2014). In the present paper, additionally, we describe three new species of this genus from Laos, Sumatra and Borneo, respectively.

Concerning the terminology of metaventricle and male genitalia, we followed OCHI *et al.*, (2008), and we also herein define some of terminologies used in the descriptions of *Parascatonomus* species as follows: 1) forceps-like projections: a pair of small sharp projections which are a little similar to apices of forceps and join together two large arms at the base in a copulatory lamella of internal sac; 2) left-copulatory arm: an arm which is arising from the base of forceps-like projections and prolonged toward left direction; 3) right-copulatory arm: an arm which is arising from the base of forceps-like projections and prolonged toward right direction.

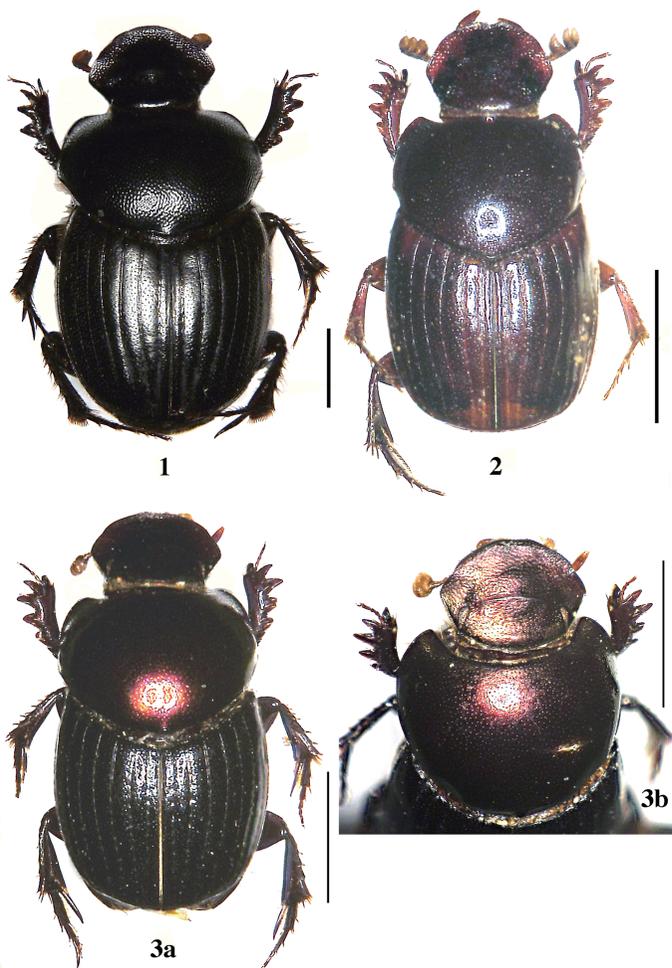
### *Parascatonomus paramairuu* sp. nov.

(Figs. 1,4–5, 10)

*Description of holotype.* Male. Length: 10.8 mm; width: 4.3 mm.

Body relatively large-sized, oblong oval, strongly convex dorsally, and distinctly constricted between pronotum and elytra; dorsal side rather shining, glabrous on head and pronotum, opaque and sparsely clothed with short sub-recumbent yellowish hairs on elytra, the hairs well noticeable under high magnification ( $\times 20$ ); ventral side opaque, clothed with long, partly short, hairs. Color uniformly black; mouth parts, palpi, antennae and legs more or reddish to brownish; club segments of antenna yellowish brown.

Head transversely pentagonal in outline; clypeus moderately produced forward, with clypeal margin broadly parabolic, weakly upturned and bordered; frontoclypeal suture finely and somewhat



Figs. 1–3. Habitus of *Parascatonomus* spp., scale 2 mm. — 1, *P. paramairuu* sp. nov., male (holotype); 2, *P. seminiasensis* sp. nov., male (holotype); 3a, *P. balikpapanensis* sp. nov., male (holotype); 3b, ditto, head and prothorax, dorsal view.

vaguely carinate, slightly pro-curved, and conjointed with genal sutures which are not carinate; genae strongly produced laterad, with genal margin obtusely angled at the middle; posterior-most portion of head forming posterior margin, with a weakly post-curved carina in the middle, which is not so raised and weakly bi-cuspid, and occupying half length of the posterior margin; surface weakly transversely wrinkled, and punctate on clypeus, the wrinkles becoming weaker and the punctures becoming slightly coarser and shallower toward genae and vertex.

Pronotum simply formed, fairly convex above, about 1.5 times as wide as long (PW : PL = 5.2 : 3.5), with a slight median longitudinal groove in basal two-thirds; anterior margin bisinuate, finely bordered though median marginal border not well visible in dorsal view; lateral margins gently rounded in front and strongly sinuate behind, finely bordered; anterior angles sub-quadrangle, rounded at the tip; posterior angles obtuse; base slightly produced backward and obtusely angled at the middle, finely

and shallowly grooved along margin though marginal border indistinct or un-bordered; surface covered with aggregated oval, partly circular, granules which become sharply defined toward anterior and lateral portions and somewhat vaguely so toward median and basal portions, and with a narrow un-granulate smooth area on either side of base along posterior margin.

Elytra about 1.3 times as wide as long (EW : EL = 5.4 : 4.3); striae broadly and rather shallowly grooved and finely ridged throughout on either side; 7th stria obviously curved and approaching 6th stria near base; stria punctures weak, partly indefinite and scarcely invading either margin of intervals; intervals weakly convex, very finely micro-granulose, sparsely covered with fine asperate punctures which become distinctly larger toward outer intervals.

Pygidium transverse, evenly convex, carinate at base, weakly wrinkled and somewhat densely covered with rather coarse transverse ocellate punctures, interspaces among punctures somewhat micro-granulose. Prothorax with anterior angles somewhat hollowed on the ventral side. Metaventricle more or less convex, weakly grooved in basal 2/3, sparsely and evenly covered with small punctures, the punctures changing into dense granules on either anterior declivous area; MT-elevation strong, with the distal end distinctly but obtusely produced forward. Abdomen with 4–6 ventrite fairly densely and coarsely punctate. Protibiae weakly incurved, with apical inner end slightly produced as a short and sharp spine; external four teeth strong, the 4th tooth short and somewhat broad; terminal spur strong, sharp and de-curved.

Aedeagus relatively small-sized than in *P. mairuu*. Phallobase moderately elongate, about 1.6 mm in length in dorsal view, about 0.6 mm in apical width. Parameres distinctly large, widely sub-pentagonal in outline in dorsal view, about 0.8 mm in length in lateral view; in lateral view, baso-lateral elevation short and broad, medio-lateral notch very narrow though well visible, apico-lateral tooth obtusely angled, apical tooth well produced, distinct and not so sharp; medio lateral notch also slightly visible in dorsal view. Internal sac with a copulatory lamella: forceps-like projections small and not so developed; left-copulatory arm slightly smaller than the right-copulatory arm and roundly lobed apicad; right-copulatory arm broadly, circularly and internally incised near apex.

*Variation.* Length: 10.0–10.8 mm; width 5.3–5.4 mm.

*Female.* Head only slightly produced forward than in male; clypeus more strongly wrinkled and partly changed into distinct transverse granules on whole surface; frontoclypeal suture briefly, vaguely and only slightly carinate at the middle; posterior carina a little longer, weakly bent backward in the middle. Protibiae broader, with four external teeth stronger, with terminal spur slightly longer; inner distal end simply formed.

*Type series.* Holotype: ♂, Mt. PhuPanne, Hua Panne p., Laos, IV. 1990. Paratypes: 2 ♀♀, the same data as the holotype.

*Type depository.* The holotype will be deposited in the collection of the National Museum of Nature and Science, Tsukuba.

*Etymology.* The specific name means that this species is somewhat similar to *P. mairuu* (MASUMOTO) from Thailand.

*Notes.* This species is closely related to *P. mairuu* (MASUMOTO, 1989) from Thailand, but can be distinguished from the latter by the smaller body, the shorter and distinctly weaker posterior carina on head in both sexes, the vague and weakly carinate frontoclypeal suture, and the smaller and obviously differently shaped male genitalia.

*Parascatonomus seminiensis* sp. nov.

(Figs. 2, 6–7, 11)

*Description of holotype.* Male. Length: 5.4 mm; width: 2.7 mm

Body small-sized, oblong oval, strongly convex dorsally, and somewhat strongly constricted between pronotum and elytra; dorsal side strongly shining and glabrous; ventral side also shining, partly clothed with yellowish hairs. Color uniformly reddish brown; mouth parts, palpi, antennae and legs slightly paler; club segments of antenna each dark brown basally and yellowish brown apically.

Head a little polygonal in outline; clypeus rather strongly produced forward, with clypeal margin distinctly incised at the middle and weakly upturned, the remaining margin weakly rounded and bordered; frontoclypeal suture finely and obviously carinate indicating as a smooth low line, only slightly pro-curved and conjointed with genal sutures which are not carinate; genae moderately produced laterad, with genal margin obtusely angled at the middle; posterior-most portion of head forming distinct posterior margin; posterior portion with a straight smooth carina which is located at the level of eye posterior margins and slightly shorter than the frontoclypeal one; surface transversely wrinkled on clypeus, the wrinkles shortened and changed into transverse granules on anterior portion of clypeus and genae, somewhat densely covered with small punctures on either side of frons, which become finer toward postero-median portion. Eyes relatively large, the interspace between eyes about 3.9 times as wide as one eye width.

Pronotum simply formed, moderately convex dorsally, about 1.4 times as wide as long (EW : EL = 2.5 : 1.8), with a vague median longitudinal groove in basal third; anterior margin emarginate, finely bordered though marginal line not visible in the middle from dorsal view; lateral margins evenly rounded in front, strongly sinuate behind, the sinus very distinct in dorsal view, with marginal border thin in front and rather thick behind; anterior angles sub-quadrate, rounded at the tip; posterior angles very obtuse; base slightly produced backward and obtusely angled at the middle, almost unbordered; surface rather sparsely and evenly covered with small punctures, which become denser and coarser toward sides, the interspaces among punctures punctulate.

Elytra about 1.2 times as wide as long (EW : EL = 2.7 : 2.2); striae rather broadly and strongly grooved, finely ridged throughout on either side; 7th stria distinctly curved and approaching 6th stria near base; stria punctures sparse, weak and scarcely invading either margin of intervals; intervals slightly convex, partly and very weakly wrinkled, irregularly scattered with rather fine, a little uneven, and simple punctures.

Pygidium transverse, strongly convex, carinate at base, shining, rather densely covered with strong punctures. Prothorax with anterior angles somewhat hollowed on the ventral side. Metaventrite gently and rather evenly convex, with a weak median longitudinal groove in basal 4/5; surface sparsely and finely punctate, the punctures becoming denser, fairly larger and ocellate toward anterior declivous area and also becoming sparser and larger on either lateral portions; MT-elevation obtusely and somewhat vaguely defined, with the distal end slightly produced. Abdomen with 6th ventrite transversely arranged with a single longitudinal row of coarse punctures along base throughout. Pro-tibiae broad, strongly incurved, with apical inner end slightly produced as a short, sharp, and vertical spine; external four teeth strong, the 4th tooth short though broad; terminal spur very strong, bold, and de-curved, with apex pointed.

Aedeagus robust. Phallobase rather stout, about 0.9 mm in length, about 0.4 mm in apical width. Parameres large and short, sub-rhombic in outline in dorsal view, about 0.4 mm in length; baso-lateral elevation short and small, medio-lateral notch and apico-lateral tooth not developed and indistinct,

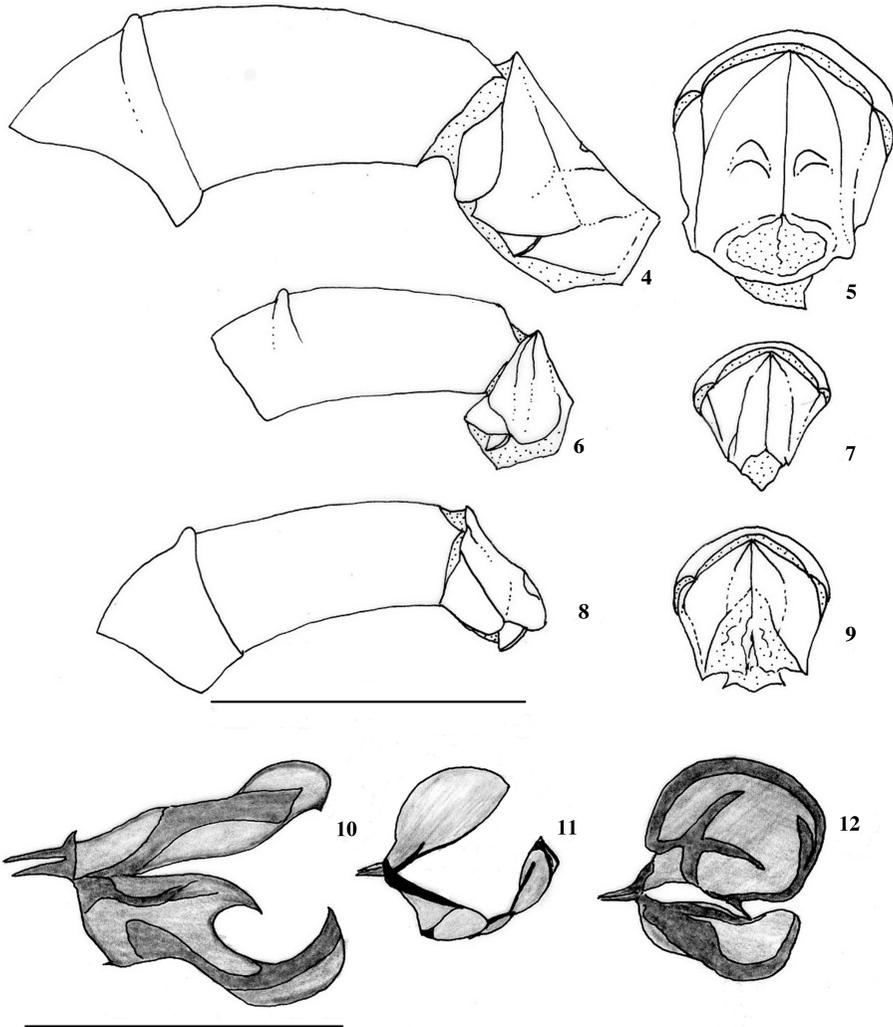


Fig. 4–12. Male genitalia of *Parascatonomus* spp., scale 1 mm for 4–9, scale 0.5 mm for 10–12. — 4, 6, 8, Phallobase and parameres, lateral view; 5, 7, 9, parameres, dorsal view; 10–12, copulatory lamella of internal sac, view from one side. — 4–5, 10, *P. paramairuu* sp. nov.; 6–7, 11, *P. seminiasensis* sp. nov.; 8–9, 12, *P. balikpapanensis* sp. nov.

apical tooth well visible in lateral view. Internal sac with copulatory lamella rather complicatedly shaped: forceps-like projections small, left-copulatory arm larger and simply formed, right-copulatory arm rather elongate, complicatedly shaped and seemingly composed of three chained lobes.

*Type series.* Holotype: ♂, Daulu, Tanah-Karo, Sumatra Utara, Indonesia, 16.VIII.1976, K. OHKUBO leg.

*Type depository.* The holotype will be deposited in the collection of Zoological Museum, Bogor, Indonesia.

*Etymology.* The specific name means that this species is a little similar to *P. niasensis* (BOUCOMONT) from Nias Is., Indonesia.

*Notes.* The present new species is closely related to *P. niasensis* (BOUCOMONT, 1914) from Nias Island, Indonesia, but can be distinguished from the latter by the noticeably large eyes, the clypeal margin distinctly incised at apex, the rather finely punctate elytral intervals and the male genitalia distinctly larger and differently shaped.

*Parascatonomus balikpapanensis* sp. nov.

(Figs. 3a, 3b, 8–9, 12)

*Description of holotype.* Male. Length: 6.3 mm; width: 3.1 mm.

Body small-sized, oblong oval, strongly convex above, and strongly constricted between pronotum and elytra; dorsal side shining and glabrous; ventral side also shining, partly clothed with yellowish hairs. Color black, tinged with strong cupreous, partly golden, luster on head and pronotum; mouth parts, palpi, antennae and legs slightly reddish brown; club segments of antenna yellowish brown.

Head somewhat polygonal in outline and similar to that of *P. poringensis*; clypeus strongly produced forward, with anterior margin slightly reflexed and finely bordered throughout, weakly and shallowly emarginate at the middle; frontoclypeal suture finely carinate and feebly pro-curved, conjoined with not carinate genal sutures; genae moderately produced laterad, with genal corner obtusely and roundly angled a little before the middle; posterior-most portion of head forming distinct posterior margin; posterior portion with a straight, long, and somewhat vague carina a little before posterior margin; surface sparsely and finely punctate, and weakly and transversely wrinkled, the wrinkles reduced toward posterior-most portion.

Pronotum simply formed, moderately convex above, about 1.3 times as wide as long (EW : EL = 3.1 : 2.3), with a vague median longitudinal groove in basal fourth; anterior margin emarginate, finely bordered though marginal line invisible in the middle from dorsal view; lateral margins evenly rounded in front, distinctly sinuate behind, finely bordered; anterior angles sub-quadrangle, rounded at the tip; posterior angles obtuse; base slightly produced backward, obtusely angled and slightly raised at the middle, almost unbordered; surface sparsely and evenly covered with fine punctures in the middle, which become denser and distinctly coarser toward anterior margin, especially so on anterior angle, and also become sparser and extremely finer toward basal margin.

Elytra about 1.3 times as wide as long (EW : EL = 3.3 : 2.5); striae broadly and a little shallowly grooved, finely ridged throughout on either side; 7th stria slightly curved and subparallel to 6th stria near base; stria punctures sparse, weakly invading either margin of intervals in inner intervals and becoming stronger and distinctly so in outer ones; intervals almost flat or only slightly convex, very lightly wrinkled, sparsely and finely punctate, the punctures slightly uneven in size.

Pygidium strongly and evenly convex, shining, irregularly sparsely covered with small round ocellate punctures, with all margins carinate including basal one, apical one noticeably thickly carinate at the middle. Prothorax with anterior angles broadly and somewhat shallowly hollowed on the ventral side. Metaventrete slightly convex, with a weak round depression in basal third, median longitudinal groove indistinct; surface sparsely and rather finely punctate, the punctures becoming denser, larger and transversely ocellate toward anterior declivous area and also either lateral portions; MT-elevation obtuse, with the distal end slightly produced. Protibiae short and broad, with inner distal end slightly produced as a fairly short and slightly de-curved spine; four external teeth strong; terminal spur short and fairly stout, diagonally truncate at apex whose inner distal end is pointed.

Aedeagus elongate. Phallobase slender, about 1.2 mm in length, about 0.5 mm in apical width.

Parameres noticeably small and short, widely sub-pentagonal in outline in dorsal view, about 0.5 mm in length; in lateral view, baso-lateral elevation broad, medio-lateral notch and apico-lateral tooth indistinct, apical tooth obviously produced ventrally and well visible. Intertanal sac with copulatory lamella large and well developed; forceps-like projections relatively very small, left-copulatory arm much widened as a large circular lobe, right-copulatory arm widened as a semicircular lobe and a little smaller than the left one.

*Variation.* Length: 5.8–6.3 mm; width 3.0–3.1 mm.

*Female.* Unknown.

*Type series.* Holotype: ♂, Balikpapan, Kalimantan, Indonesia, I.1991, native collector. Paratype: 1 ♂, same data as the holotype.

*Type depositary.* The holotype will be deposited in the collection of Zoological Museum, Bogor, Indonesia.

*Etymology.* The species is named after the type locality of this species, Balikpapan, Kalimantan, Indonesia.

*Notes.* The present new species is closely related to *P. poringensis* (OCHI et KON, 2005), from Borneo, but can be distinguished from the latter by the head weakly and indistinctly wrinkled on clypeus, the clypeal margin more distinctly emarginate at apex, the pronotum sparsely and finely punctate in the middle, the elytra entirely shining and almost black, the paramere of male genitalia with baso-lateral elevation obviously shorter, medio-lateral notch indistinct.

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### 要 約

越智輝雄・近 雅博：東南アジア(タイ、インドネシア)の *Parascatonomus* 属 3 新種の記載(鞘翅目コガネムシ科ダイコクコガネ亜科)。——— *Parascatonomus* 属は、多くの種が東南アジアに広く分布する腐肉食性のエンマコガネ類である。本論文では、3新種はそれぞれ、ラオスから *P. paramairuu* sp. nov., インドネシア、スマトラ島から *P. seminiensis* sp. nov., インドネシア、ボルネオ島から *P. Balikpapanensis* sp. nov. と命名し、記載した。近年、ダイコクコガネ亜科の形態分類で重要視されるようになった♂交尾器内袋の骨片を解剖し、*Parascatonomus* 属に特有の形態をした♂交尾器内袋の骨片を形成する3個の部分について専門用語を定義し、記載文に反映させた。

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