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A Review of the Subgenus *Parascatonomus* of the Genus *Onthophagus* (Coleoptera: Scarabaeidae) of Borneo

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Abstract The Bornean species of the subgenus *Onthophagus* (*Parascatonomus*) are reviewed. Four new species, *O.* (*P.*) *taichii* sp. nov., *O.* (*P.*) *bundutuhanensis* sp. nov., *O.* (*P.*) *brendelli* sp. nov. and *O.* (*P.*) *serapiensis* sp. nov. are described. The subspecies, *O.* (*P.*) *katoi poringensis* OCHI et KON, 2005 is upgraded to an independent species. The male of *O.* (*P.*) *tamijii* KON *et al.* is described for the first time. A lectotype is designated for *Onthophagus sarawacus* HAROLD. A key to the Bornean species of *Onthophagus* (*Parascatonomus*) is provided.

The subgenus *Parascatonomus* PAULIAN, 1932 was first erected as an independent genus of Scarabaeidae (Coleoptera), and later downgraded to a subgenus of the genus *Onthophagus* LATREILLE by PAULIAN (1945) himself. KON *et al.* (2000) recorded 12 species for the Bornean fauna of this subgenus, and provided a key. Later, OCHI and KON (2005) added six new species and a new subspecies. Consequently, a total of 18 species of *Onthophagus* (*Parascatonomus*) have been recorded from Borneo.

Recently, we had an opportunity to examine Bornean material of this subgenus preserved in the collection of the Natural History Museum, London, together with some specimens provided by our collaborators. Following this opportunity, we would like to review the fauna of Bornean *Onthophagus* (*Parascatonomus*) with the description of four new species, and redescription of some species including the previously unknown male of *O.*

(*P.*) *tamijii* KON *et al.* In addition, we upgrade *O.* (*P.*) *katoi poringensis* OCHI et KON to species rank, and also designate a lectotype for *O.* (*P.*) *sarawacus* HAROLD based on a series of syntypes in the collection of the Museo Civico di Storia Naturale, Genova. Furthermore, a key to the Bornean species of this subgenus is also provided.

All the holotypes designated herein are deposited in the collection of the Natural History Museum, London. The abbreviations for the museums and institutions are as follows: BMNH – the Natural History Museum, London; MNHN – Museum national d'Histoire naturelle, Paris; MNSG – Museo Civico di Storia Naturale, Genova; RMNHL – Rijksmuseum van Natuurlijke Histoire, Leiden; NSMT – National Museum of Nature and Science, Tokyo; OMNH – Osaka Museum of Natural History; UMS – the Institute for Tropical Biology and Conservation, University of Malaysia Sabah; FDSS – the Forest Department, Sarawak State, Malaysia.

We would like to dedicate this paper to the memory of the late Mr. Taichi SHIBATA who contributed greatly to development of the Japanese Coleopterological Society, Osaka, and encouraged many successors.

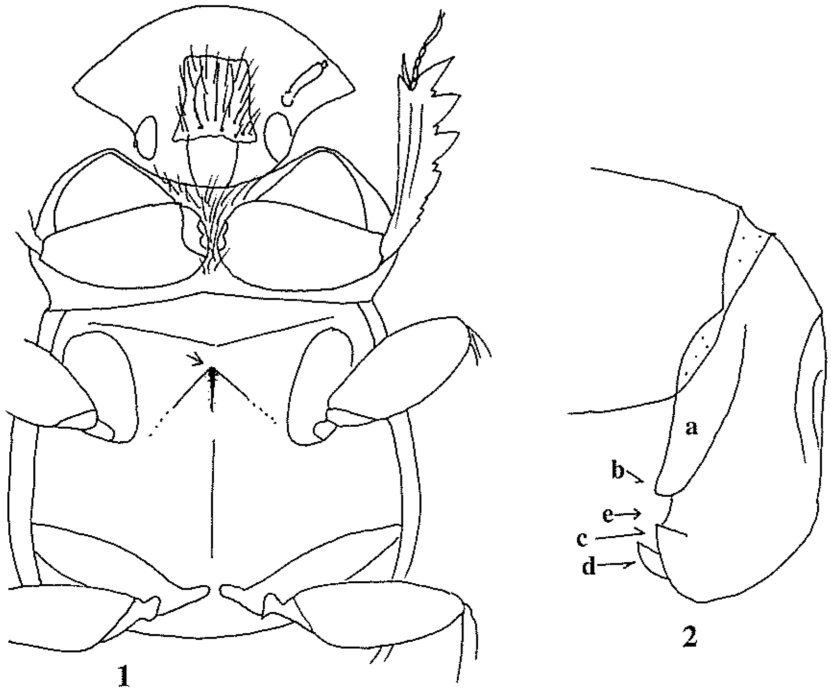
We wish to express our cordial thanks to Dr. Roberto POGGI, Museo Civico di Storia Naturale, and Dr. Yves CAMBEFORT, Museum d'Histoire Naturelle, Paris for examining type specimens and Messrs. A. AZUMA, M. KAWAHARA, T. KIKUTA and M. FUJIOKA for their kind offer of invaluable specimens. This study was supported in part by a Grant-in-Aid from the Japanese Society for the Promotion of Science (No. 17405011) and by a Natural History Museum 'Special Funds' grant awarded to Howard MENDEL. Lastly, we wish to express our hearty thanks to Dr. Kiyoshi ANDO for reading our manuscripts.

We herein define some of the terminologies used in the classification of *Parascatonomus* species as follows: 1) MT-elevation: triangular elevation in the anterior portion of metasternum with the distal end usually bluntly to sharply produced, and the antero-lateral portions before the elevation declivous (Fig. 1); 2) baso-lateral elevation: a longitudinal elevation located at the baso-lateral portion of each paramere of aedeagus (Fig. 2a), sometimes with small tooth (Fig. 2b); 3) apico-lateral tooth: a well developed tooth located on the lateral portion of each paramere of aedeagus, the tooth also clearly visible in lateral view (Fig. 2c); 4) apical tooth: another tooth located anteriorly and often interiorly to the apico-lateral tooth of paramere (Fig. 2d); 5) medio-lateral notch: a slight notch located between the baso-lateral elevation and apico-lateral tooth of each paramere of aedeagus (Fig. 2e).

Genus ***Onthophagus***
Subgenus ***Parascatonomus*** PAULIAN

Parascatonomus PAULIAN, 1932b: 212; KABAKOV, 1992: 196. Type species: *Parascatonomus politus*, 1932 (Preoccupied name by *Copris politus* FABRICIUS, 1798) = *Onthophagus renaudpauliani* OCHI et ARAYA, 1996 (Replacement name).

Onthophagus (*Parascatonomus*): PAULIAN, 1945: 101; BALTHASAR, 1963: 164; NOMURA, 1973: 41;



Figs. 1–2. *Onthophagus* (*Parascatonomus*) species —— 1, Ventral side, an arrow indicating MT-elevation; 2, parameres, lateral view: a, baso-lateral elevation; b, small tooth; c, apico-lateral tooth; d, apical tooth; e, medio-lateral notch.

NOMURA, 1976: 25; MASUMOTO, 1976: 6; PALESTRINI, 1982: 97-102; OCHI & ARAYA, 1992: 79-108; OCHI & ARAYA, 1996: 6; KRAJCIK, 2005: 86.

Coomanius PAULIAN, 1932 a: 205 (Preoccupied). Type species: *Coomanius politus* PAULIAN, 1932.

Pseudonthophagus BALTHASAR, 1959: 466; PALESTRINI, 1982: 97. Type species: *Onthophagus pencillatus* HAROLD, 1879.

Body usually strongly convex, broadly oval to oblong-oval; dorsal side often glabrous, rarely hairy. Head more or less transverse; clypeus usually rounded at apex, frequently notched or emarginate at the middle; genae well produced laterad, mostly each genal corner distinct; frontoclypeal suture often not carinate and mostly completely effaced, occasionally carinate; genal sutures usually not carinate, or rarely scarcely carinate; vertex mostly simply formed, occasionally armed with a laminal horn or transverse carina or tubercle; posterior portion of head mostly carinate and forming a posterior margin. Antennae short and compact; scape short, usually invisible from above, with the anterior face smooth; 3rd to 6th segments of similar length; 3-segmented club compact and decreasing its width apically, of which the 1st segment, crescent-shaped in dorsal view, and the 3rd

small, more or less reflexed, rarely of complicated shape (in a few species). Mentum usually longer than wide or nearly as long as wide; labial palpi relatively small, with basal segment normal, not triangularly dilated in the middle. Pronotum moderately to strongly convex; anterior angles usually rounded, frequently obtusely angled in a few species; posterior angles obtuse or rounded; base usually angulate in the middle, with the tip often slightly raised; surface simply punctate or asperately punctate or often granulate. Elytra markedly convex above, provided with 8 striae, of which one is situated along epipleural margin. Pygidium usually carinate at base. Prothorax with anterior angles more or less, or often, deeply, excavate at the middle of the ventral side, but the excavation not evenly deepened; external edge of the excavation sometimes more or less carinate, the carina arcuately reaching tip of anterior angle. Metasternum usually provided with metasternal triangular elevation which is developed in front, and the distal end usually bluntly to sharply produced, then declivous antero-laterally, but this characteristic not distinctly developed in *O. riekoae* exceptionally. Protibiae always provided with four external teeth; the interspaces between the four teeth mostly with small denticles except for the *O. discedens* group and *O. riekoae* where the denticles are almost or entirely absent. Aedeagus with phallobase usually more or less elongate, rarely short; parameres usually broad, quadrate or hexagonal in outline in dorsal view; mostly provided with baso-lateral elevation, baso-lateral tooth, apico-lateral tooth, apical tooth, and often with distinct medio-lateral notch.

Biology. As already stated by NOMURA (1976), this subgenus is necrophagous. According to our observations in East Asia (Thailand, Malaysia, Philippines, Taiwan and Japan), all the species of *Parascatonomus* are usually found in dead and rotting carrion of mammals, birds, reptiles, fishes, shrimps, insects, millipedes and so on. In our experience, they are not usually collected from dung. Dung baited traps collect a few examples, but generally very much fewer than flight interception or fish baited traps run in the same localities. Possibly, even those captured in dung baited pitfall traps may have been primarily attracted by the dead beetles and other animals already caught, rather than the dung. It is therefore interesting that *Parascatonomus* species have often been collected from animal dung in high altitudinal mountainous regions in Borneo (KIKUTA, KON & OCHI, 1997). This ecological conversion may be linked to a shortage of suitable carrion in these habitats, possibly combined with competition by other necrophagous animals, such as the burying beetle, with large necrophagous beetle, *Nicrophorus podagricus* PORTEVIN (Silphidae).

Distribution. Tropical Asia including Borneo, East Asia (Japan, Korea and China).

Onthophagus (*Parascatonomus*) *egregius* ARROW

(Figs. 11, 40)

Onthophagus egregius ARROW, 1907: 438 (Type locality: Pontianak, West Kalimantan, Borneo; type depository: BMNH); BOUCOMONT, 1914: 269; KRAJCIK, 2005: 102.

Onthophagus (*Parascatonomus*) *egregius*: BALTHASAR, 1963: 340; OCHI & KON, 1996: 28; KON,

SAKAI & OCHI, 2000: 369.

Length: 10.0–13.8 mm; width: 6.1–7.0 mm (n = 12).

Body large-sized, oblong-oval, moderately convex dorsally. Dorsal side opaque to weakly shining, densely clothed with clearly visible, long yellowish recumbent hairs, becoming conspicuously longer and reflexed on each side near posterior angle of pronotum; ventral side weakly shining, partly clothed with yellowish hairs. Color black, with head, pronotum and legs tinged with distinct dark greenish or dark cupreous luster; mouth parts, palpi and legs dark reddish brown; antennae reddish brown; in Sumatran individuals, elytron rarely with three or four small yellowish spots in the middle.

Male. Head octagonal; clypeus strongly and roundly excavate in the middle of anterior portion; clypeal margin deeply and widely incised in the middle, with a strongly produced and upturned horn in the middle of the incision, the horn strongly bifurcate near the middle; either side of clypeal margin strongly reflexed and forming a broad lobe; genae strongly produced laterad, with genal margin distinctly angulate at the middle, and sinuate in front and behind; frontoclypeal suture completely effaced; genal sutures clearly defined, sometimes finely carinate; frons with a small pointed tubercle in the middle and with a median longitudinal carina posteriorly; posterior margin produced backward as a slight and transverse prominence in the middle; surface densely covered with small round granules except for the smooth anterior excavation. Antennae with club segments conspicuously and intricately shaped; 1st segment of the club cup-like in ventral view, for receiving the remaining two segments; the last segment diverging into three lobes.

Pronotum moderately convex, about 1.5–1.7 times as wide as long (n = 3), with a weak longitudinal median groove in basal third; anterior margin emarginate, thickly bordered in the middle, thinly bordered laterally; lateral margins almost straight in front, rounded in the middle and distinctly sinuate posteriorly, finely bordered; anterior and posterior angles rounded; basal margin obtusely angulate in the middle, only slightly raised at the tip, with marginal line bordered in the middle and not distinctly so at sides; disc with a longitudinal carina along midline, the carina arising from behind anterior margin and extended to behind the middle, and strongly raised in front; surface wholly covered with small round granules which are almost the same size as those of the head.

Elytra about 1.4–1.5 times as wide as long (n = 3); striae distinctly and somewhat finely grooved, and ridged throughout on both sides, 8th stria situated along epipleural margin; strial punctures sparse, weak and slightly notching either margin of intervals; intervals almost flat, strongly microgranulose, densely covered with rather fine asperate punctures.

Pygidium evenly convex, carinate at base, weakly wrinkled, and closely covered with strong punctures. Prothorax with anterior angles deeply excavate at the middle of the ventral side. Metasternum often longitudinally raised along midline, wholly and strongly punctate in the middle, each puncture with a fairly long hair; MT-elevation strongly produced forward, with the distal end well produced and sharply defined. Protibiae rather broad and strongly incurved, four external teeth strong; the internal margin of protibia weakly expand-

ed in the middle and roughly serrate, with four to six small denticles; terminal spur simple, sharp and slightly decurved.

Aedeagus rather elongate. Phallobase about 2.2 mm in length (n = 1), about 1.1 mm in apical width. Parameres relatively large, about 1.4 mm in length (n = 1), simply formed in dorsal and lateral views; each with weak baso-lateral elevation and weak apical tooth, but lacks baso-lateral tooth, medio-lateral notch and apico-lateral tooth.

Minor males. Head with clypeal horn reduced to a short broad prominence, the apex of which is weakly emarginate; sides of clypeal margin less reflexed; tubercle on frons becoming shorter.

Female. Head with clypeal horn longer and more slender than in male. Protibiae with four external teeth stronger, and terminal spur slightly longer than those in male.

Type specimen examined. 1♂, labeled as "Borneo, Pontianak, 1893", (lectotype, BMNH).

Specimens examined. 1♂, Mt. Bawang, West Kalimantan, Indonesia, IX–X. 1990.

Further specimens examined. 6♂♂, 5♀♀, Bandar-Bar, Sibolangit, North Sumatra, Indonesia, 16. V. 2005; 2♀♀, Kuala Lumpur, Malaysia, 19. VII. 1976, P. KUIJTEN coll.

Distribution. Borneo, Sumatra and Malay Peninsula.

Notes. This species is fairly rare in Borneo, compared to Sumatra. We have only examined a few specimens from the former island. Two female specimens of this species were collected from dead fish in Kuala Lumpur, Malay peninsula.

Onthophagus (*Parascatonomus*) *dux* SHARP

(Figs. 3, 5, 12, 41–43)

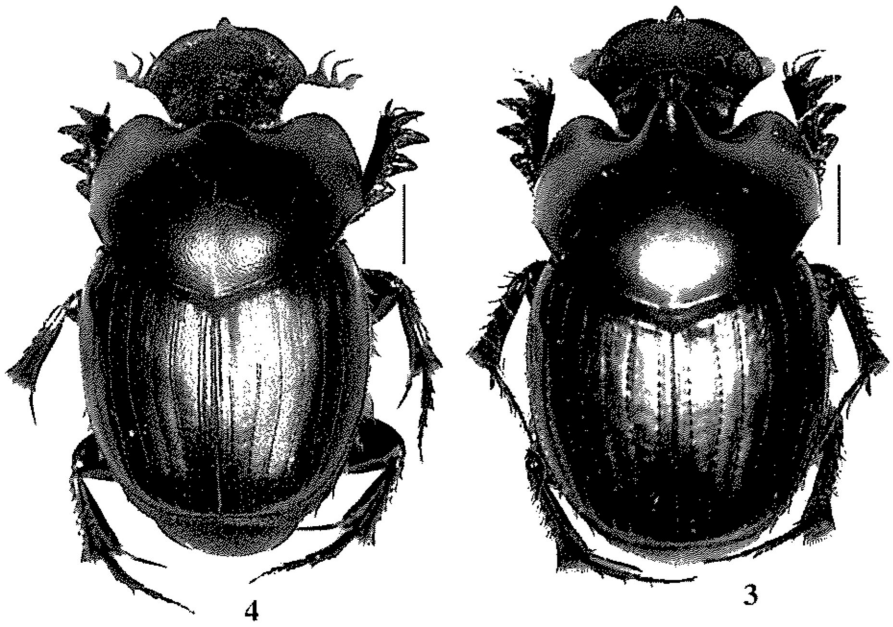
Onthophagus dux SHARP, 1875: 50 (Type area: Sarawak, Borneo; Type depository: MNHN); HAROLD, 1877: 97; LANSBERGE, 1883: 75; BOUCOMONT, 1914: 269; KRAJCIK, 2005: 101.

Onthophagus (*Parascatonomus*) *dux*: BALTHASAR, 1963: 333; NOMURA, 1976: 25; KON, SAKAI & OCHI, 2000: 370.

Length: 10.2–16.0 mm; 5.7–8.4 mm (n = 14).

Body large-sized, strongly convex above, oval. Dorsal side weakly shining, rather sparsely clothed with short yellowish hairs except for glabrous head, the hairs becoming fairly long and reflexed on each side near posterior angles of pronotum; ventral side also weakly shining, partly clothed with yellowish hairs. Color black, head and pronotum usually tinged with distinct bright cupreous, rarely dark purplish, luster; mouth parts, palpi and legs dark reddish brown; antennae with foot-stalks reddish brown, club segments yellowish brown.

Male. Head pentagonal, transverse; clypeus well produced forward as a slightly prolonged and pointed tooth in the middle, with basal sides of the tooth slightly incised; clypeal margin reflexed and broadly bordered; frontoclypeal suture barely noticeable,



Figs. 3–4. Habitus of *Onthophagus* (*Parascatonomus*) spp., in dorsal view, scale 1 mm. —— 3, *O.* (*P.*) *dux* SHARP, male; 4, *O.* (*P.*) *taichii* sp. nov., male.

weakly carinate, and genal sutures distinctly defined and forming slight satiny surface on each side behind the frontoclypeal one; genae strongly produced laterad, with genal margin roundly angulate at the middle; posterior portion of head with a pointed conical tubercle at the middle, which is strongly raised in front; surface densely covered with granules or transverse wrinkles, the granules changed into transverse punctures toward vertex.

Pronotum strongly convex, about 1.5–1.6 times as wide as long (n = 3), with a weak longitudinal median groove in basal half; anterior margin deeply emarginate, thickly bordered in the middle, thinly so at sides; lateral margins gently rounded in front, sinuate behind, with distinct marginal line; anterior angles rounded, posterior ones obtuse; basal margin obtusely and roundly angulate at the middle, finely bordered in middle, unbordered laterally; disc narrowly declivous in front, with the median upper edge of the declivity strongly produced as a horizontal conical process; surface very densely covered with granules, which are oval to round in shape and clearly larger than those of head.

Elytra about 1.4–1.6 times as wide as long (n = 3); striae distinctly and rather widely grooved, and ridged throughout on both sides; strial punctures distinct, sparse, weakly notching either margin of intervals; intervals almost flat, strongly microgranulose, somewhat sparsely covered with fine asperate punctures.

Pygidium evenly convex, carinate at base, transversely wrinkled, and densely covered

with transverse ocellate punctures, with a fine longitudinal carina in basal third along midline. Prothorax with anterior angles distinctly excavate on the ventral side. Metasternum longitudinally grooved along midline, finely punctate in the middle, coarsely so on marginal portions; MT-elevation strong, with the distal end obtusely produced forward. Protibiae broad and weakly incurved, four external teeth strong; terminal spur simple, strongly decurved.

Aedeagus robust. Phallobase about 2.4 mm in length (n = 1), about 1.1 mm in apical width. Parameres relatively large, about 1.5 mm in length (n = 1); each baso-lateral elevation weak, with tooth distinct, medio-lateral notch deep and broad, apico-lateral tooth distinct, long, and clearly visible from lateral aspect, apical tooth large, long and clearly visible from ventral aspect. Internal sac with copulating lamellae clearly larger, with apical portion strongly rounded.

Minor males. Head with the clypeal median tooth weaker than that of major male; frontoclypeal suture more distinctly carinate; conical tubercle on vertex reduced to a small rounded elevation. Pronotum with the anterior horizontal process reduced to a slight elevation.

Female. Head with clypeal margin weakly incised at the middle, the clypeal median tooth weaker than in major male. Protibial four external teeth stronger than in male.

Specimens examined. 1♂, 1♀, Gunung Serapi, Kuching, Sarawak, West Malaysia, 15–25. V. 1983, M. TAO leg.; 2♀♀, ditto, 21. V. 1993; 2♂♂, 2♀♀, ditto, 26. VIII. 1996; 2♂♂, 1♀, Mt. Bawang, Kalimantan, IX–X. 1990; 1♂, ditto, IV. 1991; 1♂, ditto, VII; 1♂, Kuching, Sarawak, 21. V. 1983, M. TAO leg.

Distribution. Borneo (Sabah, Sarawak and East Kalimantan).

Notes. Although BALTHASAR (1963, p. 338) stated that *O.* (*P.*) *dux* had no frontoclypeal suture, in reality it is distinctly visible though weakly carinate. Numerous specimens have been collected in pit-fall traps baited with dead fish in Sarawak (*e.g.* Kuching and Gunung Serapi).

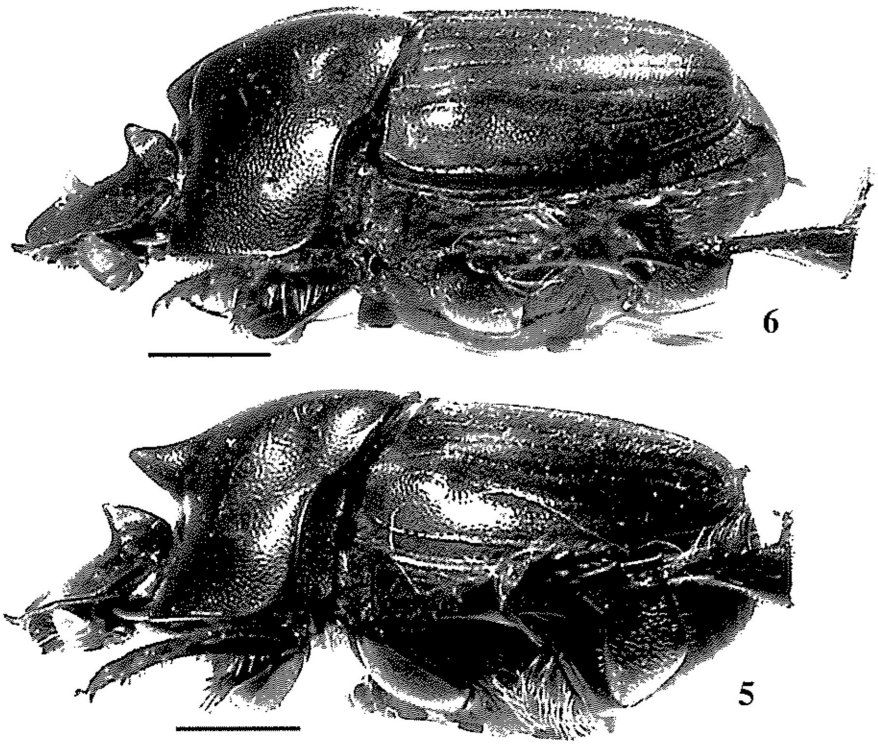
Onthophagus (*Parascatonomus*) *taichii* sp. nov.

(Figs. 4, 6, 44–46)

Length: 10.3–15.6 mm; 5.6–8.2 mm (n = 52).

Body large-sized, strongly convex dorsally, oval. Dorsal side weakly shining, head almost glabrous, pronotum and elytra rather sparsely clothed with short yellowish hairs, which are slightly shorter and sparser than those of *O. dux*; ventral side weakly shining to subopaque, partly clothed with yellowish hairs. Color usually uniformly black, often tinged with distinct cupreous to dark purplish luster; mouth parts, palpi and legs dark reddish brown; antennae with foot-stalks reddish brown, club segments yellowish brown.

Male. Head transversely pentagonal, slightly smaller than that in *O. dux*; clypeus well produced forward, pointed and upturned tooth at the middle, with either basal side of the



Figs. 5–6. Habitus of *Onthophagus* (*Parascatonomus*) spp., left lateral view, scale 1 mm. —— 5, *O.* (*P.*) *dux* SHARP, male; 6, *O.* (*P.*) *taichii* sp. nov., male.

tooth not distinctly notched; clypeal margin except for the median tooth reflexed and broadly bordered; frontoclypeal suture mostly more distinctly carinate than in *O. dux*, and genal sutures distinctly defined, though not carinate and forming a slight satiny surface on each side near the external end of frontoclypeal suture; genae strongly produced laterad, each with genal margin roundly angulate before the middle, genal corner more acute and less rounded at apex than in *O. dux*; vertex with a pointed conical tubercle at middle, which is vertical in front and gently declivous posteriad; surface densely covered with granules or transverse wrinkles, the granules changing into punctures toward vertex.

Pronotum strongly convex, about 1.5 to 1.6 times as wide as long (n = 3), with a very obtuse longitudinal median groove in basal half; anterior margin deeply emarginate, thickly bordered in the middle, thinly so at sides; lateral margins gently rounded in front, distinctly sinuate behind, with distinct marginal line; anterior angles strongly produced forward, though clearly rounded; posterior angles blunt; basal margin obtusely angulate at the middle, finely bordered in the middle, unbordered laterally; disc slightly declivous in front,

with the upper edge of the declivity produced as a transverse tubercle in the middle which is slightly emarginate in the middle; surface very densely covered with oval to round granules, obtuse in the middle and clearly defined at sides.

Elytra about 1.4–1.6 times as wide as long (n = 3); striae distinctly and somewhat widely grooved, and ridged throughout at both sides; strial punctures weak, fairly sparse, slightly notching either margin of intervals; intervals almost flat, strongly microgranulose, with punctures sparse, small and asperate, slightly sparser than in *O. dux*.

Pygidium evenly convex, carinate at base, fairly densely and rugosely covered with transverse ocellate punctures, with a vague longitudinal carina along midline in basal third. Prothorax with anterior angles clearly excavate on the ventral side. Metasternum weakly grooved along midline, more strongly punctate than in *O. dux* in the middle; MT-elevation strong, with the distal end obtusely produced forward. Protibiae broad and weakly incurved, four external teeth strong; terminal spur simply formed, strongly decurved.

Aedeagus somewhat robust. Phallobase about 2.1–2.2 mm in length (n = 3), about 1.1 mm in apical width. Parameres relatively large and long, about 1.3–1.4 mm in length (n = 3); each baso-lateral elevation weak, with tooth rather sharp, medio-lateral notch deep and broad, apico-lateral tooth distinct but somewhat short, and apical tooth relatively short and small though clearly visible in ventral view. Internal sac with copulating lamellae clearly smaller than in *O. dux*.

Minor males. Head with the clypeal median tooth weaker than that of major male; a conical tubercle on vertex reduced to a small round elevation. Pronotum with the median anterior tubercle reduced to a slight swelling.

Female. Head with clypeal median tooth weaker than in major male; vertex densely granulate or wrinkled along posterior portion of head, not distinctly punctate, median tubercle stronger. Pronotum more strongly declivous in front than in male, with the upper edge of the declivity strongly produced as a horizontal round process at the middle. Protibiae with four external teeth stronger than in male.

Type series. Holotype: ♂, Poring, Sabah State, Malaysia, 1. IV. 1980, K. SUGINO leg. (BMNH). Paratypes: 25♂♂, 27♀♀, the same data as the holotype. Two paratypes (1♂, 1♀) are deposited in BMNH, one paratype also in MNHN, MNSG and OMNH, respectively.

Distribution. Borneo (Sabah).

Etymology. The specific name is dedicated to the late Mr. Taichi SHIBATA, who was a dominant figure in Japan, and played an important role, especially in the systematics of Japanese Anthribidae and Tenebrionidae.

Notes. The present new species is closely related to *O.* (*P.*) *dux* SHARP from Borneo, but can be distinguished from the latter by the following characteristics: 1) body is generally smaller; 2) pygidium is strongly wrinkled, and more densely covered with fairly transverse and smaller punctures, whereas in *O.* (*P.*) *dux*, the pygidium is weakly wrinkled, with larger punctures; 3) elytral intervals are sparsely covered with small asperate punctures,

whereas in *O.* (*P.*) *dux*, the elytral intervals are more densely so; 4) genal corner is more strongly and less roundly angulate, and genal margin is distinctly sinuate behind the angle; 5) male pronotum is slightly declivous in front, with the upper edge of the declivity produced as a transverse small tubercle at the middle which is slightly emarginate in the middle, whereas in *O.* (*P.*) *dux*, the pronotum is more strongly declivous in front, with the upper edge of the declivity strongly produced as a horizontal round process at the middle; 6) male genitalia are smaller, with each paramere bearing a distinctly smaller apical tooth, and with copulating lamellae of internal sac smaller.

Onthophagus (*Parascatonomus*) *rudis* SHARP

(Figs. 13, 47)

Onthophagus rudis SHARP, 1875: 58 (Type area: Thailand: type depository; MNHN); LANSBERGE, 1883: 75; BOUCOMONT, 1914: 271; BOUCOMONT & GILLET, 1921: 41; BOUCOMONT, 1914: 669; BOUCOMONT, 1925: 153; ARROW, 1931: 184; BALTHASAR, 1935: 329; PAULIAN, 1945: 88; KRAJCIK, 2005: 130.

Onthophagus (*Parascatonomus*) *rudis*: BALTHASAR, 1963: 505; NOMURA, 1976: 26; ZUNINO, 1976: 94–95; OCHI & ARAYA, 1992: 92; KON, SAKAI & OCHI, 2000: 370.

Onthophagus foveolatus HAROLD, 1877: 68 (Type area: Sarawak, Borneo: type depository: MNHN); LANSBERGE, 1883: 74; BOUCOMONT, 1914: 271; PAULIAN, 1945: 102; BALTHASAR, 1963: 505; ZUNINO, 1976: 94–95.

Length: 5.5–7.1 mm; width: 2.8–3.7 mm (n = 25).

Body small-sized, oblong-oval, strongly convex; dorsal side weakly shining, rather densely clothed with short yellowish semirecumbent hairs, except for the almost glabrous head; ventral side shining, partly and densely clothed with yellowish recumbent hairs. Color blackish brown to dark brown with dark aeneous to cupreous luster, sometimes with metallic greenish or bluish luster; palpi, antennae, and fore tarsi reddish brown; legs reddish.

Male. Head octagonal; clypeus strongly produced anteriad, trapezoidal in outline, with sides weakly reflexed and almost straight or feebly sinuate, apex distinctly reflexed, narrowly truncate or rounded; frontoclypeal suture completely effaced; genal sutures distinct, not carinate; genae produced laterally, with margin angulate at the middle; vertex simply formed; posterior margin slightly and transversely carinate in the middle; surface closely granulate to rugose, the granules changing into strong elongate punctures posteriorly. Antennae short and compact; club segments with 2nd and 3rd almost the same length.

Pronotum strongly convex, about 1.2 to 1.3 times as wide as long (n = 3); anterior margin weakly bisinuate, distinctly bordered; lateral margins evenly rounded in front, sinuate behind, finely bordered; basal margin obtusely angulate at the middle and bordered by a fine marginal line, which is effaced laterally near posterior angles; anterior angles rounded;

posterior angles clearly obtuse; disc with basal portion strongly and longitudinally depressed in the middle and near posterior angles; a pair of baso-lateral longitudinal depressions each with two small semicircular pits, the anterior one clothed with about twenty long reflexed bristles along anterior edge; surface very densely covered with rather coarse granules, the granules becoming elongate on the baso-median depression.

Elytra about 1.4–1.6 times as wide as long (n = 3); striae strongly grooved and clearly ridged throughout on both sides; strial punctures sparse and moderately strong, weakly notching either margin of intervals; 2nd to 7th striae clearly sinuous, especially 6th strongly so near the middle; intervals very uneven, each with finely granulate and undulate longitudinal rows, especially on 2nd, 3rd, 5th, 6th, and 7th intervals; the granules on the intervals oval to elongate-oval in shape and partly changing into asperate punctures.

Pygidium strongly convex, carinate at base, and densely covered with small elongate granules. Prothorax with anterior angles deeply excavate at the middle of the ventral side. Metasternum densely covered with strong and somewhat coarse punctures; MT-elevation fairly strong, with the distal end well produced and clearly defined, and then strongly declivous antero-laterally. Protibiae slender and gently incurved, four external teeth strong.

Aedeagus rather slender. Phallobase about 1.1 mm in length (n = 1), about 0.5 mm in apical width (n = 1). Parameres about 0.6 mm in length, with lateral portions strongly constricted from base to the middle; each baso-lateral elevation distinct, with tooth sharp, medio-lateral notch deep, apico-lateral tooth weak though well swelled laterally, and apical tooth sharp, well visible in lateral view.

Female. Protibiae with four external teeth stronger than in male; 1st and 2nd teeth clearly longer and broader than those in male.

Type specimens examined. 1♀, Siam, MOUHOT coll. (holotype of *Onthophagus rudis* SHARP, 1875, MNHN); 1♂, Sarawak, Borneo, 1865–66, OBERTHÜR coll. (holotype of *O. foveolatus* HAROLD).

Specimens examined. 2♂♂, 2♀♀, Bunsit Park, Sabah State, West Malaysia, III. 1992, T. OCHI leg.; 1♂, Sayap, ditto, 7. XI. 1994, T. KIKUTA leg.; 1♀, ditto, 25. III.1995, T. KIKUTA leg.; 1♂, Poring, Sabah State, 12. IV. 1995, T. KIKUTA leg.; 2♂♂, ditto, 13. IV. 1995, T. KIKUTA leg.; 12 exs., ditto, 17. V. 1995, T. KIKUTA leg.; 1♂, Ulu Kimanis (1,400 m alt.), Sabah State, 30. VIII. 2002; 2♂♂, 3♀♀, Mt. Bawang, Kalimantan, Indonesia, VIII. 1990.

Further specimens examined. 9♂♂, 9♀♀, Bukittinggi, Sumatra, Indonesia, 10. VI. 1991, S. YAMADA leg.; 1♀, Malang, Java, Indonesia, 1903, H. ROUYER (MNHN); 1♀, Palawan, the Philippines, 26. V. 1985.

Distribution. Borneo, Sumatra, Java, Nias, Lombok, Palawan, Malay Peninsula, Thailand, Laos, Vietnam, Southern China and Northern India.

Notes. This species is widely distributed in Tropical Asia. *O. rudis* species-group (OCHI & ARAYA, 1992, p. 92) contains 11 species in the Oriental Region. The first author collected four specimens from a putrefied lizard at Bunsit Park, lowland locality of Sabah in 1992.

Onthophagus (*Parascatonomus*) *penicillatus* HAROLD
(Figs. 14, 48)

Onthophagus penicillatus HAROLD, 1879: 225 (Type area: Myanmar; type depository: MNHN); BOUCOMONT, 1914: 272; BOUCOMONT & GILLET, 1921: 34; ARROW, 1931: 187; BALTHASAR, 1935: 329; PAULIAN, 1945: 88; KRAJCIK, 2005: 124.
Onthophagus (*Pseudonthophagus*) *penicillatus*: BALTHASAR, 1963: 472.
Onthophagus (*Parascatonomus*) *penicillatus*: PALESTRINI, 1982: 97; KON, SAKAI & OCHI: 370.

Length: 8.3–12.1 mm; width: 4.7–5.9 mm (n = 12).

Body large-sized, elongate-oval, moderately convex; dorsal side weakly shining on head and pronotum, opaque on elytra, rather sparsely clothed with yellowish semirecumbent hairs except for the almost glabrous head; pronotum bearing an erect fascicle consisting of twenty or so long hairs near each posterior angle; ventral side weakly shining, partly and densely clothed with yellowish recumbent hairs. Color dark brown. Head and pronotum suffused with strong cupreous, or often greenish luster. Elytra yellowish brown to reddish brown, with suture black to dark brown, and with two to four black small variable black spots on each interval, which are sometimes joined to each other forming transverse bands, or rarely well developed, elytra almost entirely black. Palpi, antennae and fore tarsi reddish brown; legs reddish.

Male. Head elongate, flattened in anterior half; clypeus strongly produced forward, with apex truncate and reflexed at the middle, sides almost straight or feebly rounded; frontoclypeal suture completely effaced; genal sutures distinct, not carinate; genae produced laterally, with margin obtusely and roundly angulate at the middle; posterior portion of head shallowly to deeply excavate in the middle, with posterior edge of the excavation slightly elevated as a triangular prominence at the middle; surface evenly and somewhat regularly covered with dual kinds of punctures, strong and fine, the punctures becoming transversely rugose toward apex.

Pronotum strongly convex, about 1.3–1.4 times as wide as long (n = 3); anterior margin emarginate, finely bordered; lateral margins strongly rounded in front, sinuate behind, finely bordered; basal margin obtusely angulate at the middle and bordered by a fine marginal line, which is effaced laterally near each posterior angle; anterior angles obtuse; posterior angles rounded; disc almost simply formed, with four slight depressions, anterior depression situated at the middle just behind anterior margin, baso-median depression along midline in basal third, and a pair of baso-lateral depressions near posterior angles; surface covered with rather coarse and crowded granules, the granules changed into simple punctures on the baso-lateral depressions. Scutellum very small.

Elytra about 1.3–1.4 times as wide as long (n = 3); striae strongly grooved, and ridged throughout on both sides; strial punctures distinct, slightly sparse, feebly notching either margin of intervals; intervals weakly convex to almost flat, weakly microgranulose, somewhat densely and asperately punctate, the punctures becoming larger toward outer intervals.

Pygidium fairly strongly convex, carinate at base, and densely covered with strong and elongate punctures. Prothorax with anterior angles distinctly excavate at the middle of the ventral side. Metasternum somewhat sparsely covered with small punctures; MT-elevation strong, with the distal end weakly produced and obtusely defined, and then declivous antero-laterally; a small transverse groove situated just before the MT-elevation. Protibiae rather slender, gently incurved, four external teeth very strong; terminal spur elongate and slightly decurved, rounded at apex.

Aedeagus rather slender. Phallobase about 1.7 mm in length (n = 1), about 0.6 mm in apical width (n = 1). Parameres relatively broad and subquadrate in dorsal view, about 0.7 mm in length; each baso-lateral elevation distinct and fairly long, with tooth and medio-lateral notch situated near apex, the former rounded and the latter narrow, apico-lateral tooth indistinct, apical tooth distinct and clearly visible.

Female. Head densely granulate to transversely rugose; triangular prominence well developed and more strongly produced upward than in male. Pygidium weakly convex. Protibiae with four external teeth stronger and broader, terminal spur longer and sharpened at apex than those in male.

Type specimen examined. 1♀, labeled as "Birma, penicillatus type HAROLD, (holotype, MNHN).

Specimens examined. 1 ex., Poring, Sabah State, Malaysia, 13. IV. 1995, T. KIKUTA leg. (by Fish Trap); 2♂♂, 2♀♀, ditto, 550 m alt., 17. V. 1995, T. KIKUTA leg. (by Human Dung Trap); 1♂, 2♀♀, Sayap, Sabah State, Malaysia, 11. V. 1995, T. KIKUTA leg. (by Fish Trap); 2♂♂, 2♀♀, ditto, 1,000 m alt., 7. XI. 1994, T. KIKUTA leg.

Further specimens examined. 2♂♂, 3♀♀, Bukittinggi, Sumatra, Indonesia, 1. V. 1991, E. MARLIS leg.; 1♂, Ranon, Thailand, 25. VIII. 1997, M. KON leg.

Disitribution. Borneo, Sumatra, South China, Indochina, Thailand, Myanmar and North India.

Onthophagus (*Parascatonomus*) *riekoae* OCHI et KON

(Fig. 15)

Onthophagus (*Parascatonomus*) *riekoae* OCHI et KON, 2005: 83–98.

Type specimen examined. 1♀, Mt. Bawang, West Kalimantan, Indonesia, VIII. 1993, N. NISHIKAWA leg. (holotype, OMNH).

Distribution. Borneo (Kalimantan).

Notes. This species is fairly unique in having the following characteristics: 1) protibia very broad, without small denticles between four external teeth; 2) metasternal triangular elevation very weak; 3) antennae each with club segments not strongly lobed and closely articulated. This species is related to the *O.* (*P.*) *discedens* species-group and also *O.* (*P.*) *diversiformis* BOUCOMONT from Myanmar, based on the protibial characters.

Onthophagus (*Parascatonomus*) *discedens* SHARP
(Figs. 16, 49)

Onthophagus discedens SHARP, 1875: 49 (Type area: Sarawak, Borneo; type depository: MNHN); HAROLD, 1877: 84; LANSBERGE, 1883: 77; BOUCOMONT, 1914: 270; BOUCOMONT & GILLET, 1921: 44 (partim); GILLET, 1924: 104; ARROW, 1931: 259 (partim); BALTHASAR, 1935: 330 (partim).
Onthophagus (*Parascatonomus*) *discedens*: PAULIAN, 1945: 101; BALTHASAR, 1963: 333; NOMURA, 1976: 27, 29 (partim); KABAKOV & JANUSHEV, 1983: 161(partim); OCHI & ARAYA, 1992: 88; OCHI & ARAYA, 1996: 12; KON, SAKAI & OCHI, 2000: 370.

Length: 9.0–13.0 mm; width: 4.7–6.3 mm (n = 12).

Body large-sized, oblong-oval and markedly convex above. Dorsal side strongly shining and smooth, almost glabrous, furnished with sparse and reddish hairs on lateral portions of pronotum and elytra, anterior portion of pygidium. Ventral side also strongly shining, densely clothed with reddish hairs except for the glabrous median portion of metasternum. Color black, without metallic luster; mouth parts, palpi and antennal basal segments reddish brown; club segments almost yellowish brown; legs often more or less reddish.

Male. Head large, clearly wider than long; clypeus deeply and rather widely incised in the middle, with a small, elongate and upturned tooth at middle of the incision; clypeal margin broadly bordered; genae fairly strongly produced laterad, with genal corner more acute than rectangular; posterior portion of head, almost flat, feebly and circularly depressed on the middle; eyes relatively large, interspace between them about 5.2–5.8 times as the width of an eye (n=3); surface closely granulate and/or rugose on genae and the anterior portion of clypeus, the granules gradually changing into shallow punctures toward vertex, where the punctures are small and rather uneven. Antennae short and compact, closely articulated; club segments small, 1st segment large, crescent-shaped, 2nd and 3rd small.

Pronotum simply formed, strongly convex, about 1.3 times as wide as long (n = 3); anterior margin emarginate, thickly bordered in the middle, thinly so at sides; lateral margins widely rounded in front, scarcely sinuate behind; anterior angles usually entirely rounded, occasionally roundly angulate; posterior angles rounded; base obtusely angulate in the middle, with marginal line almost effaced; surface evenly and very finely punctate in the middle, the punctures gradually changing into asperate punctures or coarse granules toward sides.

Elytra wide, about 1.3–1.4 times as wide as long (n = 3); striae strongly and widely grooved, with strial punctures sparse and weak, slightly notching either margin of intervals; 7th striae not strongly curved; intervals nearly flat, very smooth, sparsely covered with small punctures.

Pygidium evenly convex, carinate at base, rather densely covered with large, transverse and ocellate punctures. Prothorax with anterior angles distinctly excavate on the ventral side. Metasternum obtusely and longitudinal grooved along midline, sparsely covered with fine to small punctures in the middle, the punctures becoming denser and larger

toward apex; MT-elevation strong, with the distal end clearly defined, and then declivous antero-laterally; a small transverse groove situated just before MT-elevation. Protibiae short and fairly broad, weakly incurved, four external teeth fairly strong and devoid of small denticles between them; 1st tooth sharp, slightly curved, 2nd the largest, less than twice as wide as 1st at base; 3rd slightly smaller than 1st, 4th relatively large; terminal spur curved near apex.

Aedeagus small and slender. Phallobase about 2.0 mm in length (n = 1), about 0.9 mm (n=1) in apical width. Parameres distinctly short, broad in dorsal view, about 1.2 mm in length (n=1), each baso-lateral elevation fairly short, with tooth and medio-lateral notch situated near apex, the former rounded and the latter narrow, apico-lateral tooth indistinct, and apical tooth sharp in lateral view.

Female. Head more strongly granulate than in male. Protibiae with four external teeth clearly broader than those in male.

Type specimen examined. 1♂, Sarawak, Borneo, A. R. WALLACE leg. OBERTHÜR collection, (holotype, MNHN).

Specimens examined. 1♂, Balikpapan, Kalimantan, 1. IV. 2006.

Further specimens examined. 3♂♂, 4♀♀, Harau Valley, Paya-Khumbur, Central Sumatra, Indonesia, IX. 1992; 1♀, Puncak, Java, Indonesia, II–IV. 1994; 1♀, Bandong, ditto; 1♂, Near Mantalingan, Palawan Is., the Philippines, IV–VI. 1995, D. MOHAGAN leg.

Distribution. Borneo, Sumatra, Java, Malay Peninsula, Philippines (Palawan Is.).

Notes. This species forms the *O. discedens* species group consisting of *O.* (*P.*) *discedens* SHARP, *O.* (*P.*) *fujiokai* OCHI et ARAYA, *O.* (*P.*) *renaudpauliani* OCHI et ARAYA, *O.* (*P.*) *miyakei* OCHI et ARAYA, and *O.* (*P.*) *laotianus* BOUCOMONT in the Oriental region.

Onthophagus (*Parascatonomus*) *fujiokai* OCHI et ARAYA

(Figs. 17, 50)

Onthophagus (*Parascatonomus*) *fujiokai* OCHI et ARAYA, 1996: 8; KON, SAKAI & OCHI, 2000: 370.

Type specimen examined. 1♂, 10 km from Keningau, Crocker range, Sabah State, 12. VI. 1994, F. C. CHEW leg. (holotype, NSMT).

Distribution. Borneo (Sabah and Sarawak).

Additional descriptions. Aedeagus more or less slender. Phallobase about 3.0 mm in length (n = 1), about 1.2 mm in apical width (n = 1). Parameres about 1.6 mm in length (n = 1), rhombic in outline in dorsal view, each baso-lateral elevation distinct and long, with tooth strong, medio-lateral notch distinct and deep, apico-lateral tooth small and pointed in lateral view, and apical tooth clearly visible in lateral view.

Notes. This species is closely related to *O.* (*P.*) *discedens* SHARP, but the body is generally larger and the eyes are much smaller than those of *O.* (*P.*) *discedens*.

Onthophagus (*Parascatonomus*) *aurifex* HAROLD
(Figs. 18, 51)

Onthophagus aurifex HAROLD, 1877: 80 (Type depository: MNSG; type area: Sarawak, Borneo); LANSBERGE, 1883: 75; BOUCOMONT, 1914: 275.
Onthophagus (*Onthophagus*) *aurifex*: BALTHASAR, 1963: 282.
Onthophagus (*Parascatonomus*) *aurifex*: NOMURA, 1976: 26; KON, SAKAI, & OCHI, 2000: 370.

Length: 7.9–12.0 mm; width: 4.6–6.6 mm (n = 11).

Body moderate-sized, oblong-oval, strongly convex; dorsal side distinctly clothed with long recumbent hairs, especially on elytra and pygidium except for almost glabrous head, weakly shining to slightly opaque on head and pronotum, clearly opaque on elytra; pronotum also clothed with distinct hairs in each side, glabrous in baso-median portion, and often with several noticeably long and reflexed hairs on each side near base; ventral side slightly shining, partly, densely clothed with reddish hairs. Color black; head and pronotum suffused with strong cupreous luster; ventral surface and legs tinged with weak purplish luster; mouth parts, palpi and legs more or less reddish; antennae with foot-stalks reddish brown, club segments reddish brown basally and yellowish brown distally.

Male. Head pentagonal; clypeus strongly produced forward as a reflexed and triangular tooth in the middle; clypeal margin broadly bordered; frontoclypeal suture fine, very obtusely carinate, the carina sometimes vague or almost effaced; genae well produced laterad, obtusely and somewhat roundly angulate at the middle; vertex with a fairly obtuse transverse carina along posterior margin, which is slightly raised; surface transversely wrinkled along anterior margin, densely and strongly punctate, the punctures becoming small and sparse in the middle and in posterior portion. Antennae short and compact; club segments successively diminishing the size in width and length.

Pronotum strongly convex, about 1.3–1.4 times as wide as long (n = 2), with an obtuse longitudinal median groove in basal half; anterior margin weakly bisinuate, finely bordered; lateral margins evenly and rather strongly rounded in front, sinuate behind, with distinct marginal line; basal margin slightly produced backward and angulate at the middle, with marginal line bordered in the middle and unbordered at sides; anterior angles bluntly angulate; posterior angles very obtuse; disc scarcely depressed in front of the middle; surface weakly microgranulose though slightly shining, punctures small and sparse, becoming coarser and denser toward sides, sometimes asperate or granulate in part.

Elytra about 1.3–1.4 times as wide as long (n = 2); striae strongly and somewhat widely grooved and ridged throughout on both sides; strial punctures sparse, distinct, and weakly notching either margin of intervals; 7th stria weakly curved near base; intervals nearly flat, clearly microgranulose, punctures sparse and strong on suture and 2nd to 4th intervals, becoming denser, clearly larger and partly asperate toward outer intervals.

Pygidium fairly strongly convex, carinate at base, slightly microgranulose, densely covered with coarse ocellate punctures. Prothorax with anterior angles clearly excavated at

the middle of the ventral side. Metasternum markedly convex, obtusely and longitudinally grooved along midline, sparsely covered with punctures small in the middle, and becoming denser, larger and granulate toward apex; MT-elevation strong, with the distal end sharply defined along midline, and then declivous antero-laterally; a small transverse groove situated just before MT-elevation. Protibiae somewhat slender, curved inward, four external teeth strong; terminal spur spatulate, rather elongate and weakly decurved.

Aedeagus relatively large. Phallobase rather short, about 1.6 mm in length (n = 10), about 0.8 mm in apical width (n = 1). Parameres somewhat larger than in the related species, about 1.1 mm in length, longitudinally hexagonal in outline in dorsal view, and distinctly widened at apex in lateral view; baso-lateral elevation well developed and large; apico-lateral tooth well produced in lateral view; medio-lateral notch distinct and rather broad, apical tooth weak, barely visible in ventral view.

Female. Head more strongly wrinkled or granulate in front than in male, asperately punctate or simply so behind. Protibiae with four external teeth stronger than in male; terminal spur simple, strongly decurved.

Type specimen examined. 1♀, labeled as "Borneo, Sarawak, 1865-66, Coll. S. Doria, Holotypes♀, Onthophagus aurifex Harold, 1877", (holotype, MNSG).

Specimens examined. 1♂, 2♀♀, Gunung Serapi, Sarawak State, West Malaysia, Borneo, VIII.1996; 1♂, 1♀, Mt. Bawang, West Kalimantan, Indonesia, Borneo, IX. 1990; 3♂♂, 2♀♀, Near Balikpapan, Kalimantan.

Distribution. Borneo (Sabah, Sarawak and Kalimantan), Malay Peninsula, Sumatra and Java.

Onthophagus (*Parascatonomus*) *semiaureus* LANSBERGE

(Figs. 19, 52)

Onthophagus semiaureus LANSBERGE, 1883: 75 (Type locality: Sumatra and Java; type depository: RMNHL); BOUCOMONT, 1914: 275; BOUCOMONT, 1924: 670.

Onthophagus (*Onthophagus*) *semiaureus*: BALTHASAR, 1963: 517.

Onthophagus (*Parascatonomus*) *semiaureus*: NOMURA, 1976: 26; OCHI & KON, 1994: 294; KON, SAKAI & OCHI, 2000: 370.

Length: 7.0–11.6 mm; width: 4.8–6.4 mm (n = 10).

Very similar to the proceeding species. Body moderate-sized, oblong-oval, strongly convex; dorsal side almost glabrous, weakly shining on head and pronotum, slightly opaque on elytra; pygidium sparsely clothed with short fine recumbent hairs, or sometimes almost glabrous; ventral side weakly shining, partly and densely clothed with reddish hairs. Color black; head and pronotum suffused with strong cupreous luster, though uniformly black often in the Sumatran individuals; ventral surface and legs tinged with weak purplish luster; mouth parts, palpi and legs more or less reddish; antennae with foot-stalks reddish brown,

club segments reddish brown basally and yellowish brown distally.

Male. Head pentagonal; clypeus strongly produced forward as a reflexed and triangular tooth in the middle, the tooth slightly broader than in *O. aurifex*; clypeal margin reflexed and broadly bordered; frontoclypeal suture fine, obtusely carinate, and slightly raised at the middle; genae well produced laterad, obtusely and somewhat roundly angulate at the middle; vertex with a slight transverse carina along posterior margin, which is slightly raised; surface densely and transversely wrinkled or granulate along anterior margin, densely punctate in the middle and in the posterior carina, sculptured or coarsely punctate on the posterior portion.

Pronotum strongly convex, about 1.3–1.4 times as wide as long (n = 3), with an obtuse longitudinal median groove in basal half; anterior margin feebly bisinuate, finely bordered; lateral margins evenly rounded in front, sinuate behind, with distinct marginal line; basal margin slightly produced backward and angulate at the middle, finely bordered in the middle and unbordered laterally; anterior angles bluntly angulate; posterior angles very obtuse or rounded; disc scarcely depressed in front of the middle, the depression more distinct than in *O. aurifex*; surface slightly microgranulose though rather shining, punctures somewhat dense and small, becoming denser, coarser and partly asperate or granulate toward sides.

Elytra about 1.3–1.4 times as wide as long (n = 3); striae strongly and widely grooved, ridged throughout on both sides, 7th stria weakly curved near base; strial punctures sparse, distinct, and weakly notching either margin of intervals; intervals flat, weakly microgranulose, the microgranules weaker than in *O. aurifex*, and sparsely covered with fine punctures which become slightly larger toward outer intervals.

Pygidium weakly convex, carinate at base, distinctly microgranulose, densely covered with shallow transverse punctures. Prothorax with anterior angles clearly hollowed on the ventral side. Metasternum strongly convex near the middle, obtusely and longitudinally grooved along midline, sparsely punctate in the middle, densely and coarsely granulate at apex; MT-elevation strong, with the distal end distinctly defined along midline, and then declivous antero-laterally; a small transverse groove situated just before MT-elevation. Protibiae rather slender, weakly curved inward, four external teeth strong; terminal spur spatulate, rather elongate and decurved.

Aedeagus moderate-sized. Phallobase elongate, about 1.8 mm in length (n = 1), about 0.8 mm in apical width (n = 1). Parameres longitudinally hexagonal in outline from dorsal view, about 0.9 mm in length, each baso-lateral elevation short, with tooth distinct, mediolateral notch deep and narrow, apico-lateral tooth strong and apical tooth distinct, clearly visible in lateral view.

Female. Head more strongly wrinkled or sculptured than in male; clypeus wholly and densely covered with distinct granules, the remaining portions of head sculptured. Pronotum with anterior depression weaker than in male. Protibiae with four external teeth stronger than those in male.

Specimens examined. 4♂♂, 4♀♀, Sepilok, Sabah State, West Malaysia, Borneo, 28. VIII. 1996, M. KON leg.; 2♂♂, Mt. Bawang, Kalimantan, Indonesia, IX. 1990.

Further specimens examined. 5♂♂, 4♀♀, Singaalang, West Sumatra, Indonesia, IV. 1991.

Distribution. Borneo, Sumatra, Java, Sulawesi and the Philippines.

Notes. This species is very closely related to *O.* (*P.*) *aurifex* HAROLD, but it can be easily distinguished from the latter by the glabrous elytra.

Onthophagus (*Parascatonomus*) *sarawacus* HAROLD

(Figs. 20, 53)

Onthophagus sarawacus HAROLD, 1877: 79 (Type area: Sarawak, Borneo; type depository: MNSG); LANSBERGE, 1883: 75; BOUCOMONT, 1914: 275; BOUCOMONT & GILLET, 1921: 52; BALTHASAR, 1935: 334: PAULIAN, 1945: 101.

Onthophagus (*Onthophagus*) *sarawacus*: BALTHASAR, 1963: 511.

Onthophagus (*Parascatonomus*) *sarawacus*: NOMURA, 1976: 26; OCHI & KON, 1994: 293; KON, SAKAI & OCHI, 2000: 370.

Length: 9.0–14.0 mm; width: 6.3–7.1 mm (n = 21).

Body large, oblong-oval, fairly strongly convex; dorsal side entirely mat, almost glabrous, with pronotum frequently bearing several long semirecumbent hairs on each side before base; pygidium glabrous; ventral side weakly shining, partly, densely clothed with reddish hairs. Color black; mouth parts, palpi and legs more or less reddish; antennae with foot-stalks reddish brown, club segments reddish brown basally and yellowish brown distally.

Male. Head pentagonal; clypeus strongly produced forward as a reflexed and rounded tooth in the middle, with basal sides of the tooth straight, not incised; clypeal margin reflexed and broadly bordered; frontoclypeal suture barely noticeable or almost effaced; genae well produced laterally, obtusely angulate at the middle; vertex not distinctly carinate though obtusely and transversely raised; surface densely and transversely wrinkled or granulate along anterior margin, densely punctate in the middle and on the posterior carina, sculptured or coarsely punctate on the posterior portion.

Pronotum strongly convex, about 1.4–1.5 times as wide as long (n = 3), with an obtuse trace of longitudinal median groove; anterior margin distinctly bisinuate, finely bordered; lateral margins evenly and somewhat strongly rounded in front, sinuate behind, with distinct marginal line; basal margin slightly produced backward and angulate at the middle, with marginal line bordered at the middle and unbordered laterally; anterior angles bluntly angulate; posterior angles obtuse; disc gently declivous in anterior third, with the declivous area weakly depressed in major males, whereas in minor males, the declivous area becoming smaller and indistinct; surface distinctly microgranulose, punctures somewhat dense

and fine in middle, gradually changing into denser and asperate ones or granules toward sides.

Elytra about 1.3 times as wide as long (n = 3); striae shallowly and finely grooved, with fine ridges on both sides throughout, 7th stria almost parallel to the 6th; strial punctures sparse and weak, slightly notching either margin of intervals; intervals flat, strongly microgranulose, sparsely and finely punctate, the punctures distinctly larger than in *O. liewi*, and becoming coarser toward outer intervals.

Pygidium gently convex, carinate at base, strongly microgranulose, densely covered with transverse ocellate punctures. Prothorax with anterior angles distinctly excavated at the middle of the ventral side. Metasternum well convex, obtusely and longitudinally grooved along midline, sparsely covered with small punctures in the middle, the punctures becoming denser, larger and ocellate toward apex; MT-elevation strong, with the distal end strongly produced forward and sharply defined along midline, and then declivous anterolaterally; a small transverse groove situated just before MT-elevation. Protibiae relatively slender, curved inward, four external teeth strong; terminal spur spatulate and rather elongate.

Aedeagus moderate-sized. Phallobase rather robust, about 2.1–2.2 mm in length (n = 3), about 0.9 mm in apical width (n = 1). Parameres hexagonal in outline from dorsal view, about 1.1–1.2 mm in length, each baso-lateral elevation short, with tooth distinct and well produced, medio-lateral notch deep and narrow, apico-lateral tooth and apical tooth strong, sharp and clearly visible in lateral view, the latter slightly longer than the former.

Female. Head with the median clypeal tooth narrower at base than in male; surface transversely wrinkled or granulate in front, sculptured behind except for the posterior carina which is sparsely and finely punctate. Pronotum simply formed. Protibiae broader, with four external teeth stronger than those in male.

Type specimen examined. 1 ♂, labeled as "SYNTYPUS, *Onthophagus sarawacus* HAROLD, 1877" "typus" "Sarawacus Har" "99" "Borneo, Sarawak, 1865–66, Coll. G. Doria" "Museo Civico di Genova", LECTOTYPE ♂ here designated; 1 ♀, labeled as "SYNTYPUS, *Onthophagus sarawacus* HAROLD, 1877" "100" "Museo Civico di Genova" (PARALECTOTYPE).

Specimens examined. 6 exs., Poring, Sabah State, Malaysia, 15. I. 1995, T. KIKUTA leg. (by Fish Trap); 11 exs., ditto, 800 m alt., 17. V. 1995, T. KIKUTA leg. (by Fish Trap); 4 exs., ditto, 550 m alt., (by Human Dung).

Distribution. Borneo and Vietnam.

Notes. We examined three syntype specimens of *Onthophagus sarawacus* HAROLD (MNSG), and found that two specimens surely belong to this species and one syntype belong to another species, female of *O.* (*O.*) *incisus* HAROLD, 1877. Thus, we designated two specimens as lectotype and paralectotype respectively herein and excluded one specimen from lectotype-designation. The excluded third syntype specimen's data is as follows: ♀: labeled as "SYNTYPUS, *Onthophagus sarawacus* HAROLD, 1877" "101" "Museo Civi-

co di Genova". The number "101" may show the type number in the Museo Civico di Storia Naturale "Giacomo Doria", Genova, "*Onthophagus* (*Onthophagus*) *incisus* HAROLD, designated T. OCHI". The third, incorrectly identified syntype has not been labeled as a paralectotype.

Onthophagus (*Parascatonomus*) *liewi* OCHI et KON

(Figs. 21, 54)

Onthophagus (*Parascatonomus*) *liewi* OCHI et KON, 2005: 86.

Type specimen examined. 1 ♂, Malaysia, Sabah State, Mt. Kinabalu, Sayap, 1,200 m alt., 8. XI. 1994, T. KIKUTA leg. (holotype, UMS).

Distribution. Borneo (Sabah).

Additional description. Aedeagus elongate. Phallobase about 2.2–2.5 mm in length (n = 10), about 1.0–1.1 mm in apical width (n = 10). Parameres hexagonal in outline from dorsal view, about 1.2–1.3 mm in length, each baso-lateral elevation short, with tooth strong and well produced, medio-lateral notch deep and narrow, apico-lateral tooth and apical tooth strong, sharp and clearly visible in lateral view, the latter clearly longer and sharper than the former.

Onthophagus (*Parascatonomus*) *kikutai* OCHI et KON

(Figs. 22, 29, 55)

Onthophagus (*Parascatonomus*) *kikutai* OCHI et KON, 2005: 88.

Type specimen examined. 1 ♂, Poring, 800 m, Sabah State, Malaysia, 13. IV. 1995, T. KIKUTA leg. (holotype, UMS).

Distribution. Sabah State, Malaysia (Northern Borneo).

Additional descriptions. Aedeagus moderate-sized. Phallobase slightly robust, about 1.4 mm in length (n = 1), about 0.6 mm in apical width (n = 1). Parameres hexagonal in outline from dorsal view, about 0.7 mm in length, each baso-lateral elevation relatively short, with tooth strong and well produced, medio-lateral notch deep and rather broad, apico-lateral tooth indistinct, apical tooth strongly produced, sharp and clearly visible in lateral view.

Notes. The female of this species is unknown.

Onthophagus (*Parascatonomus*) *bundutuhanensis* sp. nov.

(Figs. 7, 30, 56)

Length: 6.4–8.5 mm; width: 3.3–4.2 mm (n = 9).

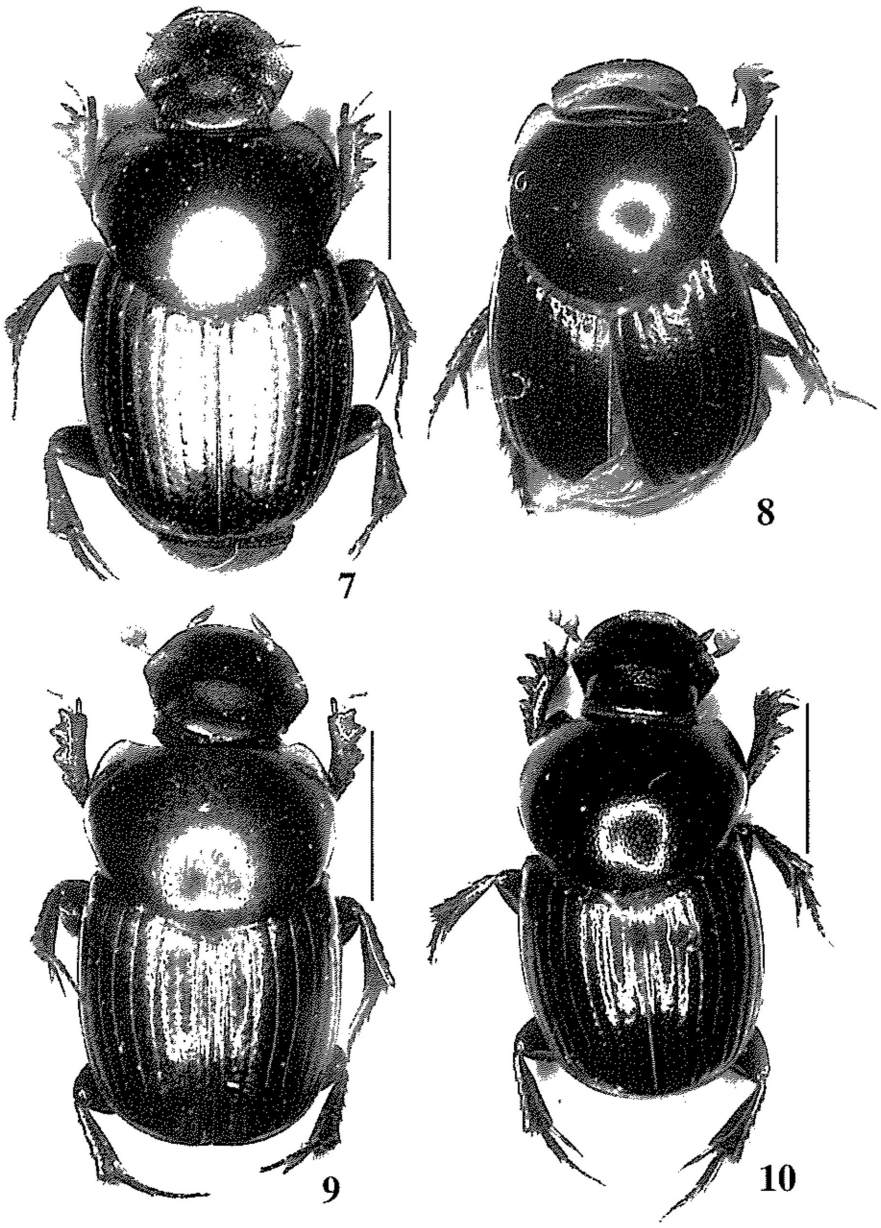
Body small-sized, oblong-oval, strongly convex; dorsal side with head and pronotum weakly shining and almost glabrous, elytra distinctly opaque, almost glabrous at a glance though sparsely clothed with very short yellowish white hairs which become longer toward sides; ventral side weakly shining, partly densely clothed with yellowish hairs. Color black; head and pronotum suffused with bright cupreous luster, occasionally a little greenish; elytra entirely black; pygidium and legs somewhat reddish; ventral side black to brownish black; mouth parts, palpi and antennal foot-stalks reddish brown; club segments of antennae yellowish brown.

Male. Head almost flat, distinctly transverse; clypeal margin slightly reflexed, briefly truncate in the middle and gently rounded at sides; frontoclypeal suture completely effaced; genal sutures finely defined, not carinate; genae somewhat strongly produced laterad, obtusely but clearly angulate at genal corner, with genal margin straight in front and slightly sinuate behind; surface slightly rugose on anterior portion along margin, somewhat sparsely covered with strong punctures in the middle, the punctures becoming coarser toward apex and sides. Antennae short and compact; scape short.

Pronotum evenly and strongly convex, about 1.1–1.3 times as wide as long (n = 3); a longitudinal median groove almost inconspicuous; anterior margin emarginate, distinctly bordered in the middle, finely so at sides; lateral margins evenly rounded in front, distinctly sinuate behind, with fine marginal lines; basal margin obtusely angulate at the middle and only slightly raised at the tip, without distinct marginal line; anterior angles bluntly angulate, rounded apically; posterior angles obtuse; surface microgranulose, evenly and rather sparsely covered with fine punctures, the punctures becoming denser, coarser and weakly asperate toward sides.

Elytra about 1.2 times as wide as long (n = 3); striae strongly and rather finely grooved, and ridged throughout on both sides; strial punctures sparse and slightly strong, and weakly notching either margin of intervals; 7th stria only slightly curved or almost parallel to 6th near base; intervals weakly convex to almost flat, strongly microgranulose, sparsely covered with fine, partly asperate, punctures as those on pronotum.

Pygidium slightly convex, carinate at base, obviously microgranulose, densely covered with strongly transverse ocellate punctures. Prothorax with anterior angles fairly deeply excavate at the middle of the ventral side. Metasternum clearly convex, obtusely and longitudinally grooved along midline, sparsely covered with small punctures in the middle, the punctures becoming denser, larger and asperate to ocellate toward apex; MT-elevation strong, with the distal end sharply defined along midline, and then declivous antero-laterally; a slight transverse groove situated just before MT-elevation. Protibiae slightly broad, curved inward, four external teeth strong; terminal spur elongate, spatulate, clearly longer



Figs. 7–10. Habitus of *Onthophagus* (*Parascatonomus*) spp., dorsal view, scale 2 mm. —— 7, *O.* (*P.*) *bundutuhanensis* sp. nov., male; 8, *O.* (*P.*) *brendelli* sp. nov., male; 9, *O.* (*P.*) *serapiensis* sp. nov., male; 10, *O.* (*P.*) *tamijii* KON, SAKAI et OCHI, male.

than 1st external tooth, and obliquely truncate at apex.

Aedeagus somewhat large. Phallobase slightly robust, about 1.3–1.5 mm in length (n = 3), about 0.6 mm in apical width (n = 3). Parameres large, quadrate in outline from dorsal view, about 0.7 mm in length (n = 3), each baso-lateral elevation long, with tooth strong and rounded, medio-lateral notch very narrow, apico-lateral tooth distinct but not produced, apical tooth strongly produced, sharp and clearly visible in lateral view.

Female. Head more strongly rugose on clypeus than in male. Pronotum more strongly convex than in male. Protibiae with four external teeth stronger, terminal spur ordinary, strongly decurved than those in male.

Type series. Holotype: ♂, Bundu Tuhan, Sabah State, Malaysia, 19. III. 2007, A. ABE leg. Paratypes: 4♂♂, 4♀♀, same data as the holotype. Type depository. BMNH.

Distribution. Borneo.

Etymology. This species is named after the locality, Bundu Tuhan, Sabah, Malaysia.

Notes. The present new species is closely related to *Onthophagus* (*Parascatonomus*) *kikutai* OCHI et KON from Borneo, but can be distinguished from the latter by the following characters; 1) elytral intervals are seemingly not distinctly hairy, whereas in *O.* (*P.*) *kikutai*, they are distinctly hairy; 2) elytra are not tinged with cupreous luster, whereas in *O.* (*P.*) *kikutai*, the elytra are tinged with cupreous luster; 3) in the male, the terminal spur of the protibia is broader, with apex obliquely truncate, whereas in *O.* (*P.*) *kikutai*, it is narrower, with apex not obliquely truncate; 4) male genitalia is larger and robust, parameres are clearly larger and differently shaped.

Onthophagus* (*Parascatonomus*) *poringensis OCHI et KON, stat. nov.

(Figs. 23, 31, 57)

Onthophagus (*Parascatonomus*) *katoi poringensis* OCHI et KON, 2005: 97.

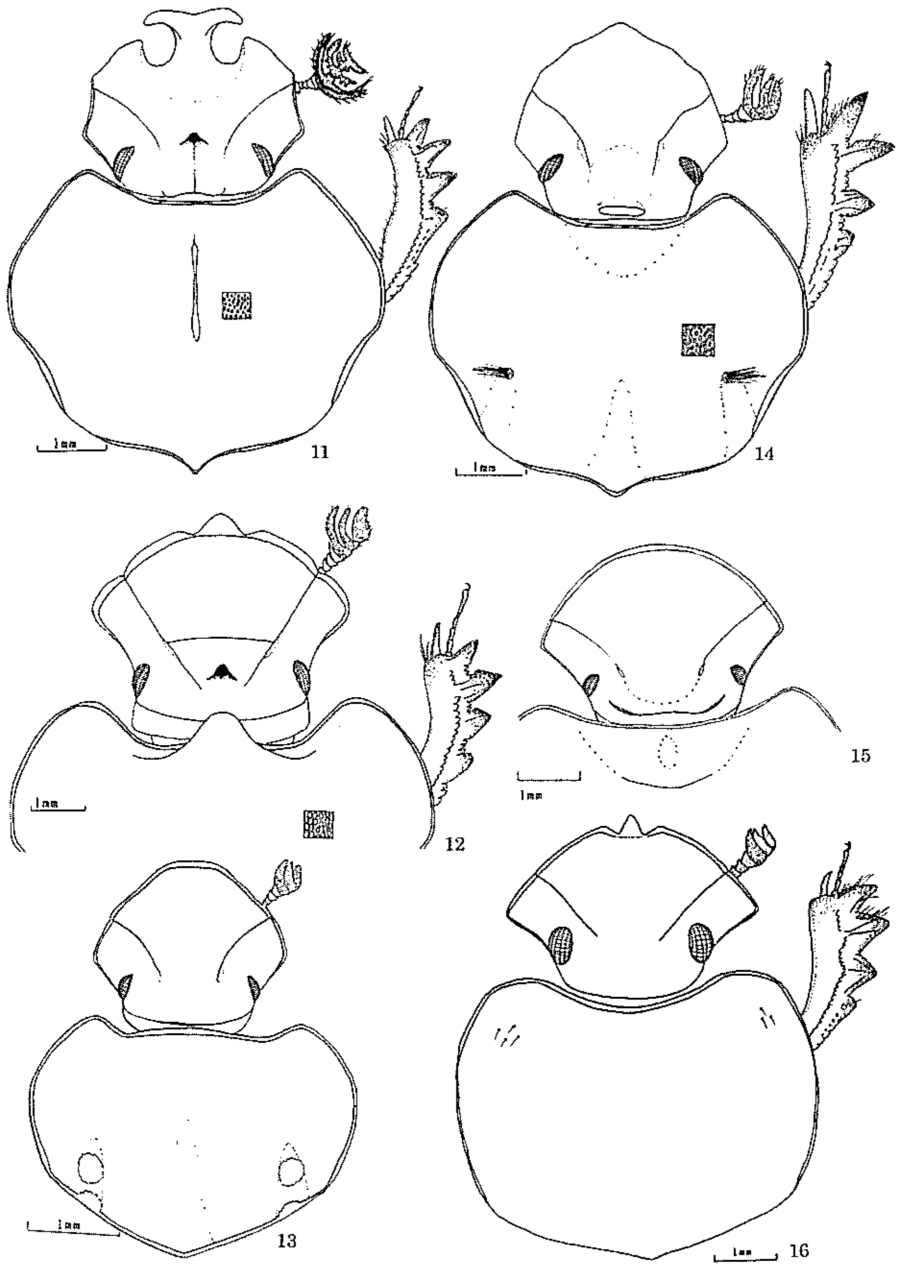
Onthophagus (*Parascatonomus*) *pilularius*: BALTHASAR, 1963: 480; KON, SAKAI & OCHI, 2000; 371 (synonymy) [nec LANSBERGE 1883].

Type specimen examined. 1♂, Poring, 900 m, Sabah State, Malaysia, 9. I. 1998, T. KIKUTA leg. (holotype, UMS).

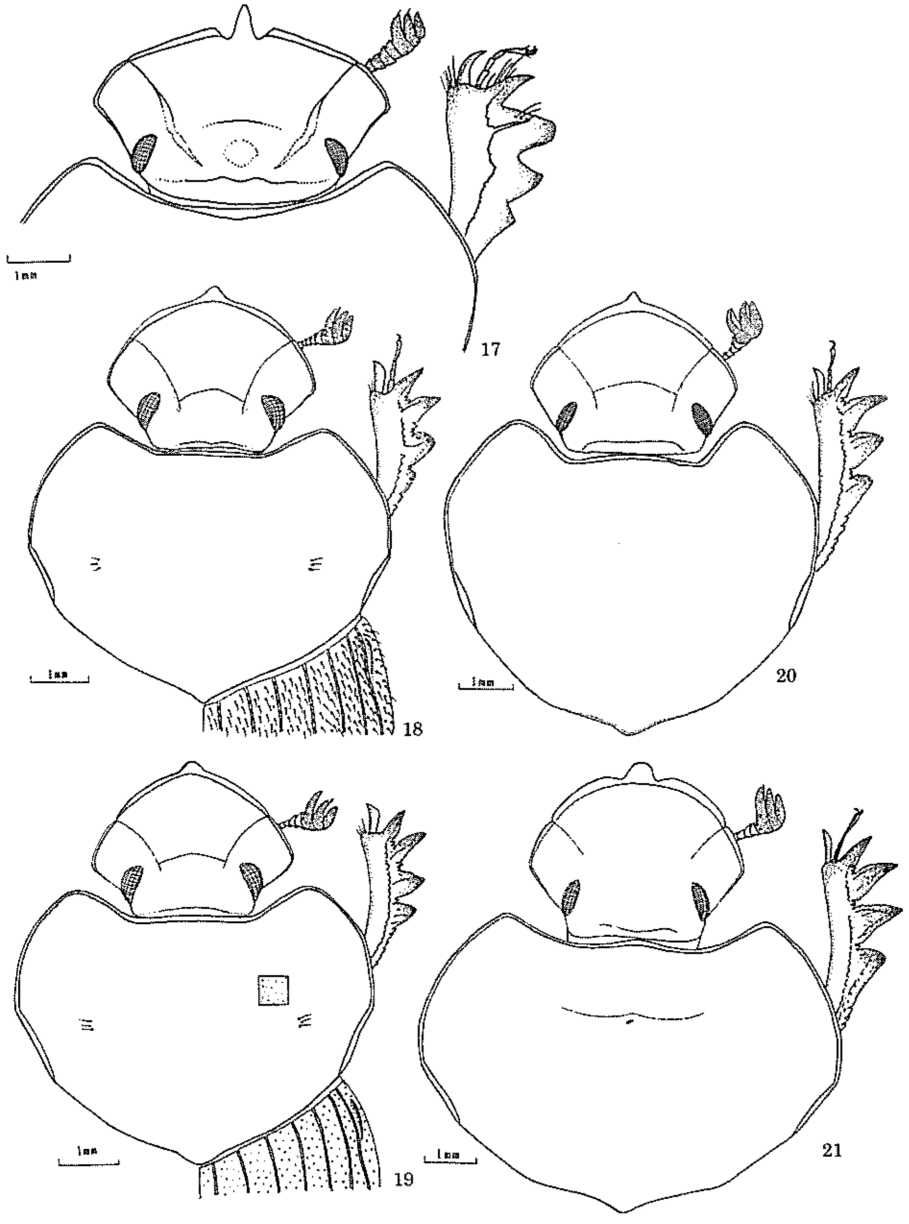
Distribution. Borneo (Sabah, Sarawak and East Kalimantan).

Additional description. Aedeagus small and slender. Phallobase elongate, about 1.0–1.2 mm in length (n = 3), about 0.4 mm in apical width (n = 3). Parameres small, about 0.4 mm in length, each baso-lateral elevation rather long, with tooth distinct, medio-lateral notch narrow and semicircular in outline in lateral view, apico-lateral tooth distinct, apical tooth strongly produced, sharp and clearly visible in lateral view. Female. Head with clypeus more strongly wrinkled; posterior carina stronger and clearly raised. Protibiae with four external teeth stronger; terminal spur ordinary.

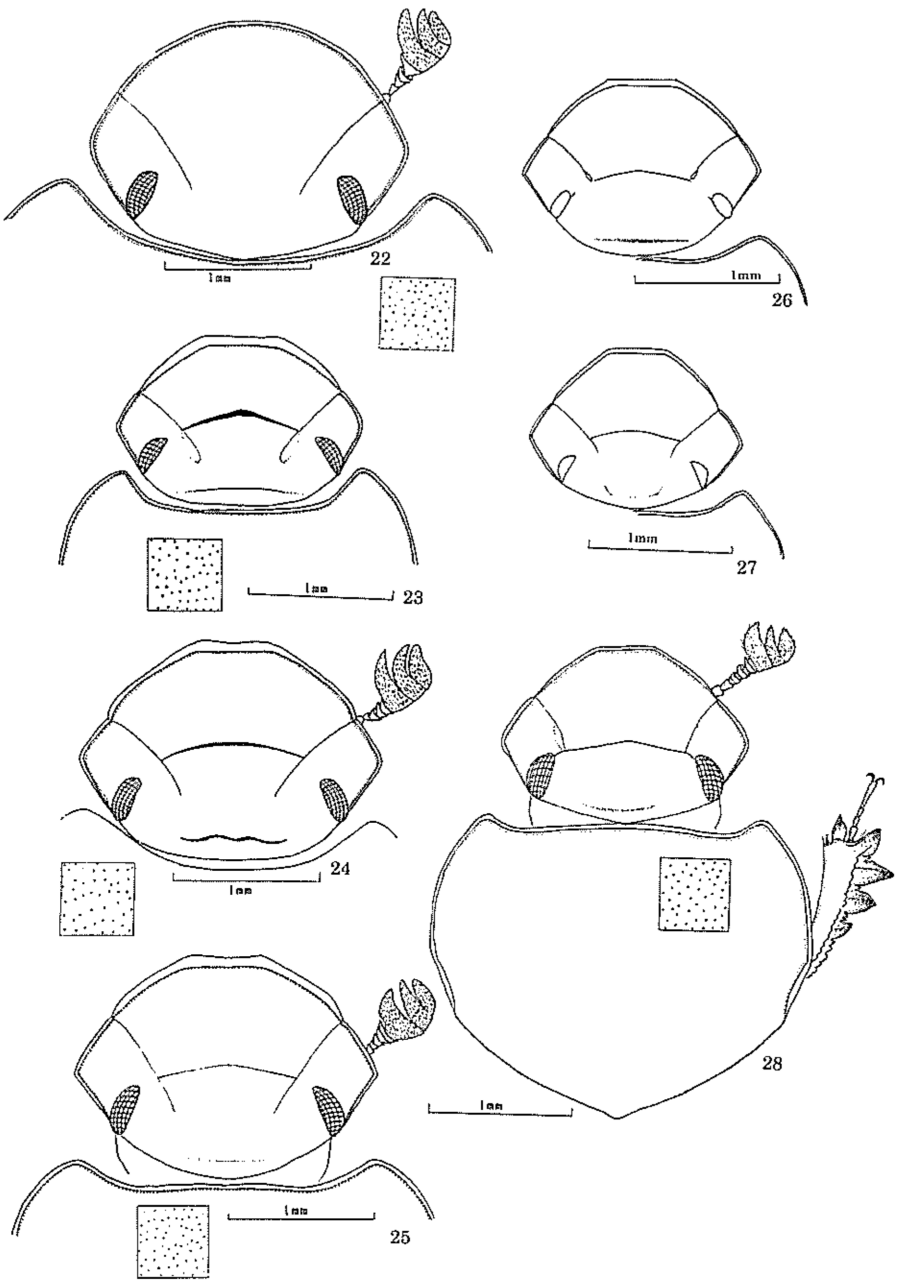
Notes. The present species is originally described from Borneo in 2005 as a sub-



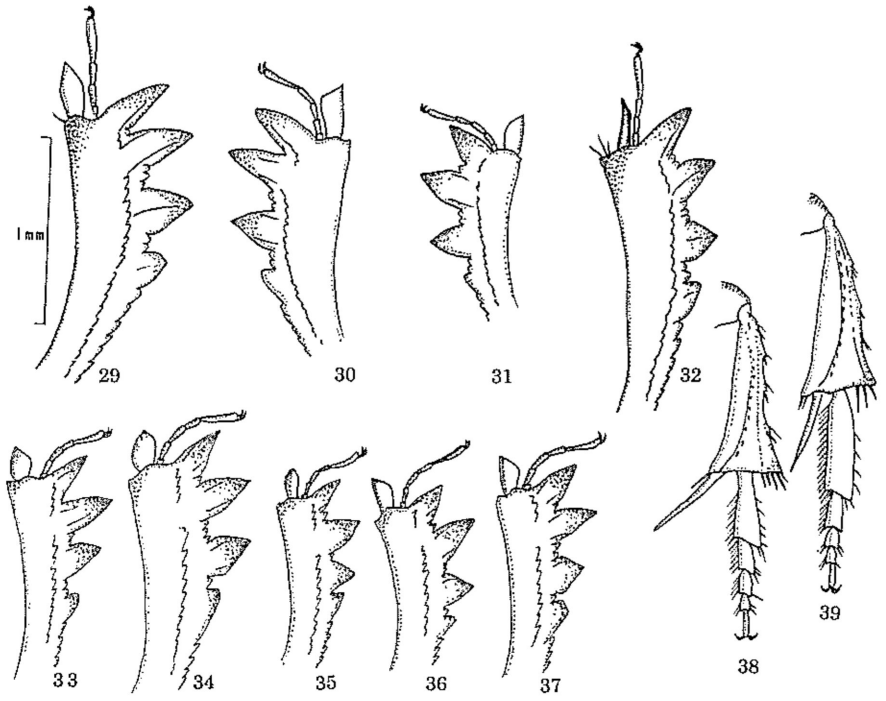
Figs. 11–16. Head and pronotum of *Onthophagus* (*Parascatonomus*) spp., dorsal view. —— 11, *O.* (*P.*) *egregius* ARROW, male; 12, *O.* (*P.*) *dux* SHARP, male; 13, *O.* (*P.*) *rudis* SHARP; 14, *O.* (*P.*) *penicillatus* HAROLD, male; 15, *O.* (*P.*) *riekoae* OCHI et KON, female; 16, *O.* (*P.*) *discedens* SHARP, male.



Figs. 17–21. Head and pronotum of *Onthophagus* (*Parascatonomus*) spp., dorsal view. —— 17, *O.* (*P.*) *fujiokai* OCHI et ARAYA, male; 18, *O.* (*P.*) *aurifex* HAROLD, male; 19, *O.* (*P.*) *semiaureus* LANSBERGE, male; 20, *O.* (*P.*) *sarawacus* HAROLD, male; 21, *O.* (*P.*) *liewi* OCHI et KON, male.



Figs. 22–28. Head and anterior portion of pronotum of *Onthophagus* (*Parascatonomus*) spp., dorsal view. —— 22, *O.* (*P.*) *kikutai* OCHI et KON, male; 23, *O.* (*P.*) *poringensis* OCHI et KON, male; 24, *O.* (*P.*) *semicupreus* HAROLD, male; 25, *O.* (*P.*) *anitidus* OCHI et KON, male; 26, *O.* (*P.*) *tamijii* KON, SAKAI et OCHI; 27, *O.* (*P.*) *sayapensis* OCHI et KON, male; 28, *O.* (*P.*) *gunsalami* OCHI et KON, male.



Figs. 29–39. Tibiae of *Onthophagus* (*Parascatonomus*) spp., in dorsal view, scale 1 mm. —— 29–37, Protibiae; 38, mesitibia; 39, metatibia; 29, *O.* (*P.*) *kikutai* OCHI et KON, male; 30, *O.* (*P.*) *bundutuhanensis* sp. nov., male; 31, *O.* (*P.*) *poringensis* OCHI et KON, male; 32, *O.* (*P.*) *semicupreus* HAROLD, male; 33, *O.* (*P.*) *brendelli* sp. nov., male; 34, *O.* (*P.*) *anitidus* OCHI et KON, male; 35, *O.* (*P.*) *serapiensis* sp. nov., male; 36, *O.* (*P.*) *tamijii* KON, SAKAI et OCHI; 37, *O.* (*P.*) *sayapensis* OCHI et KON, male; 38–39, *O.* (*P.*) *gunsalami* OCHI et KON, male.

species of the Philippine species *Onthophagus* (*Parascatonomus*) *katoi* OCHI et ARAYA, 1992 from the Philippines. We critically examined the morphological characters of *O.* (*P.*) *katoi* and *O.* (*P.*) *katoi poringensis*, and reached the conclusion that *O.* (*P.*) *katoi poringensis* should be raised to an independent species. So, we here upgrade *O.* (*P.*) *katoi poringensis* to a good species. *O.* (*P.*) *poringensis* is distinguished from *O.* (*P.*) *katoi* by the following characters: 1) body is smaller; 2) head is more strongly produced forward, with clypeal margin, narrowly truncate in middle, whereas in *O.* (*P.*) *katoi*, the head is less strongly produced forward, with clypeal margin more broadly truncate in middle; 3) head has a transverse and more distinct carina near posterior margin instead of being transversely and weakly carinate; 4) elytral intervals are more distinctly microgranulose, whereas in *O.* (*P.*) *katoi*, the microgranules weak and often slightly lustrous; 5) male genitalia are clearly smaller, with each paramere bearing a narrower medio-lateral notch narrower and shorter apical tooth than in *O.* (*P.*) *katoi*.

Records of *O.* (*P.*) *pilularius* from Borneo may refer to *O.* (*P.*) *poringensis* OCHI et KON. We have never seen specimens of true *O.* (*P.*) *pilularius* LANSBERGE from Borneo.

Onthophagus (*Parascatonomus*) *semicupreus* HAROLD

(Figs. 24, 32, 58)

Onthophagus (*Parascatonomus*) HAROLD, 1877: 81 (Type area: Sarawak, Borneo; type depository: MNSG); LANSBERGE, 1883: 61; BOUCOMONT, 1914: 276; BOUCOMONT, 1924: 670; KRAJCIK, 2005: 131.

Onthophagus (*Onthophagus*) *semicupreus*; BALTHASAR, 1963: 519.

Onthophagus (*Parascatonomus*) *semicupreus*; KON, SAKAI & OCHI, 2000: 370.

Length: 5.0–8.1 mm; width: 3.4–4.0 mm (n = 26).

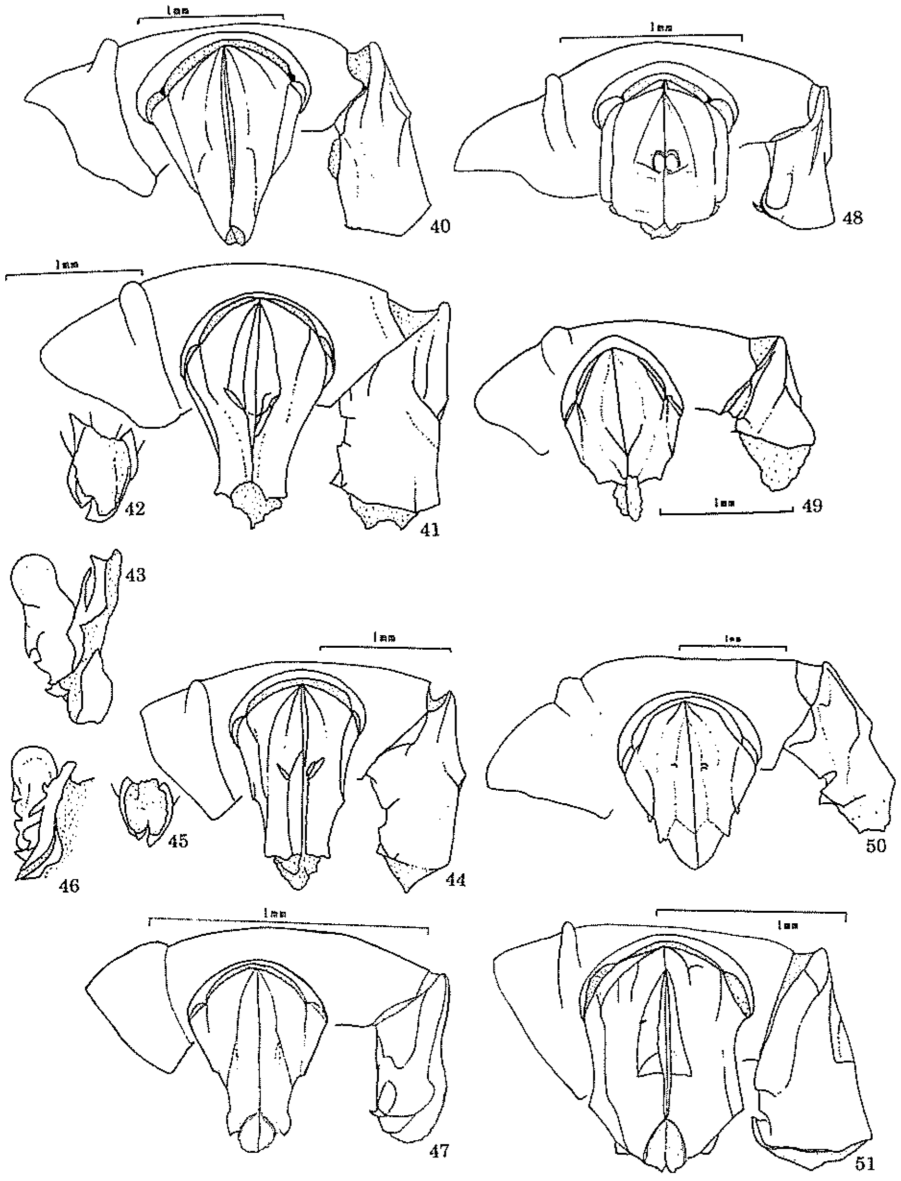
Body small-sized, oblong-oval, strongly convex dorsally; dorsal side glabrous, with head and pronotum shining, elytra opaque; ventral side weakly shining, partly and densely clothed with yellowish hairs. Color black to brownish black; head and pronotum suffused with strong cupreous luster; elytra black with purplish suture; pygidium, legs and ventral surface tinged with weak cupreous to greenish luster; mouth parts, palpi, antennal footstalks reddish brown; club segments of antennae yellowish brown.

Male. Head pentagonal, with a transverse carina before the posterior margin, the carina sharply defined, clearly raised, and slightly sinuous in the middle; clypeus strongly produced forward, with apex truncate or slightly emarginate at middle, broadly bordered and reflexed; frontoclypeal suture distinctly carinate, and weakly procurved at the middle; genal sutures fine, not carinate; genae well produced laterad, obtusely angulate at apex; surface slightly microgranulose, weakly and transversely rugose, finely punctate in the middle, and coarsely and densely so at sides.

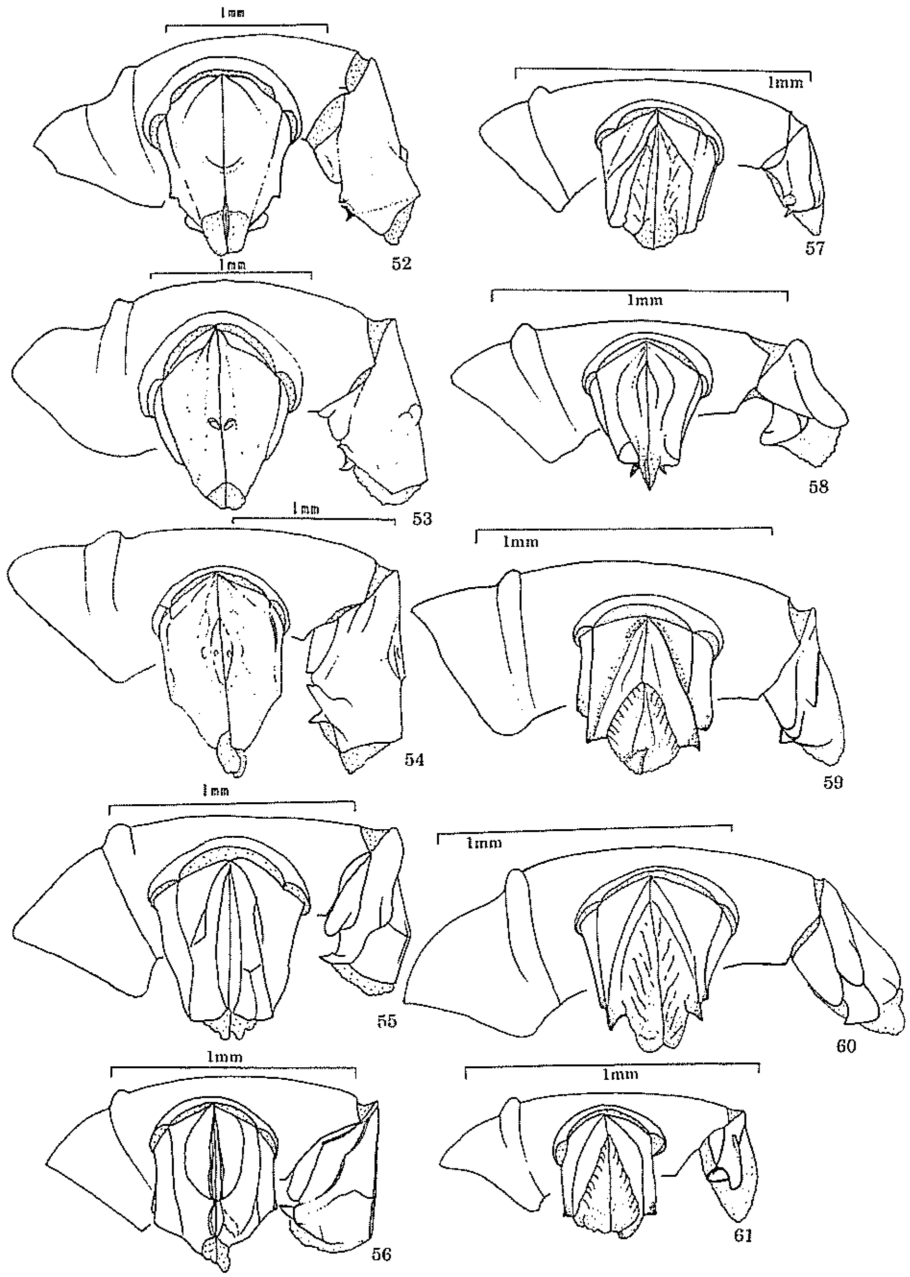
Pronotum rather strongly convex, about 1.3 times as wide as long (n = 4); a longitudinal median groove along midline obtuse; anterior margin emarginate, finely bordered; lateral margins evenly rounded in front, clearly sinuate behind, finely bordered; basal margin obtusely angulate at the middle and only slightly raised at the tip, without distinct marginal line; anterior angles well produced forward, roundly angulate; posterior angles obtuse; surface shining to weakly shining, moderately covered with small punctures, the punctures becoming denser and coarser toward apex and sides.

Elytra about 1.4 times as wide as long (n = 3); striae strongly and rather widely grooved, and ridged throughout on both sides, 7th stria weakly curved near base; strial punctures sparse and slightly strong, and weakly notching either margin of intervals; intervals slightly convex, strongly microgranulose, sparsely and finely punctate.

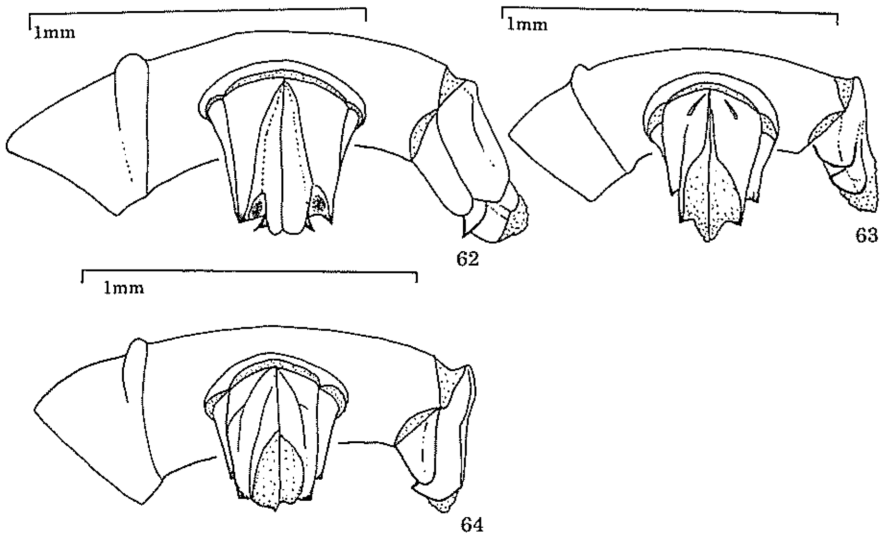
Pygidium distinctly convex, carinate at base, shining to weakly shining though slightly microgranulose, densely covered with transverse ocellate punctures, each hair of punctures very short, Prothorax with anterior angles deeply excavate at the middle of the ventral



Figs. 40–51. *Onthophagus* (*Parascatonomus*) spp. —— 40, 41, 44, 47–51, Male genitalia; 42 & 45, apices of parameres in ventral view; 43 & 46, copulatory lamellae in dorsal and lateral views. —— 40, *O.* (*P.*) *egregius* ARROW; 41–43, *O.* (*P.*) *dux* SHARP; 44–46, *O.* (*P.*) *taichii* sp. nov.; 47, *O.* (*P.*) *rudis* SHARP; 48, *O.* (*P.*) *penicillatus* HAROLD; 49, *O.* (*P.*) *discedens* SHARP; 50, *O.* (*P.*) *fujiokai* OCHI et ARAYA; 51, *O.* (*P.*) *aurifex* HAROLD.



Figs. 52–61. Male genitalia of *Onthophagus* (*Parascatonomus*) spp., dorsal and lateral views. —— 52, *O.* (*P.*) *semiaureus* LANSBERGE; 53, *O.* (*P.*) *sarawacus* HAROLD; 54, *O.* (*P.*) *liewi* OCHI et KON; 55, *O.* (*P.*) *kikutai* OCHI et KON; 56, *O.* (*P.*) *bundutuhanensis* sp. nov.; 57, *O.* (*P.*) *poringensis* OCHI et KON; 58, *O.* (*P.*) *semicupreus* HAROLD; 59, *O.* (*P.*) *brendelli* sp. nov.; 60, *O.* (*P.*) *anitidus* OCHI et KON; 61, *O.* (*P.*) *serapiensis* sp. nov.



Figs. 62–64. Male genitalia of *Onthophagus* (*Parascatonomus*) spp., dorsal and lateral views. —— 62, *O.* (*P.*) *tamijii* KON, SAKAI et OCHI; 63, *O.* (*P.*) *sayapensis* OCHI et KON; 64, *O.* (*P.*) *gunsalami* OCHI et KON.

side. Metasternum convex, obtusely and longitudinally grooved along midline, sparsely covered with small punctures in the middle, the punctures becoming denser, larger and ocellate toward apex; MT-elevation obtuse, with the distal end slightly produced, and then declivous antero-laterally; a very slight transverse groove situated just before MT-elevation. Protibiae slightly broad, curved inward, four external teeth strong; terminal spur somewhat broad and relatively long.

Aedeagus small. Phallobase elongate, about 1.3–1.4 mm in length (n = 3), about 0.5 mm in apical width (n = 3). Parameres fairly narrow in lateral view and quadrate in outline from dorsal view, about 0.6 mm in length (n = 1), each baso-lateral elevation distinct, with tooth very small, medio-lateral notch and apico-lateral tooth undeveloped and invisible, apical tooth well developed, very large.

Female. Head with clypeus more distinctly produced forward than in male; fronto-clypeal suture stronger and posterior carina more strongly raised than in male; surface sculptured or granulate on clypeus, finely punctate on genae and posterior portion. Protibiae with four external teeth stronger, terminal spur ordinary, sharp and decurved than those in male.

Type specimen examined. 3♀♀, labeled as "SYNTYPUS, ♀: *Onthophagus semicupreus* HAROLD, 1877" "typus" "*semicupreus* HAROLD, 116–117", "Borneo, Sarawak, 1865–66, Coll. G. Doria", "Museo Civico di Genova".

Specimens examined. 4♂♂, 2♀♀, Poring, Sabah State, West Malaysia, Borneo, 15. III. 1995, T. KIKUTA leg.; 1♂, 2♀♀, ditto, 12. IV. 1995; 1 ex., Trus Madi, near Keningau,

Sabah State, West Malaysia, Borneo, V. 1994; 1♂, Bunsit Park, Sabah State, West Malaysia, Borneo, 25. III. 1991, T. OCHI leg.; 3♂♂, 4♀♀, Sungai Cina, Kuching, Sarawak State, West Malaysia, 3. VIII. 1980, S. TAKEDA leg.; 8 exs., Sungai Wain R. F., Balikpapan, Kalimantan, 1. III. 2006, A. UEDA leg.

Distribution. Borneo (Sabah, Sarawak and Kalimantan), Sumatra, Java, Malay Peninsula and the Philippines (Palawan Is.).

Onthophagus (*Parascatonomus*) *brendelli* sp. nov.

(Figs. 8, 33, 59)

Length: 5.5–6.5 mm; width: 3.0–3.7 mm (n = 26).

Body small-sized, oblong-oval; dorsal side strongly shining and almost glabrous; ventral side also shining, partly and densely clothed with yellowish hairs. Color black to brownish black; head and pronotum suffused with cupreous luster, frequently greenish in part; elytra uniformly black; pygidium also suffused with greenish to cupreous luster; ventral surface tinged with slight cupreous luster which is stronger on metasternum and legs as like as in *O. semicupreus*; mouth parts, palpi and antennal foot-stalks reddish brown; club segments of antennae yellowish brown.

Male. Head distinctly transverse, less produced forward than in *O. semicupreus*, obtusely and transversely raised along posterior margin, and forming an obtuse carina which sometimes becomes vague; clypeal margin almost rounded and weakly reflexed except for the weakly emarginate or truncate narrow median portion; frontoclypeal suture fine, clearly carinate, the carina curved forward, located before eyes; genal sutures fine, clearly defined, not carinate; genae well produced laterad, obtusely angulate at the middle; surface often slightly microgranulose, transversely wrinkled or granulate on clypeus, sparsely covered with small punctures on the remaining portions.

Pronotum strongly and evenly convex, about 1.3 times as wide as long (n = 3); a longitudinal median groove traceable or almost inconspicuous in basal third; anterior margin emarginate, finely bordered throughout; lateral margins evenly rounded in front, slightly sinuate behind, finely bordered; basal margin obtusely angulate at the middle and only slightly raised at tip, without distinct marginal line; anterior angles well produced forward, obtusely angulate, with each apex rounded; posterior angles obtuse; surface sparsely and evenly covered with small to fine punctures, the punctures becoming denser and coarser toward sides.

Elytra about 1.3 times as wide as long (n = 3); striae strongly and rather widely grooved, and ridged throughout on both sides, 7th stria weakly, often distinctly, curved near base; strial punctures sparse and distinct, feebly notching either margin of intervals; intervals weakly convex, strongly shining and smooth, sparsely covered with fine but distinct punctures, which are clearly smaller than those of pronotal median portion.

Pygidium moderately convex, carinate at base, slightly microgranulose, densely covered with strong transverse ocellate punctures. Prothorax with anterior angles deeply excavate at the middle of the ventral side. Metasternum moderately convex, obtusely and longitudinally grooved along midline, sparsely covered with small punctures in the middle, the punctures becoming fairly denser, larger and ocellate toward apex; MT-elevation more distinct than in *O. semicupreus*, with the distal end clearly defined, and then declivous anterolaterally; a slight transverse groove situated just before MT-elevation. Protibiae relatively broad, slightly curved inward, four external teeth strong; terminal spur short and robust, broadly lanceolate in outline.

Aedeagus moderate-sized. Phallobase somewhat robust, about 1.3–1.4 mm in length (n = 3), about 0.5–0.6 mm in apical width (n = 3). Parameres distinctly quadrate in outline from dorsal view, about 0.6 mm in length (n = 3), each baso-lateral elevation rather short, with tooth distinct, rounded and well produced laterad, medio-lateral notch narrow, apico-lateral tooth well produced and rounded externally in lateral view, apical tooth sharp, clearly visible in lateral view.

Female. Head strongly wrinkled or granulate in front; posterior carina more strongly raised than in male. Pronotum fairly strongly convex. Protibiae with four external teeth stronger, terminal spur ordinary, slender and sharp rather than those in male.

Type series. Holotype: ♂, Danum valley, Malaysia, Sabah, 4° 58′N, 117° 58′E, 5–8. VI. 1996, Col. By A. J. DAVIS, Flight Intercept no. 15/2, BMNH {E} 2002-127 A. J. DAVIS. Paratypes: 1♀, the same data as the holotype; 2♂♂, 2♀♀, ditto, 23–27. IV. 1996; 1 ex., ditto, 27–30. IV. 1996; 1 ex., 30. IV–4. V. 1996; 2 exs., ditto, 8–12. VI. 1996; 1 ex., ditto, 27. IX. 1996; 4 exs., ditto, 29. IX–4. X. 1996; 1 ex., ditto, 30. IX–4. X. 1996; 5 exs., ditto, 29. X–1. XI. 1996; 1 ex., ditto, 1–5. XI. 1996; 1 ex., Sepilok, Sandakan, Sabah State, Malaysia (PF)X. 1996, AYC CHUNG; 1♂, 1♀, Poring, Sabah State, Malaysia, III. 1981, T. OCHI coll.

Type depository. BMNH.

Etymology. The present new species is dedicated to Mr. M. J. D. BRENDELL, former Collections Manager at BMNH for his warm companionship.

Notes. The present new species is closely related to *Onthophagus* (*Parascatonomus*) *semicupreus* HAROLD from Borneo, but can be distinguished from the latter by the following characteristics: 1) elytra with intervals are clearly shining and smooth, whereas in *O.* (*P.*) *semicupreus*, they are distinctly opaque and microgranulose; 2) head bears a very obtuse transverse carina on posterior portion, whereas in *O.* (*P.*) *semicupreus*, the carina is sharply defined in the the same place; 3) in the male, the protibia has short and robust terminal spur which is broadly lanceolate in outline, whereas in *O.* (*P.*) *semicupreus*, the terminal spur is somewhat elongate and not broadly lanceolate in outline; 4) parameres of male genitalia are clearly smaller than those of *O.* (*P.*) *semicupreus*, and differently shaped.

Onthophagus (*Parascatonomus*) *anitidus* OCHI et KON
(Figs. 25, 34, 60)

Onthophagus (*Parascatonomus*) *anitidus* OCHI et KON, 2005: 90.

Type specimen examined. 1♂, Headquarter, Kinabalu Park, 1,800 m, Sabah State, Malaysia, 12. II. 1995, T. KIKUTA leg. (holotype, UMS).

Distribution. Borneo (Sabah).

Additional descriptions. Aedeagus moderate-sized. Phallobase elongate, about 1.3–1.4 mm in length (n = 3), about 0.5–0.6 mm in apical width (n = 3). Parameres broadly quadrate in outline from dorsal view, about 0.6 mm in length (n = 3), each baso-lateral elevation long, with tooth distinct, rounded and clearly visible from dorsal and lateral views, medio-lateral notch narrow, situated near apex, apico-lateral tooth distinct and rounded externally in lateral view, apical tooth sharp, clearly visible in lateral view.

Onthophagus (*Parascatonomus*) *serapiensis* sp. nov.
(Figs. 9, 35, 61)

Length: 5.1–5.3 mm; width: 2.6–2.7 mm (n = 2).

Body small-sized, oblong-oval and well convex above; dorsal side shining and smooth, entirely glabrous; ventral side shining, partly clothed with yellowish hairs. Color black; mouth parts, palpi and antennal foot-stalks reddish brown, club segments of antenna yellowish brown to reddish brown.

Male. Head fairly transverse, weakly and transversely carinate before posterior margin, the carina obtuse, short and curved backward; surface sparsely and finely punctate; clypeus weakly produced forward than in *O. tamijii*; clypeal margin broadly truncate at the middle, gently rounded on both sides, distinctly bordered; genae well produced laterad, obtusely angulate before the middle; frontoclypeal suture finely but clearly carinate, the carina weakly curved forward. Antennae short and compact.

Pronotum evenly and somewhat strongly convex dorsally, about 1.3 times as wide as long (n = 2), with a very obtuse longitudinal median groove in basal third; anterior margin emarginate, finely bordered on either side, unbordered in middle; lateral margins evenly rounded in front, sinuate behind, finely bordered; anterior angles clearly produced forward, roundly angulate; posterior angles rounded; basal margin obtusely angulate at the middle, only slightly raised at tip, without a distinct marginal line; punctures sparse and even, becoming denser and coarser toward sides

Elytra about 1.3 times as wide as long (n = 2); striae strongly and rather widely grooved, and ridged throughout on both sides, with strial punctures clearly sparse and transverse, slightly notching either margin of intervals; 7th stria obviously curved; intervals gently convex, smooth, sparsely and finely punctate.

Pygidium clearly convex in the middle, carinate at base, somewhat densely covered with strong transverse ocellate punctures; apical margin conspicuously broadly bordered at the middle. Prothorax with anterior angles distinctly excavate at the middle of the ventral side. Metasternum obviously convex, distinctly and longitudinally grooved along midline, sparsely and finely punctate in the middle, the punctures becoming denser, larger and asperate apicad; MT-elevation obtuse, with the distal end slightly produced and not clearly defined, and then declivous antero-laterally; a slight transverse groove indistinct. Protibiae short and rather stout, weakly incurved, four external teeth strong; terminal spur short and robust, tumid near apex.

Aedeagus small-sized. Phallobase elongate, about 0.9 mm in length (n = 2), about 0.4 mm in apical width (n = 2). Parameres broadly quadrate in outline from dorsal view, about 0.4 mm in length (n = 2), each baso-lateral elevation short, with tooth pointed, medio-lateral notch indistinct, apico-lateral tooth well produced toward apex in lateral view, apical tooth strongly produced and clearly visible in lateral view.

Female. Unknown.

Type series. Holotype: ♂, Gunung Serapi, Sarawak State, Malaysia, 1981. Paratype: 1 ♂, same data as the holotype. Type depository. BMNH.

Distribution. Borneo (Sarawak).

Etymology. This species is named after the type locality of this species, Gunung Serapi, Sarawak, Malaysia.

Notes. The present new species is closely related to *Onthophagus* (*Parascatonomus*) *tamijii* KON, SAKAI and OCHI from Borneo, but can be distinguished from the latter by the following characteristics: 1) in the male, protibia with terminal spur is short, robust and slightly tumid near apex, whereas in *O.* (*P.*) *tamijii*, it is very short and more strongly tumid near apex; 2) clypeal margin of head is not emarginate in middle, whereas in *O.* (*P.*) *tamijii*, it is emarginate in middle; 3) head is clearly transverse and weakly produced forward, whereas in *O.* (*P.*) *tamijii*, it is not clearly transverse and more strongly produced forward; 4) male genitalia is clearly smaller with parameres very different in shape.

Onthophagus* (*Parascatonomus*) *tamijii KON, SAKAI et OCHI

(Figs. 10, 26, 36, 62)

Onthophagus (*Parascatonomus*) *tamijii* KON, SAKAI et OCHI, 2000: 367.

Type specimens examined. 1 ♀, Lambir Hills National Park, Sarawak State, Malaysia, 3. V. 1998, S. SAKAI leg. (holotype, FDSS); 1 ♀, same data as the holotype (paratype).

Distribution. Borneo (Sabah and Sarawak).

Additional descriptions. Male. Head more transverse than in female; clypeus less strongly produced forward; clypeal margin more shallowly emarginate in middle; frontoclypeal suture more finely carinate; surface slightly and transversely wrinkled along anteri-

or margin of clypeus, evenly and closely covered with small punctures in the middle, the punctures becoming distinctly stronger toward apex and sides. Pronotum less strongly convex than in female, about 1.3 times as wide as long (n = 2); punctures slightly smaller and sparser. Elytra about 1.2–1.3 times as wide as long (n = 3). Metasternum weakly convex, slightly and longitudinally grooved along midline, somewhat sparsely covered with small punctures in the middle, the punctures becoming denser, larger and ocellate toward apex; antero-lateral declivous area densely punctate; MT-elevation distinctly obtuse, with the distal end weakly produced and not clearly defined, and then gently declivous antero-laterally; a slight transverse groove indistinct. Protibiae slightly broad, curved inward, four external teeth strong; terminal spur fairly short, briefly lanceolate and decurved.

Aedeagus somewhat large-sized. Phallobase elongate, about 1.4–1.5 mm in length (n = 3), about 0.5 mm in apical width (n = 3). Parameres broadly quadrate in outline in dorsal view, about 0.5–0.6 mm in length (n = 3), each baso-lateral elevation long, clearly visible from dorsal and lateral views, with tooth distinct and rounded in lateral view, medio-lateral notch situated near apex, apico-lateral tooth indistinct, apical tooth strongly and sharply produced from dorsal and lateral view.

Specimens examined. 1♂, Gunung Serapi, Sarawak, Borneo, 26. VIII. 1996; 2♂♂, Ulu Kimanis, 1,400 m alt., Sabah, 30. VII. 2002; 6♂♂, 5♀♀, Mt. Trus Madi, 1800 ft., Sabah, 18–28. VIII. 1977 (carrion trap), (BMNH); 13♂♂, 6♀♀, Gn. Mulu NP, 4 h Division, Sarawak, III–V. 1978, I. HANSKI, B. M. 1978-524 (Pit fall-trap, fish bait, Alluv. For. Ca. 100 m), (BMNH).

Notes. This species was described from Sarawak based on two female specimens by KON, SAKAI et OCHI (2000). The males described above were associated based on external morphology.

Onthophagus (*Parascatonomus*) *sayapensis* OCHI et KON

(Figs. 27, 37, 63)

Onthophagus (*Parascatonomus*) *sayapensis* OCHI et KON, 2005: 95.

Type specimen examined. 1♂, Sayap, nr. Mt. Kinabalu, Sabah State, Malaysia, 8. XI. 1995, T. KIKUTA leg. (holotype, UMS).

Distribution. Borneo (Sabah).

Additional description. Aedeagus moderate-sized. Phallobase elongate, about 1.0 mm in length (n = 3), about 0.4 mm in apical width (n = 1). Parameres quadrate in outline in dorsal view, about 0.4 mm in length (n = 1), each baso-lateral elevation short and its tooth distinct, clearly visible in dorsal and lateral views, medio-lateral notch narrow, apico-lateral tooth distinct in lateral view, and apical tooth indistinct.

Onthophagus (*Parascatonomus*) *gunsalami* OCHI et KON

(Figs. 28, 38, 39, 64)

Onthophagus (*Parascatonomus*) *gunsalami* OCHI et KON, 2005: 93.

Type specimen examined. ♂, Poring, 900 m, Sabah State, Malaysia, 16. I. 1997, T. KIKUTA leg. (holotype, UMS).

Distribution. Borneo (Sabah).

Additional description. Aedeagus moderate-sized. Phallobase elongate, about 1.2 mm in length (n = 1), about 0.5 mm in apical width (n = 1). Parameres relatively small, about 0.5 mm in length (n = 1), broadly quadrate in outline from dorsal view, each baso-lateral elevation long, with tooth rounded though clearly visible, medio-lateral notch indistinct, apico-lateral tooth well produced and rounded externally, apical tooth indistinct.

Key to the Species of the Subgenus *Parascatonomus* from Borneo

1(10) Pronotum wholly covered with granules.

2(3) Antenna with club segments conspicuously and complicatedly shaped; 1st segment of the club cup-like in ventral view, for receiving the remaining two segments; the last segment diverging into three lobes. Head very deeply notched in the middle with a bifurcate and upturned horn at the middle of the notch. 10.0–13.8 mm .... *O.* (*P.*) *egregius* ARROW

3(2) Antenna with club segments ordinary, not conspicuously and complicatedly shaped. Head not deeply notched in the middle, without an upturned and bifurcate horn at the middle of the notch.

4(7) Pronotum with a strong horizontal process or small tubercle in front. Head with a carina on frontoclypeal suture; clypeal margin with a small upturned triangular tooth in the middle; posterior portion of head with a strong tubercle in the middle.

5(6) Pygidium weakly microgranulose, roughly wrinkled and punctate; the punctures distinctly coarse, round to oval in shape and fairly strong; median portion strongly convex at apical third in male, gently convex in female. Head and pronotum usually with strong to distinct cupreous to dark purplish luster. Head sparsely covered with small to fine punctures in the middle along posterior margin. In male & female: pronotum with a strongly produced horizontal process in the middle in front, though the process is indistinct in minor males. 10.2–16.0 mm ..... *O.* (*P.*) *dux* SHARP

6(5) Pygidium distinctly microgranulose, strongly and finely wrinkled and punctate; the punctures not coarse, fairly transverse and shallow; median portion gently convex in both sexes. Body usually uniformly black, rarely with distinct cupreous luster on head and pronotum. Head densely covered with strong coarse punctures or granules in the middle of posterior margin. In male: pronotum with a small transverse tubercle at the middle in front; the tubercle mostly slightly notched at the middle: in female: pronotum with a strongly produced horizontal process at the middle in front. 10.3–15.6 mm

..... *O.* (*P.*) *taichii* sp. nov.

7(4) Pronotum simply formed, without a tubercle or process in front. Head without a carina on frontoclypeal suture; clypeal margin without a small upturned triangular tooth at the middle; posterior portion of head simply formed or with a transverse tubercle at the middle.

8(9) Head simply formed, without a distinct excavation and tubercle on vertex. Pronotum without a pair of fascicles of erect hairs at base near each posterior angle. Elytral intervals with finely granulated longitudinal rows, which are strongly sinuous, on 2nd, 3rd, 5th, 6th, and 7th intervals. Scutellum absent. 5.5–7.1 mm ····· *O.* (*P.*) *rudis* SHARP

9(8) Head not simply formed, with a distinct excavation and tubercle on vertex. Pronotum with a pair of fascicles composed of 20 or so long erect hairs at base near each posterior angle. Elytral intervals without granulate longitudinal rows. Scutellum present though small. 8.3–12.1 mm ..... *O.* (*P.*) *penicillatus* HAROLD

10(1) Pronotum not wholly covered with granules; surface usually simply punctate in the middle, more or less granulate on either side along lateral margin.

11(16) Protibia very broad, usually without small denticles between four external teeth; terminal spur ordinary, but strongly decurved in both sexes. Body shining dorsally and ventrally, entirely black.

12(13) Head with clypeus not deeply notched in the middle, clypeal margin parabolic in outline and broadly bordered ..... *O.* (*P.*) *riekoae* OCHI et KON

13(12) Clypeus deeply notched in the middle, with a small and simply prolonged tooth at the middle of the notch.

14(15) Head simply formed without a transverse carina or tubercle; gena strongly produced laterad, with genal corner more acute than rectangular. Eyes large, the interspace between eyes about 5.2–5.8 times as wide as width of an eye. Pronotum with anterior angle distinctly rounded; surface smooth, very finely punctate except for granulate lateral portions. 9.0–13.0 mm ..... *O.* (*P.*) *discedens* SHARP

15(14) Head with a short transverse carina occupying in median third on frontoclypeal suture and also with a transverse carina at the middle on posterior portion; gena strongly produced laterad, with genal corner more obtuse than rectangular. Eyes small, the interspace between eyes about 7.7–9.2 times as wide as the width of an eye. Pronotum with anterior angle obtusely angulate; surface weakly wrinkled and granulate in front and at sides, sparsely covered with small punctures in the middle. 11.6–17.7 mm. ..... *O.* (*P.*) *fujiokai* OCHI et ARAYA

16(11) Protibia ordinary, not very broad, usually with small denticles between four external teeth; terminal spur more or less broadened and swollen, often spatulate or briefly lanceolate in male, ordinary in female.

17(24) Head with clypeal margin distinctly produced forward as a small triangular tooth at the middle. Pronotum often with a slight depression in the middle behind anterior margin in major males, simple in females and minor males.

18(21) Head and pronotum usually suffused with distinct cupreous to greenish luster. Pronotum shining to weakly shining, scarcely microgranulose.

19(20) Elytron with intervals slightly convex, strongly and rather closely punctate, and distinctly clothed with long and recumbent hairs which are about 0.1–0.2 mm in length

in fresh individuals (in old individuals, the hairs mostly fall out, in which case, the hairs are sometimes noticeable on the marginal portions of each elytron). Pygidium also distinctly clothed with noticeably long hairs. 8.6–12.0 mm ..... *O.* (*P.*) *aurifex* HAROLD

20(19) Elytron with intervals almost flat, sparsely and rather finely punctate, almost glabrous. (in reality, very minute setae are noticeable). Pygidium glabrous or clothed with short hairs. 8.5–11.6 mm ..... *O.* (*P.*) *semiaureus* LANSBERGE

21(18) Head and pronotum uniformly black, without metallic luster. Pronotum opaque to weakly shining, predominantly distinctly microgranulose.

22(23) Head with clypeal margin clearly but slightly produced as a small triangular tooth at the middle, either side of the tooth not distinctly notched; vertex weakly and rather briefly carinate, the carina low, not distinctly raised. Body somewhat opaque to weakly shining. 9.0–14.0 mm..... *O.* (*P.*) *sarawacus* HAROLD

23(22) Head with clypeal margin strongly produced as a small triangular tooth at the middle, either side of the tooth distinctly notched; vertex strongly and widely carinate, the carina distinctly raised. Body strongly opaque. Length: 10.4–14.4 mm ..... *O.* (*P.*) *liewi* OCHI et KON

24(17) Head with clypeal margin not distinctly produced forward as a small triangular tooth at the middle; usually rounded, otherwise truncate or emarginate at apex. Pronotum simply formed.

25(34) Head and pronotum suffused with strong metallic luster.

26(29) Head with frontoclypeal suture not carinate.

27(28) Elytra not entirely black, tinged with weak metallic luster; intervals distinctly hairy. In male: protibia with terminal spur neither distinctly dilated apicad, nor obliquely truncate at apex. 4.6–8.5 mm ..... *O.* (*P.*) *kikutai* OCHI et KON

28(27) Elytra entirely black, not tinged with weak metallic luster; intervals not distinctly hairy. In male: protibia with terminal spur distinctly dilated apicad, and obliquely truncate at apex. 6.4–8.5 mm ..... *O.* (*P.*) *bundutuhanensis* sp. nov.

29(26) Head with frontoclypeal suture carinate.

30(31) Elytra suffused with distinct greenish luster. Head and pronotum usually with strong greenish luster, occasionally with bright cupreous luster in part. Pronotum moderately covered with rather small but strong punctures. 4.5–5.7 mm ..... *O.* (*P.*) *poringensis* OCHI et KON, stat. nov.

31(30) Elytra not suffused with greenish luster. Head and pronotum usually with strong cupreous luster, frequently with weak greenish luster partly.

32(33) Elytron with intervals clearly microgranulose and opaque. Head with a strong and sharp transverse carina before posterior margin. In male: protibia with terminal spur elongate and cylindrical, not briefly lanceolate in outline. 5.0–8.1 mm..... *O.* (*P.*) *semicupreus* HAROLD

33(32) Elytron with intervals clearly shining, without microgranules. Head with a weak and obtuse transverse carina before posterior margin. In male: protibia with terminal spur remarkably short, briefly lanceolate in outline. 5.5–6.5 mm ..... *O.* (*P.*) *brendelli* sp. nov.

34(25) Head and pronotum uniformly black.

35(36) Elytral intervals distinctly microgranulose, entirely mat or at most partly shining; punctures on intervals very sparse and fairly fine. 6.1–7.5 mm ..... *O.* (*P.*) *anitidus* OCHI et KON

36(35) Elytral intervals shining, frequently scarcely microgranulose in part; punctures on intervals neither very sparse nor fairly fine.

37(38) In male: protibia with terminal spur rather short and slightly tumid near apex, though not briefly lanceolate in outline. Head weakly produced forward, with clypeal margin transversely semicircular in outline and slightly truncate in middle; clypeal surface simply punctate. Female unknown. 5.1–5.3 mm ..... *O.* (*P.*) *serapiensis* sp. nov.

38(37) In male: protibia with terminal spur very short and robust, briefly lanceolate in outline. In male and female: Head strongly produced forward, with clypeal margin trapezoidal in outline, emarginate or truncate at apex; clypeal surface wholly or partly granulate.

39(40) Head with clypeal margin weakly emarginate in middle; vertex with a distinct transverse carina before posterior margin. Metasternum with MT-elevation not distinctly raised, very obtuse. 5.1–5.9 mm. Species known from lowland or low mountainous regions from Borneo (below less than 600 m altitude) ..... *O.* (*P.*) *tamijii* KON, SAKAI et OCHI

40(39) Head with clypeal margin truncate or very weakly emarginate in middle; vertex without a distinct transverse carina before posterior margin. Metasternum with MT-elevation distinctly raised, not very obtuse. Species known from mountainous regions from Borneo (above more than 600 m altitude).

41(42) Metasternum with distal end of MT-elevation more acute than rectangular. Eyes small, interspace between them about 6.5–7.2 times as wide as an eye (n = 3). Anterior portion of head, anterior angles of pronotum, and pygidium tinged with weak purplish luster. 6.6–7.7 mm ..... *O.* (*P.*) *gunsalami* OCHI et KON

42(41) Metasternum with distal end of MT-elevation not more acute than rectangular. Eyes large, interspace between them about 5.5–6.3 times as wide as an eye (n = 3). Anterior portion of head, anterior angles of pronotum, and pygidium not tinged with weak purplish luster 4.1–6.1 mm ..... *O.* (*P.*) *sayapensis* OCHI et KON

要　　約

越智 輝雄・近 雅博・Maxwell V. L. BARCLAY：ボルネオ産エンマコガネ属のツヤエンマコガネ亜属 *Parascatonomus* の総説. ——— 大英博物館 (The Natural History Museum) および筆者らの標本を基に，ボルネオより4新種を記載し，18種のツヤエンマコガネ亜属の種を再記載した. 4新種のうち1種は，日本の甲虫分類学の発展に貢献された芝田太一氏に因んで *O.* (*P.*) *taichii* sp. nov. と命名した. 他の4新種は，それぞれ地名や研究者に因んで *O.* (*P.*) *brendelli* sp. nov., *O.* (*P.*) *bundutuhanensis* sp. nov., *O.* (*P.*) *serapiensis* sp. nov.と命名した. 18種の既知種のうち，ジェノバ博物館に保存されている *O.* (*P.*) *sarawacus* HAROLD をレクトタイプ（後模式標本）に指定し，また，ボルネオから記載された亜種 *O.* (*P.*) *katoi poringensis* OCHI et KON を種に昇格させた. 併せて，♂が未見であった *O.* (*P.*) *tamijii* KON,

SAKAI et OCHI のどの特徴を記載した.

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