

Dung Beetles (Coleoptera, Scarabaeoidea) Collected from Sabah, Borneo (I)¹⁾

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Abstract Twenty-one species of dung beetles, collected by the Kyoto University Expeditions to Sabah, Borneo (1985, 1987), are recorded. One new species of the genus *Onthophagus* is described from Sabah, Borneo, under the name of *O. (Phanaeomorphus) johkii* sp. nov. *Catharsius (Catharsius) dayacus* LANSBERGE, previously synonymized with *C. (C.) molossus* (LINNÉ), is regarded as a valid species and redescribed based on the specimens collected during the present survey.

More than 3,000 examples of dung beetles (Coleoptera, Scarabaeoidea) were collected by the junior author (M. KON) during the Kyoto University Expeditions to Sabah, Borneo (1985, 1987). Collections were made by using traps baited with a mass of either water-buffalo or human dung in Sepilok and Sungai Manila near Sandakan, Brumas near Tawau and Keningau (Fig. 1). We recognized 39 species in the collection. Four of those were new to science, and one was recorded for the first time from Borneo.

In the present part, we are going to record 20 species of dung beetles and to describe one new species of the genus *Onthophagus*.

Family Scarabaeidae

Subfamily Scarabaeinae

Tribe Gymnopleurini

Gymnopleurus (Paragymnopleurus) maurus SHARP

(Fig. 2)

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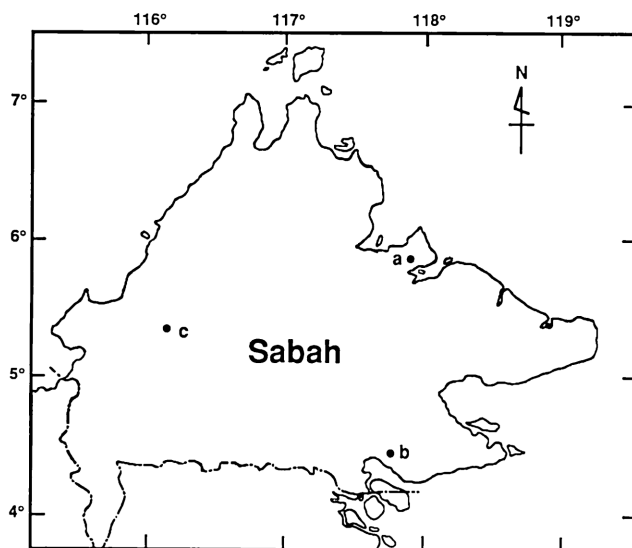


Fig. 1. A sketch map of Sabah, Borneo, showing the localities at which collections were made. a, Sepilok and Sungai Manila near Sandakan; b, Brumas near Tawau; c, Keningau.

Gymnopleurus maurus SHARP, 1875, Coleopt. Hefte, 13, p. 34 — HAROLD, 1877, Anli. Mus. civ. Stor. nat. Genova, 10, p. 38. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 248. — HANSKI, 1983, Acta zool. fenn., 167, p. 45.

Paragymnopleurus maurus: JANSSENS, 1875, Mém. Mus. r. Hist. nat. Belg., 2 (16), p. 20.

Gymnopleurus (Paragymnopleurus) maurus: BALTHASAR, 1963, Monogr. Scarab., 1, p. 217.

Specimens examined. 1 ex., Sepilok, 29-VII-1987; 1 ex., ditto, 4-VIII-1987; 4 exs., ditto, 5-VIII-1987; 3 exs., ditto, 7-VIII-1987.

Distribution. Borneo, Sumatra, Malay Peninsula.

Gymnopleurus (Paragymnopleurus) sparsus SHARP

(Fig. 3)

Gymnopleurus sparsus SHARP, 1875, Coleopt. Hefte, 13, p. 38. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 248.

Paragymnopleurus sparsus: JANSSENS, 1875, Mém. Mus. r. Hist. nat. Belg., 2 (16), p. 22.

Gymnopleurus (Paragymnopleurus) sparsus: BALTHASAR, 1963, Monogr. Scarab., 1, p. 221.

Specimens examined. 2 exs., Sepilok, 29-VII-1987; 2 exs., ditto, 2-VIII-1987; 9 exs., ditto, 7-VIII-1987; 1 ex., ditto, 8-VIII-1987; 1 ex., ditto, 12-VIII-1987.

Distribution. Borneo, Java, Philippines.

Tribe Sisyphini

Sisyphus (Sisyphus) thoracicus SHARP

(Fig. 4)

Sisyphus thoracicus SHARP, 1875, Coleopt. Hefte, 13, p. 39. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 254. — ARROW, 1927, Ann. Mag. nat. Hist., 9, (19), p. 465.

Sisyphus (Sisyphus) thoracicus: HAAF, 1955, Ent. Arb. Mus. Frey, 4, p. 358. — BALTHASAR, 1963, Monogr. Scarab., 1, p. 241.

Specimens examined. 2 exs., Sepilok, 29-VII-1987; 1 ex., ditto, 30-VII-1987; 1 ex., ditto, 1-VIII-1987; 8 exs., ditto, 2-VIII-1987; 5 exs., ditto, 4-VIII-1987; 67 exs., ditto, 5-VIII-1987; 72 exs., ditto, 7-VIII-1987; 21 exs., ditto, 8-VIII-1987; 1 ex., ditto, 12-VIII-1987; 1 ex., Keningau, 17-VIII-1987.

Distribution. Borneo, Java, Sumatra, Philippines.

Subfamily Coprinae

Tribe Coprini

Catharsius (Catharsius) dayacus LANSBERGE

(Figs. 18-21)

Catharsius dayacus LANSBERGE, 1886, Tijdschr. Ent., 29, p. 6. — GILLET, 1911, Coleopt. Cat., (38), p. 67. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 330. — PAULIAN, 1936, Treubia, 15, p. 395.

Catharsius molossus var. *dayacus*: BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 8.

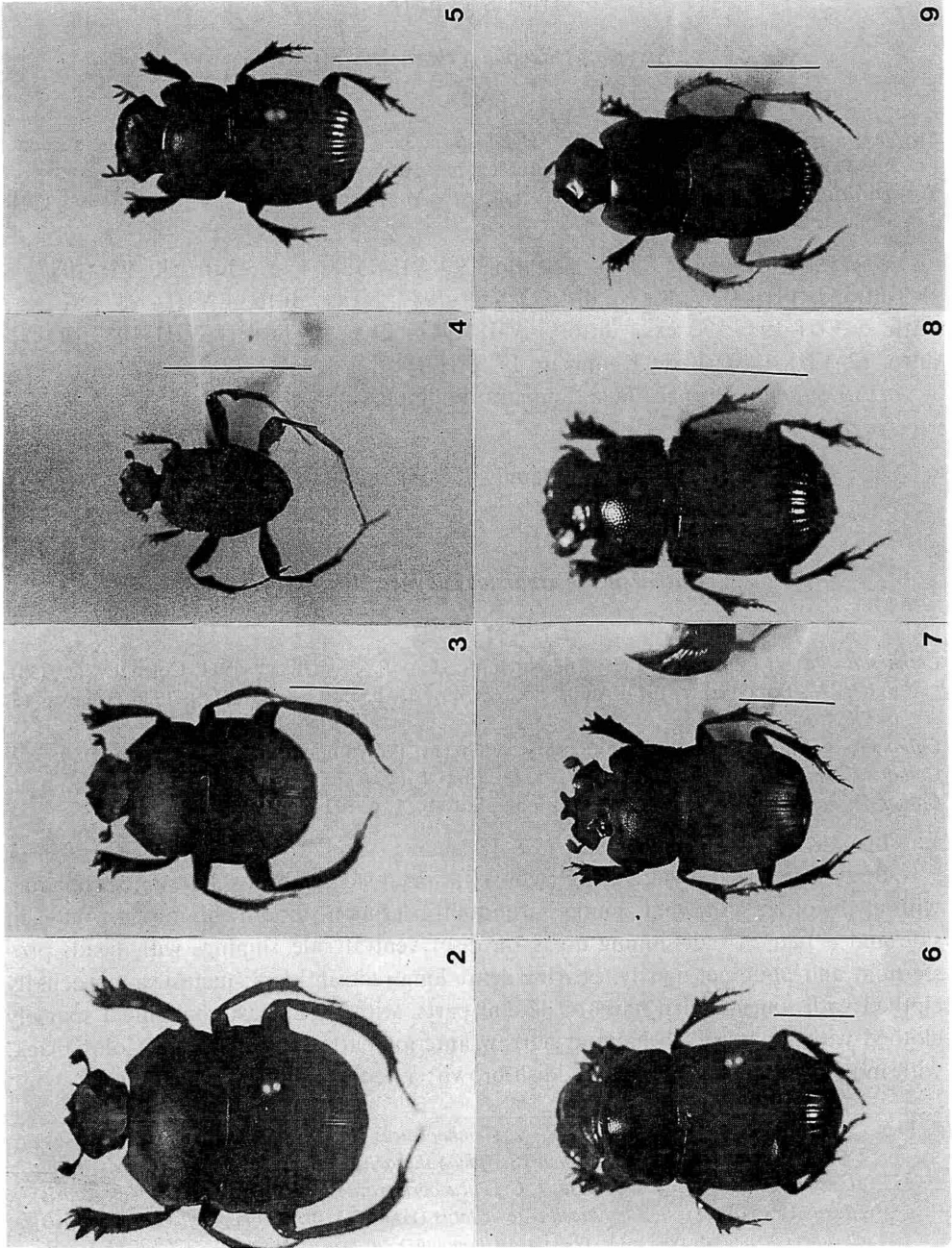
Catharsius molossus dayacus: PAULIAN, 1945, Fn. Emp. fr., 3, p. 70.

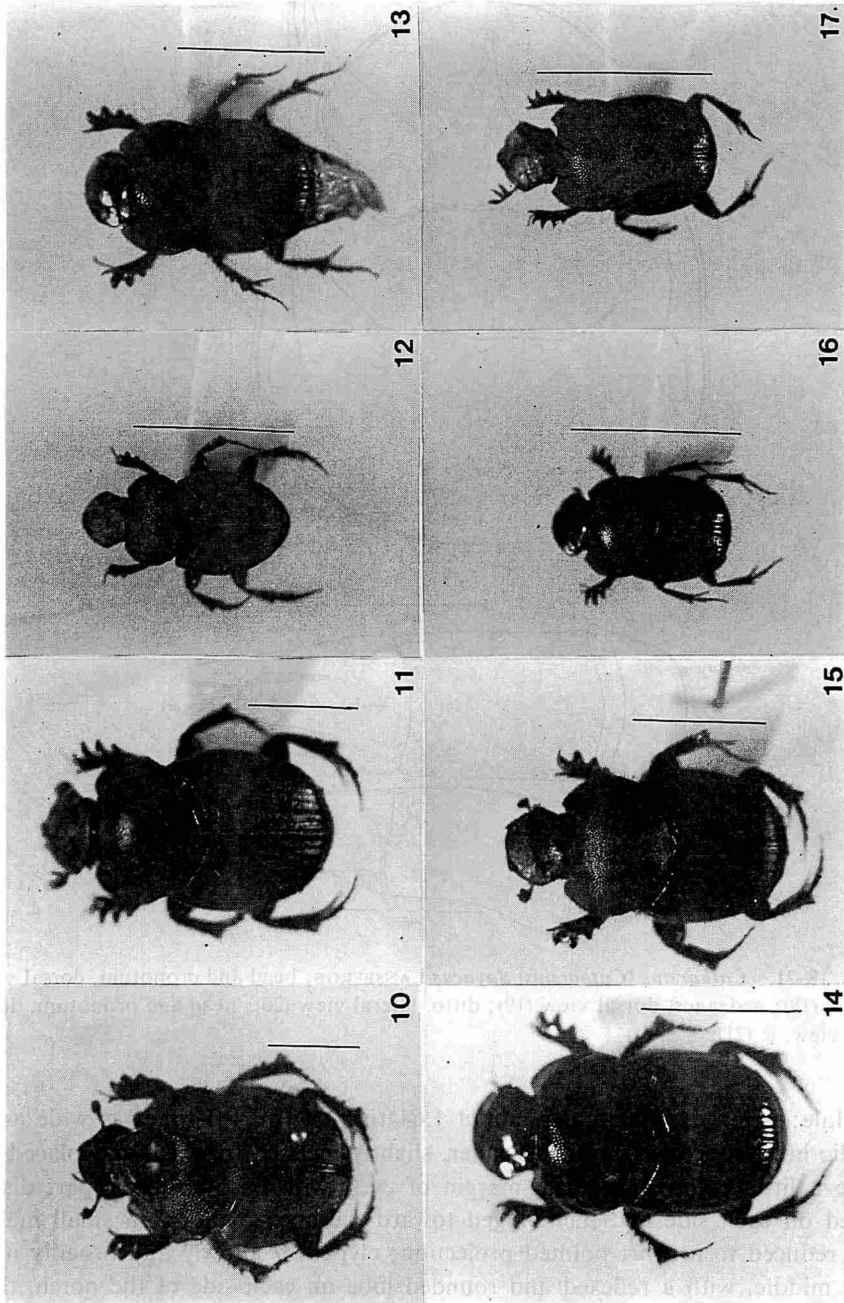
Catharsius molossus: BALTHASAR, 1963, Monogr. Scarab., 1, p. 307 [*partim*].

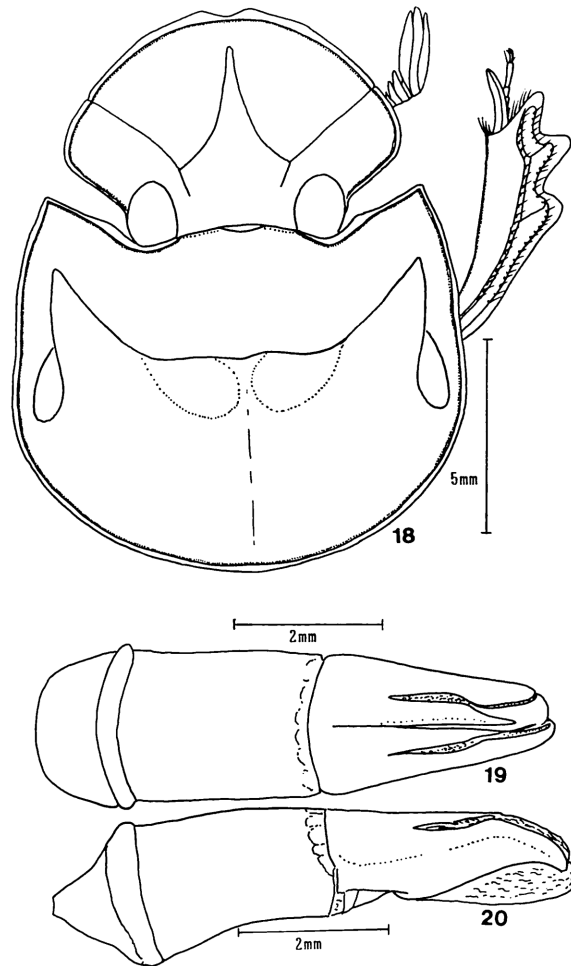
Length, 22.3-32.8 mm; width, 12.8-18.1 mm.

Body large-sized, oval, strongly convex; dorsal side glabrous and almost opaque, with elytra often somewhat shining, pronotum bearing a smooth shining part on each side and a pair of half-shining areas on disc; ventral side shining, with head, prosternum and abdomen partly, bearing dense long reddish hairs; metasternum densely clothed with long reddish hairs on lateral parts, with the metasternal shield sparsely clothed with long reddish hairs at narrow anterior part along margin. Color black, with mouth parts and antennae reddish brown; antennal clubs brownish black.

Figs. 2-17 (on pp. 00-00). Habitus. — 2, *Gymnopleurus (Paragymnopleurus) maurus* SHARP; 3, *G. (P.) sparsus* SHARP; 4, *Sisyphus (Sisyphus) thoracicus* SHARP; 5, *Copris (Copris) agnus* SHARP; 6, *C. (C.) numa* LANSBERGE; 7, *C. (Paracopris) ramosiceps* GILLET; 8, *C. (Microcopris) reflexus* (FABRICIUS); 9, *Euoniticellus tessellatus* (HAROLD); 10, *Onthophagus (Proagoderus) schwaneri* VOLLENHOVEN; 11, *O. (Parascatonomus) sarawacus* HAROLD; 12, *O. (P.) rudis* SHARP; 13, *O. (Serrophorus) sagittarius* (FABRICIUS); 14, *O. (S.) laevis laevis* HAROLD; 15, *O. (S.) mulleri* LANSBERGE; 16, *O. (Phanaeomorphus) banguyensis* BOUCOMONT; 17, *O. (P.) johkii* OCHI et KON, sp. nov. (Scale: 5 mm.)

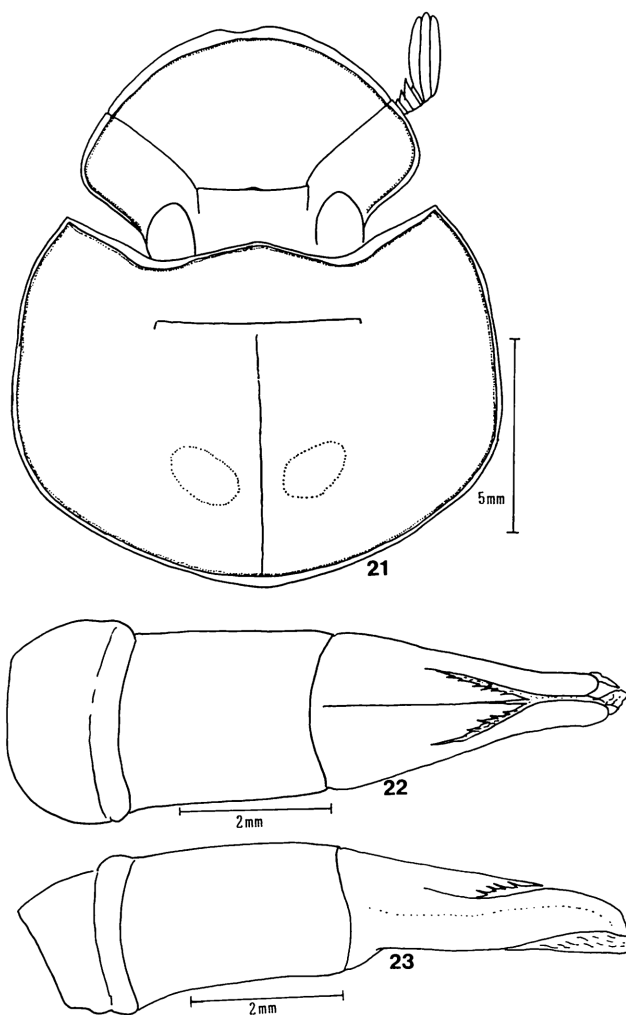






Figs. 18-21. *Catharsius (Catharsius) dayacus* LANSBERGE; head and pronotum, dorsal view, ♂ (18); aedeagus, dorsal view (19); ditto, lateral view (20); head and pronotum, dorsal view, ♀ (21).

Male:— Head semicircular, about 1.64 to 1.89 ($n=18$) times as wide as long; cephalic horn subconical, rather slender, slightly inclined forward, and placed in the middle a little before the apical margin of eyes, with baso-posterior part distinctly toothed on each side and then ridged toward the apex of horn, in small males the horns reduced to a short pointed projection; clypeus shallowly and broadly notched in the middle, with a reflexed and rounded lobe on each side of the notch, the rest margin reflexed and broadly bordered; genae produced laterally, with genal angles more broadly rounded than in the congeners, margin widely bordered anteriorly, finely so posteriorly; eyes large, the interspace between them about 2.5 to 3.1 times



Figs. 22–23. *Catharsius (Catharsius) molossus* (LINNÉ) from Thailand; aedeagus, dorsal view (22); ditto, lateral view (23).

as wide as the width of one eye; surface densely and transversely rugose on clypeus and round the horn, densely and coarsely granulate on genae, shining and smooth on posterior half between eyes which is finely punctate laterally.

Pronotum strongly convex, about 1.60–1.88 ($n=18$) times as wide as long, with a slight longitudinal impression along median line in posterior three-fifths; anterior margin bisinuate and bordered, with marginal line broadest on each sinuation, indefinite in middle; lateral margins generally rounded and bordered though weakly sinuate before the middle; anterior angles broadly truncate, with each outer corner obtusely

and distinctly angulate; posterior angles obtuse; disc abruptly declivous in anterior two-fifths with upper edge of the declivity almost straightly and obtusely ridged, sides of the declivity very strongly produced forward as a little divergent large process which has an oval, rather deep and smooth excavation beneath; surface densely covered with small round granules except for the shining and smooth part between the lateral excavation and the sinuation of anterior margin on each side; the granules on a pair of the half-shining areas flat and somewhat polished; in small males, the lateral processes less prominent, the lateral excavations and the shining smooth parts becoming narrower or obsolete.

Elytra about 1.14 to 1.28 ($n=18$) times as wide as long; disc strongly convex, with nine striae, the 1st to 8th striae extending from base to near apex between sutural margin and lateral costa, the 9th also extending from base to near apex between lateral costa and lateral margin, the 2nd and 9th, the 3rd and 6th, the 4th and 5th, the 7th and 8th joining at apices and the 1st isolated; all striae shallowly and finely but distinctly impressed, with striae punctures vague; intervals almost flat, microrugose and indistinctly microgranulose.

Pygidium weakly convex, about twice as wide as long, distinctly microgranulose, moderately densely covered with asperate punctures on median and apical parts, the punctures gradually changing into granules towards base and sides. Metasternum with a weak longitudinal impression along median line, median part smooth, shining and rather sparsely punctate. Protibiae broad, slightly incurved, with three strong lateral teeth; terminal spur normal, a little curved internally. Meso- and metatibiae strongly dilated apicad, each with apex quadrilobed; tarsi relatively broad, with the 1st segment distinctly shorter than twice the 2nd.

Aedeagus robust, about 6.6 to 7.3 mm in length ($n=6$). Parameres short, about 3.2 to 3.3 mm in length, about 0.8 to 0.9 times as long as phallobase ($n=6$).

Female:— Head with a strong transverse carina a little before the anterior margin of eyes, then gently sloping downward anteriorly and somewhat steeply declivous posteriorly; the carina almost straight, sharply toothed on each side and slightly pointed in the middle. Pronotum abruptly declivous in anterior fifth, with the upper edge of the declivity forming an almost straight transverse carina. Meso- and metatibiae with tarsi broader than in the male.

Specimens examined. 1 ex., Sepilok, 30-VII-1987; 1 ex., ditto, 1-VIII-1987; 1 ex., ditto, 2-VIII-1987; 1 ex., ditto, 4-VIII-1987; 9 exs., ditto, 5-VIII-1987; 2 exs., ditto, 6-VIII-1987; 1 ex., ditto, 7-VIII-1987; 13 exs., ditto, 8-VIII-1987.

Distribution. Borneo.

Notes. *Catharsius dayacus* was originally described from Borneo by LANSBERGE in 1886. Later in 1921, this taxon was treated as a variety of *C. molossus* by BOUCOMONT and GILLET. BALTHASAR (1963) regarded *C. dayacus* as a junior synonym of *C. molossus*. However, he showed no concrete evidence about this treatment. Since BALTHASAR's (1963) monograph, *C. dayacus* has never been referred to for three decades.

Through the examination of the specimens of *Catharsius molossus* collected in the

present survey, we found these specimens separable into two distinct forms based on the morphology of external and male genitalic characters. According to LANSBERGE'S (1886) original description of *C. dayacus*, we have concluded that the specimens from Sepilok correspond to *C. dayacus* LANSBERGE and those from Brumas and Keningau to *C. molossus* (LINNÉ). Thus, we regarded *C. dayacus* as a good species.

Catharsius (Catharsius) molossus (LINNÉ)

(Figs. 22–27)

Scarabaeus molossus LINNÉ, 1758, Syst. Nat., ed. 10, p. 347.

Copris molossus: FABRICIUS, 1801, Syst. Eleuth., 1, p. 42.

Catharsius molossus: HAROLD, 1877, Anni. Mus. civ. Stor. nat. Genova, 10, p. 44. — LANSBERGE, 1886, Tijdschr. Ent., 29, p. 5. — BOUNCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 329. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 8. — ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., 3, p. 94. — BALTHASAR, 1935, Scarab. Monogr., 1, p. 65. — PAULIAN, 1936, Treubia, 15, p. 395; 1945, Fn. Emp. fr., 3, p. 69. — BALTHASAR & CHŪJŌ, 1964, Coleopt. S. E. Asia, 3, p. 182. — KRZYZHANOVSKIJ & MEDVEDEV, 1966, Ent. Obozr., 45, p. 212. — HANSKI, 1983, Acta zool. fenn., 167, p. 45.

Catharsius (Catharsius) molossus: BALTHASAR, 1963, Monogr. Scarab., 1, p. 307. — MASUMOTO, 1987, Ent. Rev. Japan, 42, p. 128.

Scarabaeus abbreviatus HERBST, 1789, Käfer, 2, p. 53.

Scarabaeus berbiceus HERBST, 1789, Käfer, 2, p. 227.

Scarabaeus janus OLIVIER, 1789, Ent. I. Scarb., p. 101.

Copris ursus FABRICIUS, 1801, Syst. Eleuth., 1, p. 43.

Catharsius timorensis LANSBERGE, 1879, Anns. Soc. ent. Belg., 22, p. 148.

Catharsius dubius PAULIAN, 1936, Treubia, 15, p. 396 [*nomen nudum*].

Catharsius borneensis PAULIAN, 1936, Treubia, 15, p. 396 [*nomen nudum*].

Specimens examined. 14 exs., Keningau, 17–VIII–1987; 3 exs., ditto, 18–VIII–1987; 6 exs., Brumas, 23–VII–1987; 4 exs., ditto, 24–VII–1987; 3 exs., ditto, 25–VII–1987; 5 exs., ditto, 26–VII–1987; 4 exs., ditto, 27–VII–1987.

Distribution. Afghanistan, Sri Lanka, India, Myanmar, Indochina, Malay Peninsula, Sumatra, Andaman, Java, Borneo, China, Taiwan.

Copris (Copris) agnus SHARP

(Fig. 5)

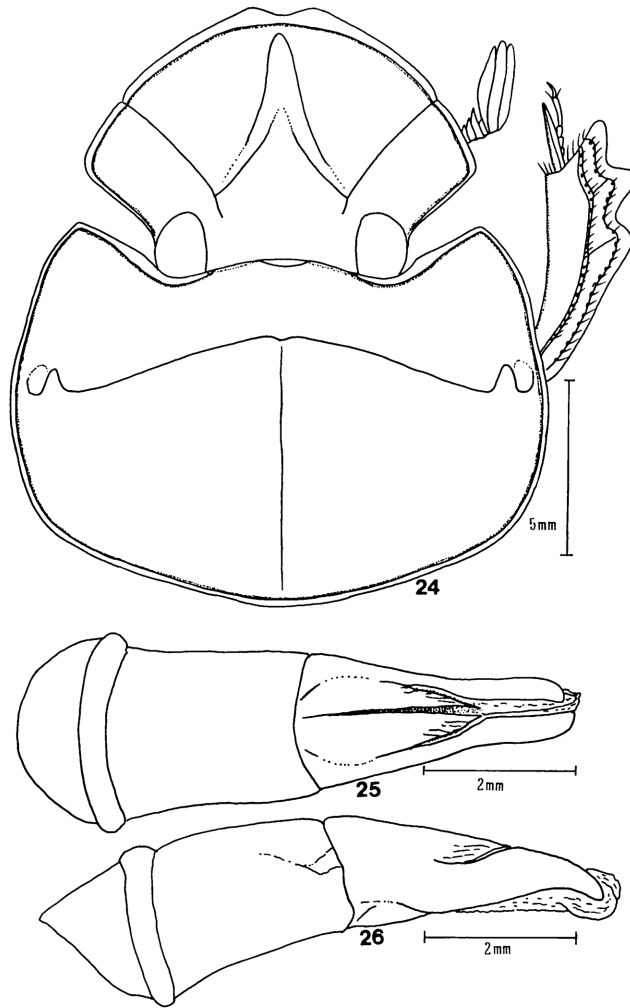
Copris agnus SHARP, 1875, Coleopt. Hefte, 13, p. 47. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 334. — HANSKI, 1983, Acta zool. fenn., 167, p. 45.

Copris (Copris) agnus: BALTHASAR, 1963, Monogr. Scarab., 1, p. 307. — OCHI & ARAYA, 1992, G. it. Ent., 6, p. 83.

Copris servius HAROLD, 1877, Anni. Mus. civ. Stor. not. Genova, 10, p. 46.

Specimens examined. 1 ex., Sepilok, 4–VIII–1987; 3 exs., ditto, 7–VIII–1987; 1 ex., ditto, 8–VIII–1987.

Distribution. Borneo, Malay Peninsula, Singapore Is.



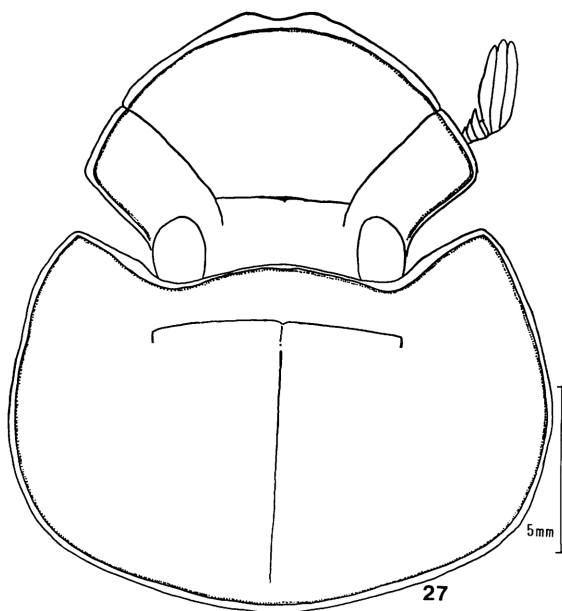
Copris (Coprís) numa LANSBERGE

(Fig. 6)

Copris numa LANSBERGE, 1886, Tijdschr. Ent., 29, p. 19. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 332. — ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., 3, p. 211.
Copris (Coprís) numa: BALTHASAR, 1963, Monogr. Scarab., 1, p. 364. — OCHI & ARAYA, 1992, G. it. Ent., 6, p. 83.

Specimens examined. 1 ex., Sepilok, 7-VIII-1987; 1 ex., Keningau, 17-VIII-1987.

Distribution. North India, Myanmar, Malay Peninsula, Sumatra, Borneo.



Figs. 24–27 (on pp. 000–000). *Catharsius (Catharsius) molossus* (LINNÉ) from Borneo; head and pronotum, dorsal view, ♂ (24); aedeagus, dorsal view (25); ditto, lateral view (26); head and pronotum, dorsal view, ♀ (27).

Copris (Paracopris) ramosiceps GILLET

(Fig. 7)

Copris ramosiceps GILLET, 1921, Anns. Soc. Sci. Bruxellus, **41**, p. 126. — ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., **3**, p. 128. — HANSKI, 1983, Acta zool. fenn., **167**, p. 45.

Copris (Paracopris) ramosiceps: BALTHASAR, 1963, Monogr. Scarab., **1**, p. 375.

Specimens examined. 1 ex., Sepilok, 5–VIII–1987; 1 ex., ditto, 7–VIII–1987.

Distribution. India, Myanmar, southern China, Malay Peninsula, Borneo.

Copris (Microcopris) reflexus (FABRICIUS)

(Fig. 8)

Scarabaeus reflexus FABRICIUS, 1787, Mant. Ins., **1**, p. 16. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., **83**, p. 334.

Copris reflexus: FABRICIUS, 1801, Syst. Eleuth., **1**, p. 53. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., **83**, p. 335. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 13. — ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., **3**, p. 120. — PAULIAN, 1945, Fn. Emp. fr., **3**, p. 75. — KRZYZHANOVSKIJ & MEDVEDEV, 1966, Ent. Obozr., **45**, p. 213. — HANSKI, 1983, Acta zool. fenn., **167**, p. 45.

Copris (Microcopris) reflexus: BALTHASAR, 1963, Monogr. Scarab., 1, p. 376. — MASUMOTO, 1987, Ent. Rev. Japan, 42, p. 129.

Scarabaeus oryctes HERBST, 1789, Nat. Käf., 2, p. 215. — LANSBERGE, 1886, Tijdschr. Ent., 29, p. 22.

Specimens examined. 3 exs., Sepilok, 30–VII–1987; 2 exs., ditto, 1–VIII–1987; 1 ex., ditto, 2–VIII–1987; 10 exs., ditto, 4–VIII–1987; 4 exs., ditto, 6–VIII–1987; 14 exs., ditto, 8–VIII–1987; 4 exs., Keningau, 17–VIII–1987; 11 exs., ditto, 18–VIII–1987.

Distribution. North India, Myanmar, Indochina, China, Malay Peninsula, Sumatra, Java, Borneo.

Tribe Oniticellini

Euoniticellus tessellatus (HAROLD)

(Fig. 9)

Oniticellus tessellatus HAROLD, 1879, Coleopt. Hefte, 16, p. 227. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 256. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. Coleopt., Lamellic., p. 23. — BALTHASAR, 1941, Ent. Blätt., 37, p. 91. — PAULIAN, 1945, Fn. Emp. fr., 3, p. 131. — JANSSENS, 1953, Oniticellini (Col. Lamellicor.), Expéd. Parc Nat. Upemba, Mission Witte, fasc 11, p. 109.

Oniticellus (Oniticellus) tessellatus: BALTHASAR, 1963, Monogr. Scarab., 2, p. 77. — BALTHASAR & CHŪJŌ, 1964, Coleopt. S. E. Asia, 3, p. 183.

Euoniticellus tessellatus: HANSKI, 1983, Acta zool. fenn., 167, p. 45.

Scarabaeus pictus WIEDEMANN, 1819, Zool. Mag., 1, p. 160.

Specimens examined. 1 ex., Sepilok, 30–VII–1987; 2 exs., Sungai Manila, 5–VIII–1987.

Distribution. Laos, Vietnam, Sumatra, Java, Borneo.

Liatongus (Liatongus) femoratus (ILLIGER)

Copris femoratus ILLIGER, 1800, in WIEDEMANN, Arch. Nat., 1, p. 2. — FABRICIUS, 1801, Syst. Eleuth., 1, p. 47.

Oniticellus femoratus: LAPORTE, 1840, Hist. nat. Ins. Coléopt., 1, p. 91. — HAROLD, 1877, Annli. Mus. civ. Stor. nat. Genova, 10, p. 84.

Liatongus femoratus: ARROW, 1931, Fn. Brit. Ind., Coleopt., Lamellic., 3, p. 363. — BALTHASAR, 1935, Scarab. Monogr., 1, p. 106. — JANSSENS, 1953, Oniticellini (Col. Lamellicor.), Expéd. Parc Nat. Upemba, Mission Witte, fasc 11, p. 95. — BALTHASAR, 1963, Monogr. Scarab., 2, p. 84.

Copris bidens WEBER, 1801, Obs. Ent., p. 36.

Copris niger WIEDEMANN, 1819, Zool. Mag., 1, p. 159.

Specimens examined. 56 exs., Keningau, 18–VIII–1987.

Distribution. Myanmar, Thailand, Malay Peninsula, Sumatra, Java, Borneo.

Tribe Onthophagini

Caccobius (Caccophilus) unicornis (FABRICIUS)

- Copris unicornis* FABRICIUS, 1798, Ent. Syst. Suppl., p. 33; 1801, Syst. Eleuth., 1, p. 52.
Onthophagus unicornis: BOUCOMONT, 1914, Annli. Mus. civ. Stor. nat. Genova, 46, p. 236.
Caccobius unicornis: ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., 3, p. 145. — BALTHASAR, 1933, Čas. Čs. Spol. ent., 30, p. 51. — PAULIAN, 1945, Fn. Emp. fr., 3, p. 83. — OCHI, 1985, Coleopt. Japan Col., Osaka, 2, p. 357. — ISHIDA & FUJIOKA, 1988, List Lamellic. Japan, p. 15.
Caccobius (Caccophilus) unicornis: BALTHASAR, 1949, Acta. ent. Mus. natn. Pragae, 26, p. 44. — BALTHASAR, 1963, Monogr. Scarab., 2, p. 142.
Onthophagus nitidiceps FAIRMAIRE, 1893, Annls. Soc. ent. Belg., 17, p. 304.
Onthophagus yamacuhii MATSUMURA, 1936, Ins. matsum., 11, p. 66.

Specimen examined. 1 ex., Sepilok, 2–VIII–1987.

Distribution. Sri Lanka, India, Myanmar, Indochina, Malay Peninsula, Sumatra, Borneo, Philippines, China, Taiwan, Korea, Japan.

Onthophagus (Proagoderus) schwaneri VOLLENHOVEN

(Fig. 10)

- Onthophagus schwaneri* VOLLENHOVEN, 1864, Tijdschr. Ent., 7, p. 146. — LANSBERGE, 1883, Not. Leyden Mus., 5, p. 41. — BOUCOMONT, 1914, Annls. Soc. ent. Fr., 83, p. 262. — MARCUS, 1917, Arch. Naturg., (A), 83 (10), p. 62.
Proagoderus schwaneri: MARCUS, 1920, Dt. ent. Z., 1920, p. 181.
Onthophagus (Proagoderus) schwaneri: BALTHASAR, 1963, Monogr. Scarab., 2, p. 515. — PALESTRINI, 1982, Boll. Mus. zool. Univ. Torino, 1982, p. 33.

Specimens examined. 23 exs., Sepilok, 4–VIII–1985; 2 exs., ditto, 5–VIII–1985; 11 exs., ditto, 7–VIII–1985; 1 ex., ditto, 15–VIII–1985; 7 exs., ditto, 16–VIII–1985; 1 ex., ditto, 18–VIII–1985; 5 exs., ditto, 30–VII–1987; 1 ex., ditto, 1–VIII–1987; 2 exs., ditto, 4–VIII–1987; 1 ex., ditto, 8–VIII–1987; 1 ex., Brumas, 24–VII–1987; 4 exs., ditto, 26–VII–1987; 11 exs., ditto, 27–VII–1987.

Distribution. Borneo.

Onthophagus (Parascatonomus) sarawacus HAROLD

(Fig. 11)

- Onthophagus sarawacus* HAROLD, 1877, Annli. Mus. civ. Stor. nat. Genova, 10, p. 79. — LANSBERGE, 1883, Not. Leyden Mus., 5, p. 75. — BOUCOMONT, 1914, Annls. Soc. ent. Fr., 83, p. 275. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 52. — BALTHASAR 1935, Fol. zool. hydrob., 8, p. 334. — HANSKI, 1983, Acta zool. fenn., 167, p. 45.
Onthophagus (Onthophagus) sarawacus: PAULIAN, 1945, Fn. Emp. fr., 3, p. 111. — BALTHASAR, 1963, Monogr. Scarab., 2, p. 511.
Onthophagus (Parascatonomus) sarawacus: NOMURA, 1976, Ent. Rev. Japan, 26, p. 26.

Specimen examined. 1 ex., Sepilok, 7–VIII–1987.

Distribution. Borneo, Batoe Is.

***Onthophagus (Parascatonomus) semiaureus* LANSBERGE**

Onthophagus semiaureus LANSBERGE, 1883, Not. Leyden Mus., 5, p. 75. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 275; 1924, Philip. J. Sci., 24, p. 670.

Onthophagus (Onthophagus) semiaureus: BALTHASAR, 1963, Monogr. Scarab., 2, p. 517.

Onthophagus (Parascatonomus) semiaureus: NOMURA, 1976, Ent. Rev. Japan, 26, p. 26.

Specimens examined. 1 ex., Sepilok, 5–VIII–1987; 1 ex., ditto, 7–VIII–1987.

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

***Onthophagus (Parascatonomus) rudis* SHARP**

(Fig. 12)

Onthophagus rudis SHARP, 1875, Coleopt. Hefte, 14, p. 58. — LANSBERGE, 1883, Not. Leyden Mus., 5, p. 75. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 271. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 41. — BOUCOMONT, 1924, Philip. J. Sci., 24, p. 669; 1925, Bull. Soc. ent. Fr., 1925, p. 153 — ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., 3, p. 185. — BALTHASAR, 1935, Fol. zool. hydrob., 8, p. 329. — HANSKI, 1983, Acta zool. fenn., 167, p. 45.

Onthophagus (Onthophagus) rudis: PAULIAN, 1945, Fn. Emp. fr., 3, p. 102. — BALTHASAR, 1963, Monogr. Scarab., 2, p. 505. — ZUNINO, 1976, Boll. Mus. zool. Univ. Torino, 7, p. 94. — KRIKKEN, 1986, Zool. Med., Leyden, 60, p. 280.

Onthophagus (Parascatonomus) rudis: NOMURA, 1976, Ent. Rev. Japan, 26, p. 26. — KABAKOV & JANUSHEV., 1983, Fn. Ekol. Vietnam, Moscow, p. 161. — OCHI & ARAYA, 1992, G. it. ent., 6, p. 92.

Onthophagus foveolatus HAROLD, 1877, Anni. Mus. civ. Stor. nat. Genova, 10, p. 68. — OCHI & ARAYA, 1992, G. it. ent., 6, p. 92.

Specimens examined. 1 ex., Sepilok, 5–VIII–1987; 1 ex., ditto, 8–VIII–1987.

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

***Onthophagus (Serrophorus) sagittarius* (FABRICIUS)**

(Fig. 13)

Scarabaeus sagittarius FABRICIUS, 1775, Syst. Ent., p. 24; 1781, Spec. Ins., p. 26.

Copris sagittarius: FABRICIUS, 1801, Syst. Eleuth., 1, p. 41.

Onthophagus sagittarius: LANSBERGE, 1883, Not. Leyden Mus., 5, p. 71. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 287. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 56. — ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., 3, p. 304. — BALTHASAR, 1935, Fol. zool. hydrob., 8, p. 342.

Onthophagus (Onthophagus) sagittarius: PAULIAN, 1945, Fn. Emp. fr., 3, p. 120. — PALESTRINI, 1980, Boll. Mus. zool. Univ. Torino, 1980, p. 16.

Onthophagus (Serrophorus) sagittarius: BALTHASAR, 1963, Monogr. Scarab., 2, p. 509. — BALTHASAR & CHÛJÔ, 1964, Coleopt. S. E. Asia, 3, p. 184. — KABAKOV & JANUSHEV, 1983, Fn. Ekol. Vietnam, Moscow, p. 160. — MASUMOTO, 1988, Ent. Rev. Japan, 43, p. 140.

Scarabaeus oryx FABRICIUS, 1792, Ent. Syst., p. 56.

Scarabaeus javanus FABRICIUS, 1801, Syst. Eleuth., 1, p. 33.

Copris erectus WIEDEMANN, 1819, Zool. Mag., 1, p. 157.

Copris obtusus WIEDEMANN, 1819, Zool. Mag., 1, p. 158.

Specimens examined. 22 exs., Sungai Manila, 5–VIII–1987; 2 exs., ditto, 7–VIII–1987; 27 exs., ditto, 9–VIII–1987; 208 exs., Keningau, 18–VIII–1987.

Distribution. India, Myanmar, Indochina, southern China, Malay Peninsula, Sumatra, Java, Timor, Borneo (new record).

Onthophagus (Serrophorus) laevis laevis HAROLD

(Fig. 14)

Onthophagus laevis HAROLD, 1880, Not. Leyden Mus., 2, p. 194; 1886, Coleopt. Midden Sumatra, p. 26. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 276. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 52. — ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., 3, p. 171.

Onthophagus (Onthophagus) laevis: PAULIAN, 1945, Fn. Emp. fr., 3, p. 109. — BALTHASAR, 1963, Monogr. Scarab., 2, p. 412.

Onthophagus laevis ssp. *stevensi* ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., 3, p. 172. — BALTHASAR, 1963, Monogr. Scarab., 2, p. 412.

Onthophagus laevis ssp. *lampromelas* FAIRMAIRE, 1891, C.-R. Soc. ent. Belg., 35, p. 193. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 51. — BALTHASAR, 1935, Fol. zool. hydrob., 8, p. 336; 1963, Monogr. Scarab., 2, p. 412. — PAULIAN, 1945, Fn. Emp. fr., 3, p. 109.

Onthophagus laevis ssp. *asiaticus* BOUCOMONT, 1919, Bull. Mus. Hist. nat. Paris, 25, p. 604. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 51. — ARROW, 1931, Fn. Brit. Ind., Coleopt. Lamellic., 3, p. 172. — BALTHASAR, 1935, Fol. zool. hydrob., 8, p. 336; 1963, Monogr. Scarab., 2, p. 412. — PAULIAN, 1945, Fn. Emp. fr., 3, p. 110.

Onthophagus (Serrophorus) laevis asiaticus: KABAKOV & JANUSHEV, 1983, Fn. Ekol. Vietnama, Moscow, p. 160.

Specimens examined. 2 exs., Sepilok, 1–VIII–1987; 1 ex., ditto, 8–VIII–1987.

Distribution. Northern India, Indochina, China, Malay Peninsula, Sumatra, Java, Borneo.

Notes. This species has been treated as a member of the subgenus *Onthophagus* s. str. Recently, KABAKOV and JANUSHEV (1983) assigned it to the subgenus *Serrophorus*. We follow their arrangement herein because *O. laevis* has the antennal scape bearing weak but distinct serration on the anterior side.

Onthophagus (Serrophorus) mulleri LANSBERGE

(Fig. 15)

Onthophagus mulleri LANSBERGE, 1883, Not. Leyden Mus., 5, p. 56. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 271. — BOUCOMONT & GILLET, 1921, Fn. ent. Indoc. fr. Scarab., p. 52.

Onthophagus (Pseudonthophagus) mulleri: BALTHASAR, 1963, Monogr. Scarab., 2, p. 345.

Onthophagus (Parascatonomus) mulleri: PALESTRINI, 1982, Boll. ent. ital., Genova, 114, p. 98.

Onthophagus oblongomaculatus LANSBERGE, 1883, Not. Leyden Mus., 5, p. 79. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 272.

Onthophagus spilophorus HAROLD, 1886, Berl. ent. Z., 30, p. 144. — BOUCOMONT, 1914, Anns. Soc. ent. Fr., 83, p. 272.

Specimens examined. 1 ex., Sepilok, 31–VII–1987; 5 exs., ditto, 1–VIII–1987; 2

exs., ditto, 2–VIII–1987; 31 exs., ditto, 4–VIII–1987; 14 exs., ditto, 5–VIII–1987; 4 exs., ditto, 6–VIII–1987; 13 exs., ditto, 7–VIII–1987; 9 exs., ditto, 8–VIII–1987; 1 ex., ditto, 12–VIII–1987; 6 exs., Brumas, 23–VII–1987; 2 exs., ditto, 24–VII–1987; 3 exs., ditto, 26–VII–1987; 4 exs., ditto, 27–VII–1987.

Distribution. Sumatra, Java, Borneo, Banka Is., Batoe Is.

Notes. This species has been assigned to the subgenus *Pseudonthophagus* (BALTHASAR, 1963). However, PALESTRINI (1982) regarded *Pseudonthophagus* as a junior synonym of the subgenus *Parascatonomus*. When OCHI and ARAYA (1992) redefined the subgenus *Parascatonomus*, they revealed that the members of *Parascatonomus* have no serration on the anterior side of the antennal scape excepting *O. mulleri* which has the antennal scape bearing very distinct serration on the anterior side. Thus, we regarded *O. mulleri* as a member of the subgenus *Serrophorus*.

Onthophagus (Phanaeomorphus) bangueyensis BOUCOMONT

(Fig. 16)

Onthophagus bangueyensis BOUCOMONT, 1914, Anns. Soc. ent. Fr., **83**, p. 317; 1924, Philip. J. Sci., **24**, p. 670.

Onthophagus (Onthophagus) bangueyensis: BALTHASAR, 1963, Monogr. Scarab., **2**, p. 286.

Specimens examined. 1 ex., Sepilok, 2–VIII–1987; 4 exs., ditto, 6–VIII–1987; 4 exs., ditto, 7–VIII–1987; 5 exs., ditto, 8–VIII–1987.

Distribution. Borneo, Bangueye Is., Philippines.

Notes. This species has been classified as a member of the subgenus *Onthophagus*. However, it has a distinct triangular disc on the pronotum, a diagnostic character of the subgenus *Phanaeomorphus*. Thus, we regard *O. bangueyensis* as a member of the subgenus *Phanaeomorphus*. Judging from the morphological features, it seems closely related to *Onthophagus (Phanaeomorphus) tagal* BOUCOMONT, 1924 from the Philippines.

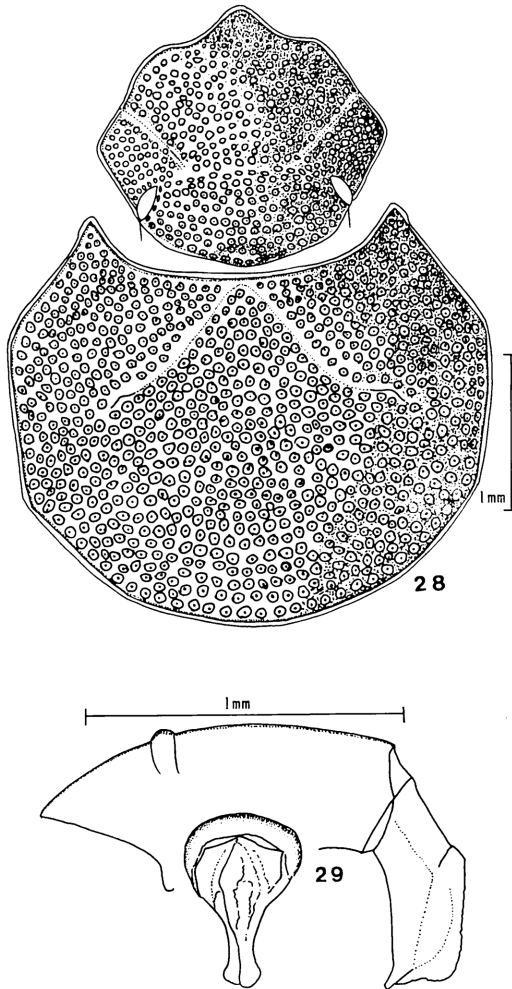
Onthophagus (Phanaeomorphus) johkii sp. nov.

(Figs. 17, 28, 29)

Length: 6.7 mm (n=1); width: 3.5 mm (n=1).

Male. Body small-sized, elongate oval, strongly convex; dorsal side mat, somewhat densely clothed with very short yellowish white hairs, except for glabrous head; ventral side weakly shining, also clothed with yellowish white hairs. Color blackish brown, with mouth parts, palpi, antennae, all legs, and abdomen reddish brown.

Head almost simple, irregularly polygonal in outline, about 1.18 times as wide as long (n=1); clypeus strongly produced forward as a reflexed rounded lobe at the middle, with sides of the lobe a little roundly expanded anteriorly; clypeo-frontal suture completely effaced; genal sutures fine, not carinate; genae produced laterally, with margin angulate in anterior third; vertex slightly elevated medially in the posterior-



Figs. 28-29. *Onthophagus (Phanaeomorphus) johkii* OCHI et KON, sp. nov., ♂: head and pronotum, dorsal view (28); aedeagus, lateral and dorsal views (29).

most part; surface microgranulose except for the shining median rounded lobe, and closely covered with coarse punctures, the punctures small and sparse at anterior part of clypeus, and changing into ocellate ones toward vertex.

Pronotum strongly convex, about 1.43 times as wide as long ($n=1$); anterior margin emarginate and bordered; lateral margins almost straight anteriorly, very weakly sinuate posteriorly; basal margin gently rounded; anterior angles strongly produced and sharp, with apices a little expanded outward; posterior angles obtuse; disc declivous toward anterior angles, with upper edge of the declivity forming a barely perceptible triangular blunt ridge which is slightly tuberculate on each end;

surface very densely covered with rather coarse ocellate punctures.

Elytra about 1.37 times as wide as long ($n=1$); striae shining, very widely but shallowly impressed and distinctly ridged on both sides with striae punctures transverse, slightly crenulate intervals; the 7th stria not distinctly curved; intervals flat, clearly microgranulose and closely covered with rather small asperate punctures.

Pygidium well convex, very densely covered with ocellate punctures. Metasternum with a longitudinal impression in posterior two-thirds, densely covered with ocellate punctures, the punctures irregularly close and uneven in median part. Pro-tibiae relatively slender, gently incurved, with four lateral teeth; the 1st tooth sharp, the 2nd a little longer than the 1st, the 3rd shorter than the 2nd and widest in them, and the 4th small; the interspaces between the 2nd and 3rd, and the 3rd and 4th without small denticle in right tibia and each with a small denticle in left tibia.

Aedeagus long; parameres narrow at base from lateral aspect, with lateral margins strongly constricted before the middle and expanded apically from dorsal aspect.

Female unknown.

Type series. Holotype: male, Sepilok, Sabah, Borneo, 5-VIII-1987, M. KON leg. The holotype is deposited in the collection of the Osaka Museum of Natural History, Osaka, Japan.

Etymology. This species is dedicated to Dr. Y. JOHKI of Showa Women's Junior College, who has been giving us invaluable advice and encouragement.

Notes. The present new species is closely related to *Onthophagus mentaveiensis* BOUCOMONT from Mentavei Is. and the Malay Peninsula, but differs from the latter in the following points: in the male, 1) body distinctly robust with elytra shorter; 2) clypeal margin distinctly expanded on each side of the median reflexed lobe, while in *O. mentaveiensis*, it is almost straight or weakly rounded; 3) elytra with intervals bearing more crowded and smaller granules.

[Note] Acknowledgments, Japanese abstract and references will be given at the end of the next part.