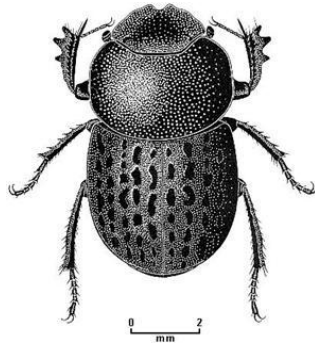




IW  KRAMA



**Key to the dung beetles (Scarabaeidae: Scarabaeinae) of the
Iwokrama Forest v.1**

Reese Worthington

Key to the genera and subgenera of Iwokrama dung beetles

- 1 Tip of mesoscutellum clearly visible between bases of elytra, exposed portion triangular, rounded, guttiform or pentagonal (Fig. 1, inset-arrow); elytra laterally with 0-2 parallel longitudinal carinae viewed from side.....**Eurysternus** Dalman, 1824 (See species key)(Fig. 2)
- Mesoscutellum completely covered by elytra; tip, if exposed, minute, visible only under magnification (X25); if mesoscutellum tip exposed, then elytra laterally with three parallel longitudinal carinae viewed from side.....2
- 2 (1) Proleg with trochantofemoral anterior pit (Fig. 3, arrows; not to be confused with trochantofemoral articulation-trochantofemoral pit is situated in apical border of trochanter, while the articulation is basal).....3
- Proleg lacking trochantofemoral anterior pit.....4
- 3 (2) Last abdominal sternite greatly expanded medially such that remaining sternites visible only laterally (Fig. 4).....**Trichillum** Harold, 1868 (Fig. 5)
- Last sternite not grossly enlarged, all sternites visible medially.....**Uroxys** Westwood, 1842 (Figs. 6-8)
- 4 (2) Length of basal metatarsomere longer than that of following three tarsomeres combined (Fig. 9); if subequal, then labial palpi with only two palpomeres (rarely third very reduced), the second one longer than the first; metatarsus with five tarsomeres.....**Onthophagus aff. rubescens** Blanchard, 1843
- Length of basal metatarsomere less than that of following three tarsomeres combined; if subequal, then labial palpi three distinct palpomeres, length of third palpomere at least one-half that of the second, and the second palpomere shorter than the first; or metatarsus with fewer than five tarsomeres.....5
- 5 (4) Mesotarsus and metatarsus lacking claws.....6
- Mesotarsus and metatarsus with claws.....8
- 6 (5) Clypeal margin deeply, acutely emarginated medially, emarginations producing two acute teeth that are separated from adjacent clypeal border by external emarginations...**Coprophanaeus** Olsoufieff, 1924....7
- Clypeal margin lacking deep, acute emarginations; at most with two conspicuous median teeth.....**Oxysternon festivum** Linnaeus, 1767
- 7 (6) Very large beetles to 50 mm long, length rarely less than 25 mm. Protarsus usually present in female; interstriae usually strongly sculptured (transverse carinae or foveae). Posterior surface of protibia with tufts of setae at bases of lateral teeth.....**Coprophanaeus (Megaphanaeus) lancifer** Linnaeus, 1767 (Fig. 10)
- Small to medium-sized beetles, length rarely over 25 mm. Protarsus always absent in females; interstriae never strongly sculptured. Posterior surface of protibia with single row of setae at bases of lateral teeth.....**Coprophanaeus (Coprophanaeus) aff. jasius** Olivier, 1789 (Fig. 11)

- 8 (5) Tarsal claws reduced, straight or only weakly curved; Propleuron convex or weakly concave, never deeply excavated anteriorly; head lacking transverse carina.....**Anomiopus aff. globosus** Canhedo, 2006 (Fig. 12)
- Tarsal claws large, strongly curved, falciform or angulate; if only weakly developed, then either propleuron deeply excavated anteriorly or head with transverse carina or both.....9
- 9 (8) Mesotibia and metatibia not appreciably widened apically, or only weakly or gradually so.....10
- Middle and usually also hind tibia abruptly widened apically.....18
- 10 (9) Apex of elytral interstriae with short carina or tubercles (Fig. 13).....**Deltochilum** Eschsholtz, 1822...11
- Elytral interstriae lacking apical carinae or tubercles, at most with one lateral almost complete elytral carina.....13
- 11 (10) Ninth elytral interstriae (on pseudoepipleuron) lacking carina, or with an inconspicuous carina.....**Deltochilum (Calhyboma) carinatum** (Westwood, 1837) (Fig. 14)
- Ninth interstriae distinctly carinate.....12
- 12 (11) Clypeus bidentate.....**Deltochilum (Deltohyboma) valgum** Burmeister, 1873 (Fig. 15)
- Clypeus quadridentate.....**Deltochilum (Hybomidium) icarus** Olivier, 1789 (Fig. 16)
- 13 (10) Pronotum with sides explanate, with acute median tooth, denticulate anteroventrally. Elytra with strong, complete lateral carina. Color metallic green on pronotum, opaque (coriaceous) tan to brown on elytra.....**Hansreia affinis** Fabricius, 1801 (Fig. 17)
- Sides of pronotum not explanate, not denticulate anteriorly. Elytra often carinate laterally, but if so, carina incomplete (effaced) anteriorly and pronotum and elytra similarly colored.....14
- 14 (13) Basal tarsomere of mesotarsus and metatarsus short, length about one-half that of second tarsomere, obliquely (nearly 45°) truncated apically (Fig. 18). Lateral borders of tarsomeres parallel, forming a continuous border for all tarsi, overall shape of tarsomeres 2-4 quadrate to rectangular.....**Scybalocanthon** Martinez, 1948 (Fig. 19)
- Length of basal tarsomere of mesotarsus and metatarsus only slightly less than, or greater than that of tarsomere 2; if much smaller, then nearly transversely truncated apically. Lateral borders of tarsomeres separately divergent apically, overall shape of tarsomeres 1-4 trapezoidal.....**Canthon** Hoffmannsegg, 1817.....15
- 15 (14) Ventral surface of metafemur with fine anterior margin (Fig.20).....**Canthon (Canthon)** Hoffmannsegg, 1817 (in part) (See species key)(Fig. 21,22)
- Ventral surface of metafemur not margined anteriorly (Fig. 23).....16
- 16 (15) Dorsum with distinct pilosity. Protibial teeth closely set near apex of tibia.....**Canthon (Trichocanthon) sordidus** Harold, 1868 (Fig. 24)

- Dorsum glabrous, or with indistinct pilosity. Protibial teeth widely spaced along apical one-half of lateral margin.....17
- 17 (16) Interocular distance about six times width of eye, and/or pygidium and propygidium not separated by carina.....**Canthon (Canthon)** Hoffmannsegg, 1817 (in part)(See species key)
- Interocular distance about 10 times width of eye; pygidium and propygidium separated by carina.....**Canthon (Glaphyrocanton) aff. quadriguttatus** Olivier, 1789 (Fig. 25)
- 18 (9) Propleura deeply excavated anteriorly, excavation shaped posteriorly as vertical wall topped by strong carina. Inner apical angle of protibia ~90° or acute, edge of apical tooth continuous (not forming angle) with apical truncation.....**Ateuchus** Weber, 1801 (Figs. 26,27)
- Propleura only weakly excavated anteriorly, excavation not clearly defined posteriorly (Fig. 28); transverse propleural carina almost always absent. Inner apical angle of protibia obliquely truncate (> 90°); if ~90° or slightly acute, then edge of apical tooth forming angle with margin of apical truncation.....19
- 19 (18) Inner apical angle of protibia ~90° or acute. Mesosternum usually very short, positioned almost vertically (Fig. 29). Clypeal process usually absent, sometimes indicated by feeble longitudinal ridge or transverse carina. Metasternum usually convex. Dilation of mesotibia and metatibia resulting from curvature of inner margin only (as in Fig. 30); outer margin straight.....**Canthidium** Erichson, 1847
- Inner apical angle of protibia usually >90°. Mesosternum very well developed, horizontal. Clypeal process bifurcate tubercle or transverse ridge with or without median angle or tubercle. Metasternum usually flat. Dilation of mesotibia and metatibia resulting from curvature of both inner and outer margins.....**Dichotomius boreus** Olivier, 1789

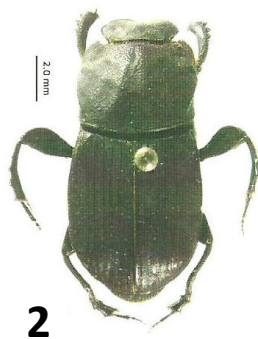
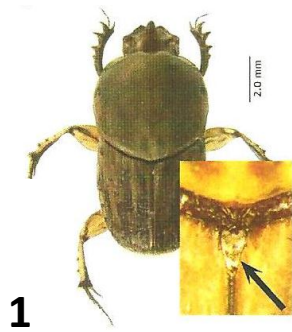
Key to the species of *Canthon (Canthon)* occurring in Iwokrama

- 1 Size ranges from 9-10 mm, pronotum yellow with variable dark patterning located medially (Fig. 31).....**triangularis** Drury, 1770
- Size ranges from 5-5.5 mm, pronotum not matching previous description, often unicolorous (Fig. 32).....**sericatus** Schmidt, 1922

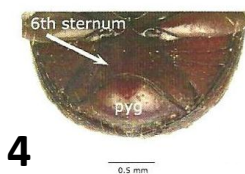
Key to the species of *Eurysternus* occurring in Iwokrama

- 1 Smaller species (less than 8.0 mm in length); dorsum with long erected setae mixed with much shorter setae (Fig. 33); elytral microsculpture always forming more or less transverse lines (Fig. 34); elytral striae usually wide, striae 1-4 separated by less than three times their width on disc (Fig. 34).....**atrosericus** Genier, 2009
- Larger species (greater than 8.0 mm in length); dorsum with short setae, generally uniform in size (except for a few tufts of long setae on elytral apex, anterior region of pronotum, head or row of setae along pronotal lateral margin and elytra) (Fig. 35); elytral microsculpture variable, alveolate (Fig. 36); elytral striae usually normal, striae 1-4 separated by more than three times their width on disc.....2

- 2 (1) Metatibial spur articulated in male (Fig. 37); posterior surface of metafemur lacking denticle or tubercle in female; elytral apical declivity always with long setae (Fig. 38); elytral humeral carina short, never extended beyond basal sixth of elytra.....*cayennensis* Castelnau, 1840
- Metatibial spur fused in male (Fig. 39); posterior surface of metafemur usually with denticle or tubercle in female (Fig. 40); elytral apical declivity with long setae, or with setae similar in length to the rest of surface in species lacking denticle or tubercle on posterior surface of posterior tibia (Fig. 41); elytral humeral carina short or extended beyond distal third of elytra.....3
- 3 (2) Metacoxa unicolored laterally; abdominal segment 3 anteriorly truncate between metacoxae, which are more or less widely separated (Fig. 42); eyes barely visible dorsally (Fig. 43).....*hypocrita* Balthasar, 1939
- Metacoxa bicolored laterally, usually pale with two dark spots, the first close to trochanter insertion, the second medially (coxa might appear completely dark in dirty or greasy individuals) (Fig. 44); abdominal segment 3 acute anteriorly (Fig. 45); eyes distinctly visible dorsally (Fig. 46).....4
- 4 (3) Metasternal disc lacking medial fovea (Fig. 47); fifth interstriae feebly convex, lower than pseudopleural carina medially (Fig. 48); eight interstriae lower than pseudopleural carina medially (Fig. 48).....*caribaesus* (Herbst), 1789
- Metasternal disc with rounded and glabrous medial fovea (Fig. 49); fifth interstriae convex and higher than pseudopleural carina medially (Fig. 50); eight interstriae much higher than pseudopleural carina, strongly convex medially (Fig. 50).....*plebejus* Harold, 1880



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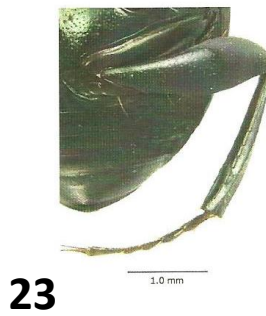
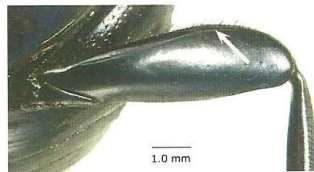
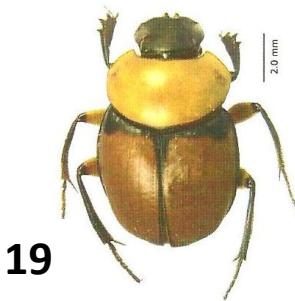
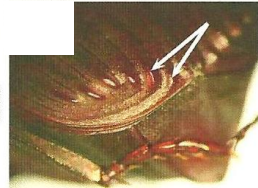
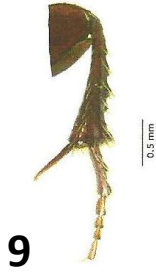
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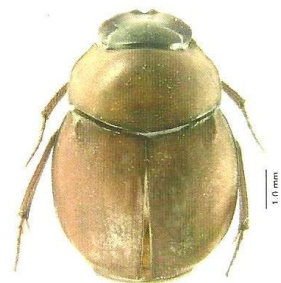
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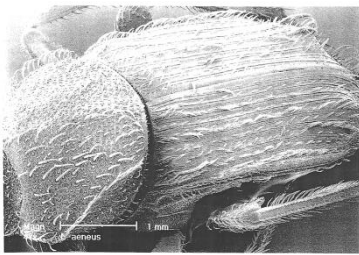
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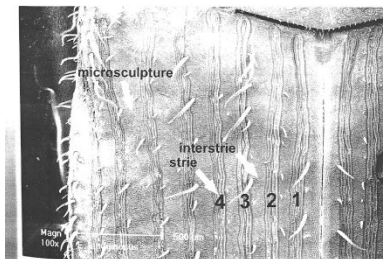
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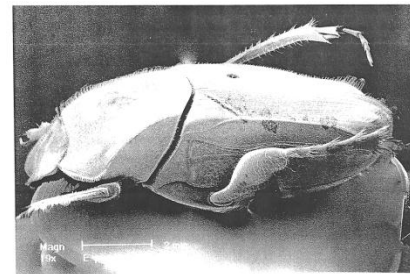
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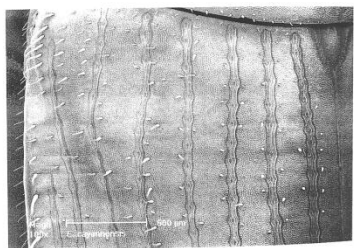
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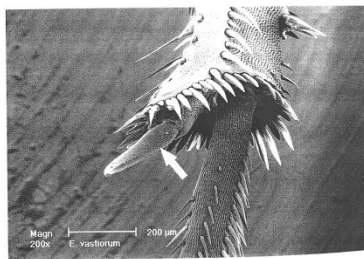
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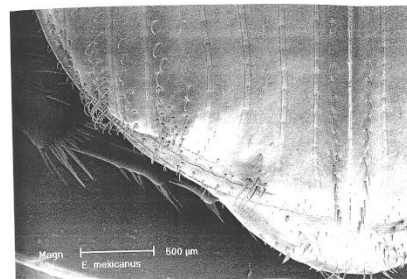
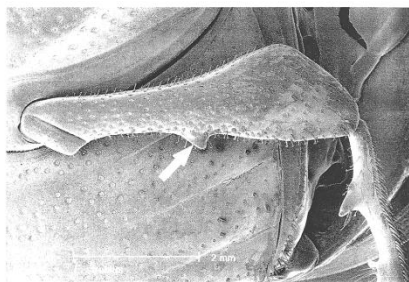
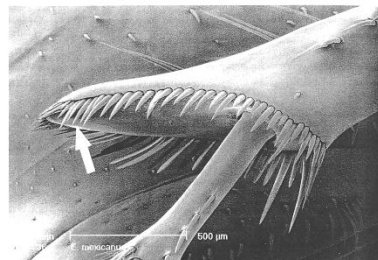
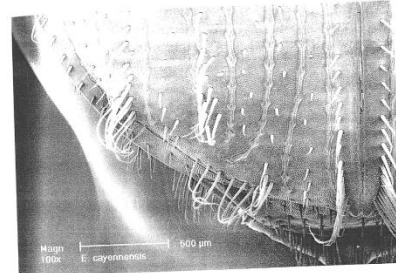
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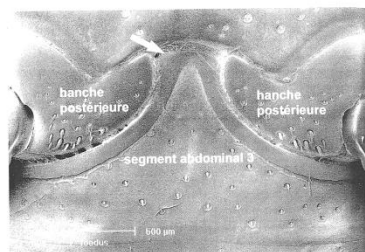
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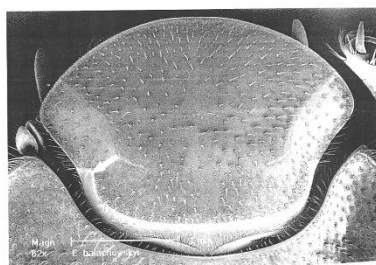
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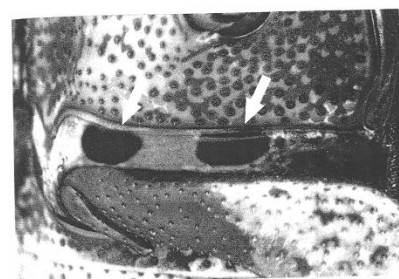
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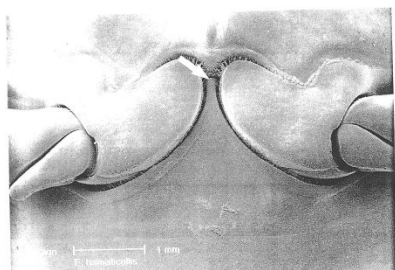
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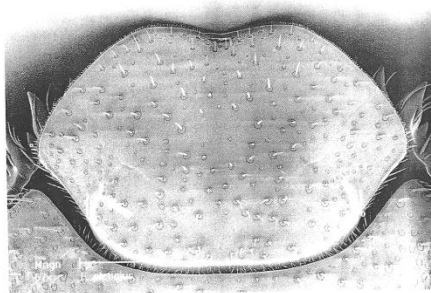
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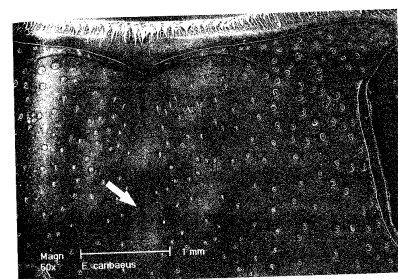
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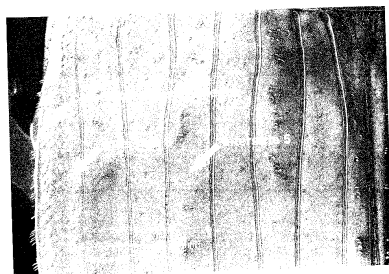
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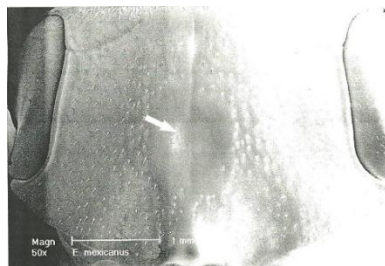
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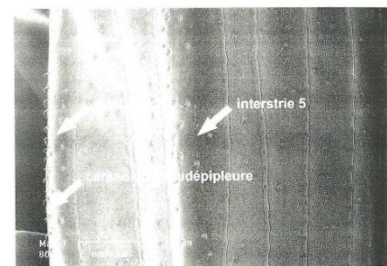
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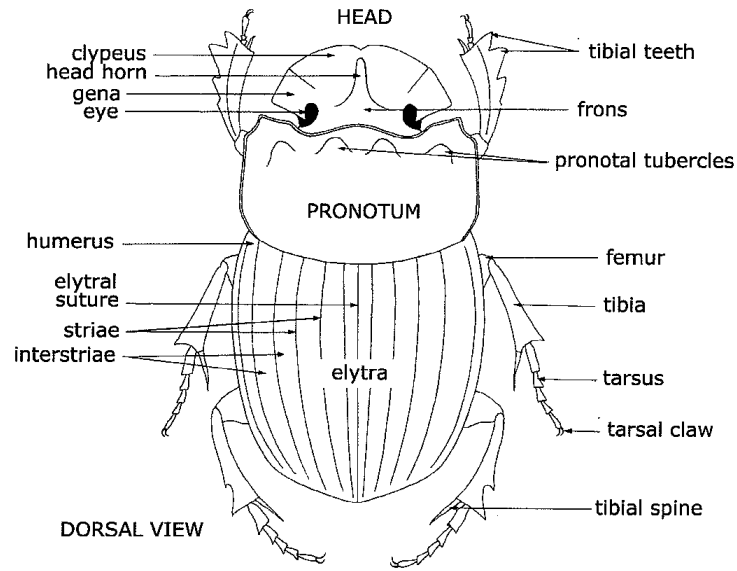
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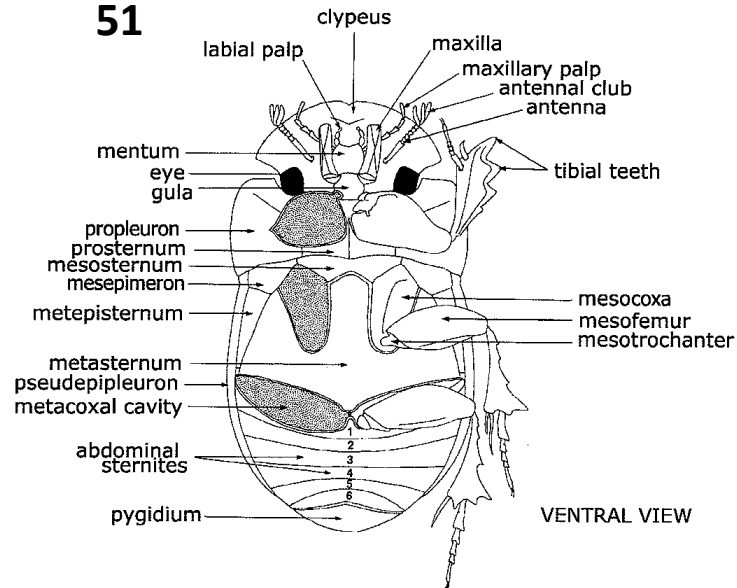
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Figures 1-30, 51-52. Vaz-de-Mello *et al* 2011.

Figures 31-32. Gardner and Hernandez. 2006.

Figures 33-50. Genier 2009.

Figure 51. Ratcliffe and Paulsen 2008.

Keys adapted from Vaz-de-Mello *et al* (2011), Gardner and Hernandez (2006), and Genier (2009).

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