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Three new species of *Scaphidiinae* from Mindanao and Palawan (Coleoptera: Staphylinidae)

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Abstract

A new species of *Scaphidium* Olivier, 1795, *S. spinipenne* sp. nov., distinguished from its congeners by elytra spinose at apices, and two species of *Baeocera* Erichson, 1845, assigned to the *B. monstrosa* group, are described from Mindanao and Palawan. *Scaphidium spinipenne* is a member of an informal species group restricted to the Oriental realm that has not yet been reported from the Philippines. The *Baeocera monstrosa* group is known from the Philippines only by two species, both from Luzon.

***Keywords*:** Diversity, Philippines, rove beetles, shining fungus beetles, taxonomy.

Introduction

The rove beetles of the subfamily Scaphidiinae are mycophagous and myxomycetophagous (Newton 1984) and highly diverse in the Philippines. To date, 11 genera with 182 species have been recorded from the archipelago, all but 12 species known only from there and thus likely endemics (Löbl 2018c, 2021). Most of the Mindanao scaphidiines available for my studies were collected in the 40s while most of the materials from other Philippine islands were collected in the 80s and 90s of the last century and by a few collectors only. Thus, there is still a huge knowledge gap in Philippine scaphidiines (Löbl, 2012). The present study is based on a few Philippine scaphidiines sampled by local collectors which corroborates with the previous statement. Among 14 specimens donated by colleagues, three are undescribed species. One of them is a member of *Scaphidium* Olivier, 1790 and two are *Baeocera* Erichson, 1845. The new species of *Scaphidium* is notable by its elytral characters and may be easily distinguished from its Philippine congeners (Löbl, 2006). The genus *Baeocera* comprises 23 Philippine species, most of them dealt with in Löbl (2012). A few additional Philippine *Baeocera* species have been subsequently described by Löbl (2018a, 2021). Unlike *Scaphidium*, reliable identification *Baeocera* usually requests examination of aedeagi mounted on slides.

Materials and methods

ZOOBANK: https://zoobank.org/References/4567317E-CA99-4B60-91AA-214A9CE73D31?fbclid=IwAR2R46iYq7PlIqiv3jkvEQRJ4LzqS__BK7sWzNN25SHZdbJ5M3eGCZQTV4o
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The material examined is deposed in the collection of the Muséum d'histoire naturelle, Geneva (MHNG).
The label data of are reproduced verbatim. The body length is measured from the anterior pronotal margin to the posterior inner angles of elytra, the total length is given only for *Scaphidium*. The widths are measured at the widest points of the respective body parts. Statements about metaventral punctation do not refer to punctures margining submesocoxal lines and statements about abdominal microsculpture do not refer to intersegmental membranes. The sides of the aedeagus refer to its morphological sides with the ostium situated dorsally, while it is in resting position rotated 90°. The dissected body parts are embedded in Euparal and fixed on a separate card on the same pin as the respective specimen.

TAXONOMY

***Scaphidium spinipenne* sp. nov.**
urn:lsid:zoobank.org:act:FB667474-A894-46B6-BE0A-852F0F8C7592
(Figures 1-5)

Type material. Holotype male: Phil.: Mindanao Sibagat Agusan del Sur, VII.2019 [001 M] (MHNG).

Description. Total length 4.10 mm, body length without head and abdomen 3.40 mm. Head, antennomeres I and VI, nearly entire pronotum, most of elytra and legs light ochraceous; antennomere VII darkened (following antennomeres missing). Narrow basal margin of pronotum darkened. Elytron blackish on narrow basal humeral stripe; middle of elytral disc with two blackish spots, inner spot with irregular anterior and posterior margins situated between first and third discal striae, outer spot touching fourth discal stria situated at same level; epipleuron dark brown. Upper part of hypomeron ochraceous, inferior part of hypomeron darkened. Ventral side of thorax and abdomen ochraceous. Legs ochraceous, with trochanters and bases of femora darkened. Head with eyes about 1 mm wide, frons very finely punctate, at narrowest point 0.18 mm wide; eyes prominent. Pronotum about 1.40 mm long, at anterior margin 0.90 mm wide, at base about 2.10 mm wide; pronotal disc convex in middle and very finely punctate, with punctures indistinct at magnification 100 times; lateral margins sinuate, convexly expanded in basal third, slightly concave in anterior two thirds; lateral margin carinae exposed in dorsal view; lateral margin stria sparsely punctate; anterior margin bead in middle twice as large as on sides, anterior margin stria impunctate; antebasal puncture row impressed, dense, not interrupted in middle, consisting of coarse, evenly large punctures; discal punctation very fine, as that on frons. Exposed part of scutellum nearly twice as wide as long. Elytra flat, inflexed, strongly narrowing apicad, elytral disc below level of pronotal centre; lateral margins rounded in basal third, oblique in middle third, lateral margin carinae exposed in dorsal view, lateral margin striae punctate; sutural striae not extending along basal margin, coarsely and densely punctate; adsutural areas sightly convex, with hardly visible punctation at magnification 100 times. Elytral disc with five impressed, longitudinal rows of coarse

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puncture; first row starting about 0.20 mm posterior of level of scutellar tip and extending up to apical fourth of sutural length; second row starting near basal margin of elytron and as first row extending apically up to apical fourth of sutural length; third and fourth rows starting as the second row near base but longer, ending about 0.25 mm anterior of apical margin of elytron; fifth row starting as second to fourth rows near base, longer than fourth row, ending about 0.10 mm anterior of apical margin of elytron; row intervals somewhat convex, very finely punctate, several coarse punctures scattered near apical margins. Mesoventral ridge raised between procoxal cavities. Mesoventrite and mesanepisternum impunctate, latter with strigulate microsculpture. Pseudepimeron extending to mesocoxa, narrow. Metaventrite with entire discrimen, lacking premetacoxal lines, with few fine punctures near mesocoxal cavities, metaventral sides with strigulate microsculpture, impunctate on prevailing surface; lateral margin impressed along metanepisternum; submesoxocal lines punctate. Metanepisternum distinctly narrowed anteriad. Legs elongate and slender. Abdomen impunctate, with strigulate microsculpture.
Male. Elytron with spine at middle of apical margin, latter rounded outward, oblique between spine and sutural angle (Fig. 1). Entire mesal area of metaventrite punctate and pubescent, with long horizontal setae, longest setae extending to apical margin of ventrite I. Femora lacking particular sexual characters. Protibia in basal half straight, in apical half weakly curved, gradually thickened apicad, at apex about twice as wide as at base. Protarsomeres I to III weakly enlarged, with short ventral setae. Mesotibia 1.5 times as long as protibia, as protibia weakly curved and gradually widened apicad, at apex twice as wide as at base, with sort setae. Mesotarsi long, mesotarsomeres I to III strongly widened, with long ventral setae, lacking tenent setae. Aedeagus as Figs 2-5, 1.08 mm long, apicomesal parts of parameres membranous.
Female. Unknown.

Etymology. The species epithet is a Latin adjective referring to the spinose elytron.

Diagnosis. The new species has large eyes, the head width exceeding the width of the anterior margin of pronotum, the pronotum convex dorsally, the elytra flattened with five coarsely punctate striae, and long legs as *Scaphidium striatipenne* Gestro, 1879, *Scaphidium sulcipenne* Gestro, 1879 and *Scaphidium tricolor* Achard, 1920 from the Great Sunda Islands. The shape of the elytral apices bearing a spine is unique for *S. spinipenne*. In addition, this species is distinguished from *S. striatipenne* and *S. sulcipenne* by the unicolor pronotum and the light apices of elytra. Unlike *S. spinipenne*, males *S. sulcipenne* have protibiae widened at apices and protarsi and mesotibiae with conspicuously long setae, while the males *S. striatipenne* have a profemoral tubercle. *Scaphidium tricolor* may be also distinguished by its male profemora that are denticulate ventrally and protibiae rugose in apical halves.

Comments. Achard (1922a) established the genus *Hemiscaphium* to accommodate species of *Scaphidium* Olivier, 1790 having particularly large eyes, a prosternum not or weakly carinate, a mesoventrite with a robust carina, a convex pronotum, long and slender legs, often bearing

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Figure 1. Dorsal habitus of *Scaphidium spinipenne* sp. nov.

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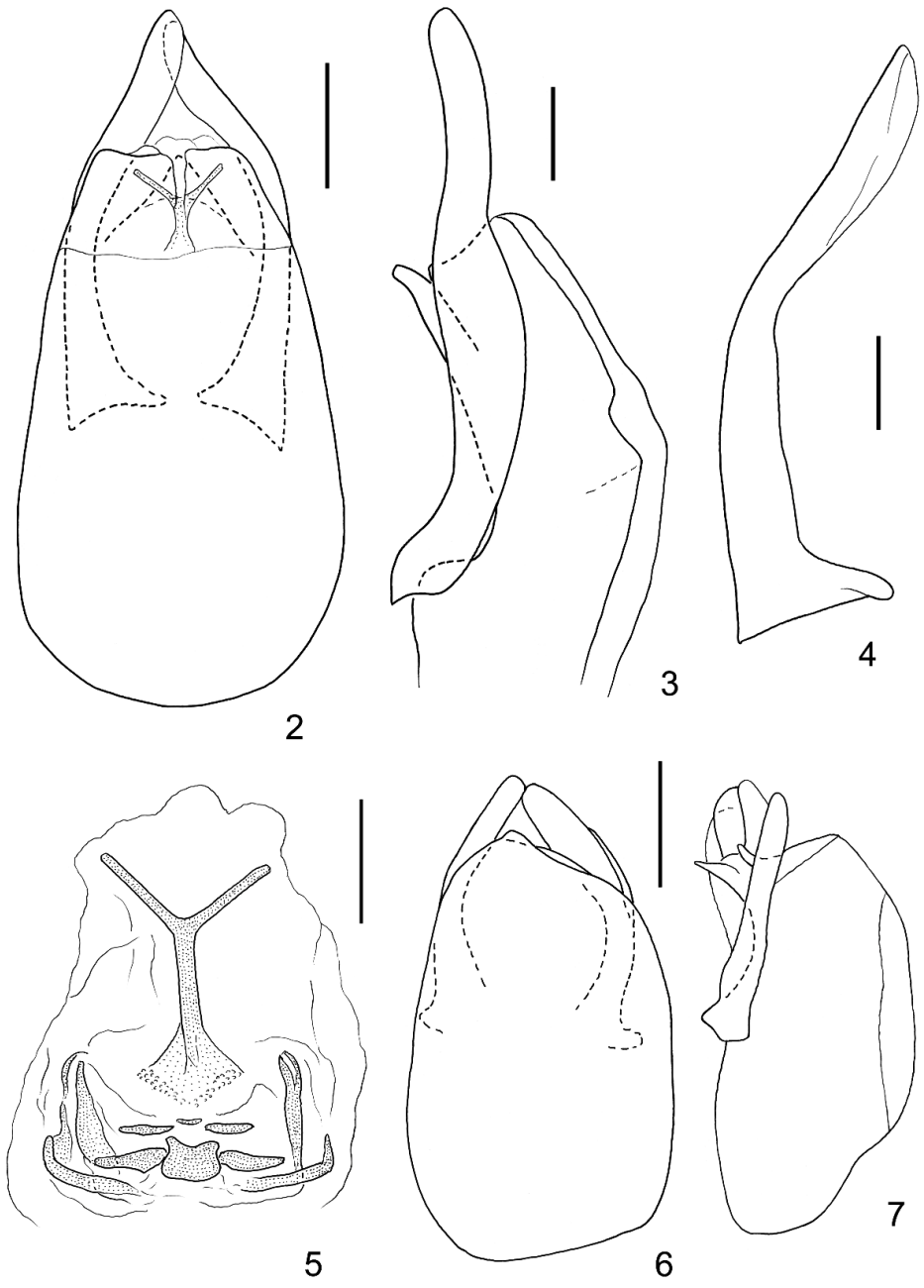

Figures 2-7. Male genitalia. 2-5. *Scaphidium spinipenne* sp. nov.; 2. Aedeagus in dorsal view, scale =0.2 mm; 3. Aedeagus in lateral view, without basal bulb, scale = 0.1 mm; 4. Paramere in ventral view, scale = 0.1 mm; 5. Internal sac, scale = 0.1 mm; 6, 7. *Baeocera alamada* sp. nov., aedeagus in dorsal and lateral views, scale = 0.2 mm.

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conspicuous sexual characters, and elytra strongly narrowed apicad and bearing two to five longitudinal punctate striae. Achard (1922b) provided a synopsis of the 12 species assigned to *Hemiscaphium*, all but the Myanmar *Hemiscaphium brunneopictum* Achard, 1922 reported from the Sundaland islands. A character analysis (Leschen & Löbl, 1995) showed that *Hemiscaphium* and several other Scaphidiini genera established by Achard (1922a) were based upon variable characters and without well-defined synapomorphies or autapomorphies, resulting in their placement in synonymy of *Scaphidium*.

The antennae of the sole available specimens of *S. spinipenne* have been broken off, four club segments of one antenna are missing and only two basal antennomeres of the second antenna are present. Nevertheless, the species exhibits unique and conspicuous characteristics that in my opinion justify its description. To date, 12 species of *Scaphidium* have been reported from the Philippines. Only one of them, *Scaphidium seriatum* Heller, 1917, has elytral disc with longitudinal rows of coarse punctures. The latter species differs notably from *Scaphidium spinipenne* by the elytra having only two puncture rows, and the smaller and uniformly rufous body (Heller, 1917). Members of *Scaphidium* are uncommon in the collections I had occasion to examine, possibly because they are night-active (Tang et al., 2014).

***Baeocera alamada* sp. nov.**
urn:lsid:zoobank.org:act:25CF7C02-C5A0-4AB1-B626-447891558EEB
(Figures 6-9)

Type material. Holotype male: Philipp.: Mindanao North Cotabato Alamada, Dato X.2019 (MHNG).

Description. Length 1.92 mm, width 1.45 mm. Head, pronotum and elytra black, brown apical margins of elytra excepted. Hypomera, mesoventrite and metaventrite dark brown with reddish shine. Mesanepisterna, mesepimera, metanepisterna and metepimera black. Abdomen dark reddish-brown, ventrite I darker than following ventrites. Femora and tibiae rufous, tarsi and antennomeres I to IV yellowish, antennomere V at base yellowish, darkened apicad, antennomeres VI to XI light brown. Length/width ratios of antennomeres as: III 20/9: IV 30/8: V 33/9: VI 31/12: VII 52/15: VIII 45/13: IX 56/17: X 56/19: XI 90/16. Lateral margins of pronotum and elytra separately rounded. Pronotum with lateral margin carinae visible only near base in dorsal view, discal punctation very fine. Hypomera impunctate. Scutellum triangular, small. Elytra weakly narrowed apicad; lateral margins straight in middle third, lateral margin carinae exposed throughout in dorsal view; sutural striae deep, curved near base and extending lateral to form basal striae gradually approximating basal margin and joining lateral striae. Punctation on adsutural areas very fine, punctation on disc much coarser than on pronotum, shallow, puncture intervals in middle of disc about 2 to 3 times as large as puncture diameters. Exposed tergites very finely punctate. Mesoventrite flat, with longitudinal striae. Mesepimeon large, about 5 times as long as wide and 6 times as long as interval to mesocoxa. Metaventrite convex in middle, with row of coarse punctures anterior of metacoxal process, mesal area appearing impunctate, lateral areas very finely and sparsely punctate; submesocoxal areas 0.04

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mm long, with coarse marginal punctures. Metanepisternum flat, about 0.15 mm wide, gradually narrowing anteriad, with suture impunctate, nearly straight, reaching margin of metepimeron. Tibiae straight. Abdomen lacking microsculpture. Ventrite I with coarse, to part slightly elongate basal punctures, remaining abdominal punctation very fine and sparse.
Male. Protarsomeres I to III and mesotarsomeres I and II widened and bearing tenet setae; protarsomere I about as wide as apex of protibia. Aedeagus as Figs 6-9, 0.75 mm long, strongly sclerotized.
Female. Unknown.

Etymology. The species epithet is a noun, the name of the type locality.

Diagnosis. *Baeocera alamada* is a member of the *B. monstrosa* group comprising of 17 Asian species (Löbl 2018b). The aedeagus of this species has a short apical process of the median lobe overlapped by the basal bulb, a simple right paramere, and a lobed left paramere. These characteristics are shared with *Baeocera alticola* Löbl, 2012, *Baeocera fujiana* Löbl, 2018, *Baeocera inoptata* Löbl, 2018, *Baeocera monstrosa* (Löbl, 1971), *Baeocera nakanei* (Löbl, 1968), *Baeocera paradoxa* (Löbl, 1971), and *Baeocera robertiana* Löbl, 1986. The new species is distinguished by the parameral lobe nearly evenly wide and elongate, about as long as two-thirds of total parameral length. In addition, the structures of the internal sac, notably the long, robust rod bent at apex and the denticle-like mesal sclerite are diagnostic. To date, only two species of the group are known from the Philippines, *B. alticola* and *B. fortis* Löbl, 2012. Both are from Luzon, the former is possibly restricted to the high altitudes in the Mountain and Benguet Provinces, and the second was found at Los Banos in the Lagunas Province. In addition to the genital characters, *Baeocera alamada* may be easily distinguished from these two Philippine congeners by the antennomere IV much longer than the antennomere III, and the antennomere XI much longer than antennomere X, and by evenly fine elytral punctation.

Comments. To date, 23 species of *Baeocera* have been described from the Philippines (see Löbl 2012, 2018a, 2021). *Baeocera* are often common in moist floor litter of tropical and subtropical forests but are rarely sampled if not sieved by appropriate devices.

***Baeocera roxas* sp. nov.**
urn:lsid:zoobank.org:act:85FCB636-D5F7-4176-8EAE-CED15EA9AA02
(Figures 10-12)

Type material. Holotype male: PHIL.: Palawan Roxas, III.2020 [005 PA] (MHNG).

Description. Length 1.85 mm, width 1.35 mm. Head, pronotum and elytra black. Hypomera and mesoventrite blackish with reddish shine, mesanepisterna, metaventrite, and metanepisterna black. Abdomen uniformly very dark brown. Femora and tibiae rufous, tarsi yellowish. Antennomeres I and II rufous, III to V yellowish, following antennomeres brown. Length/width ratios of antennomeres as: III 18/9: IV 20/9: V 29/10: VI 24/12: VII 47/10: VIII

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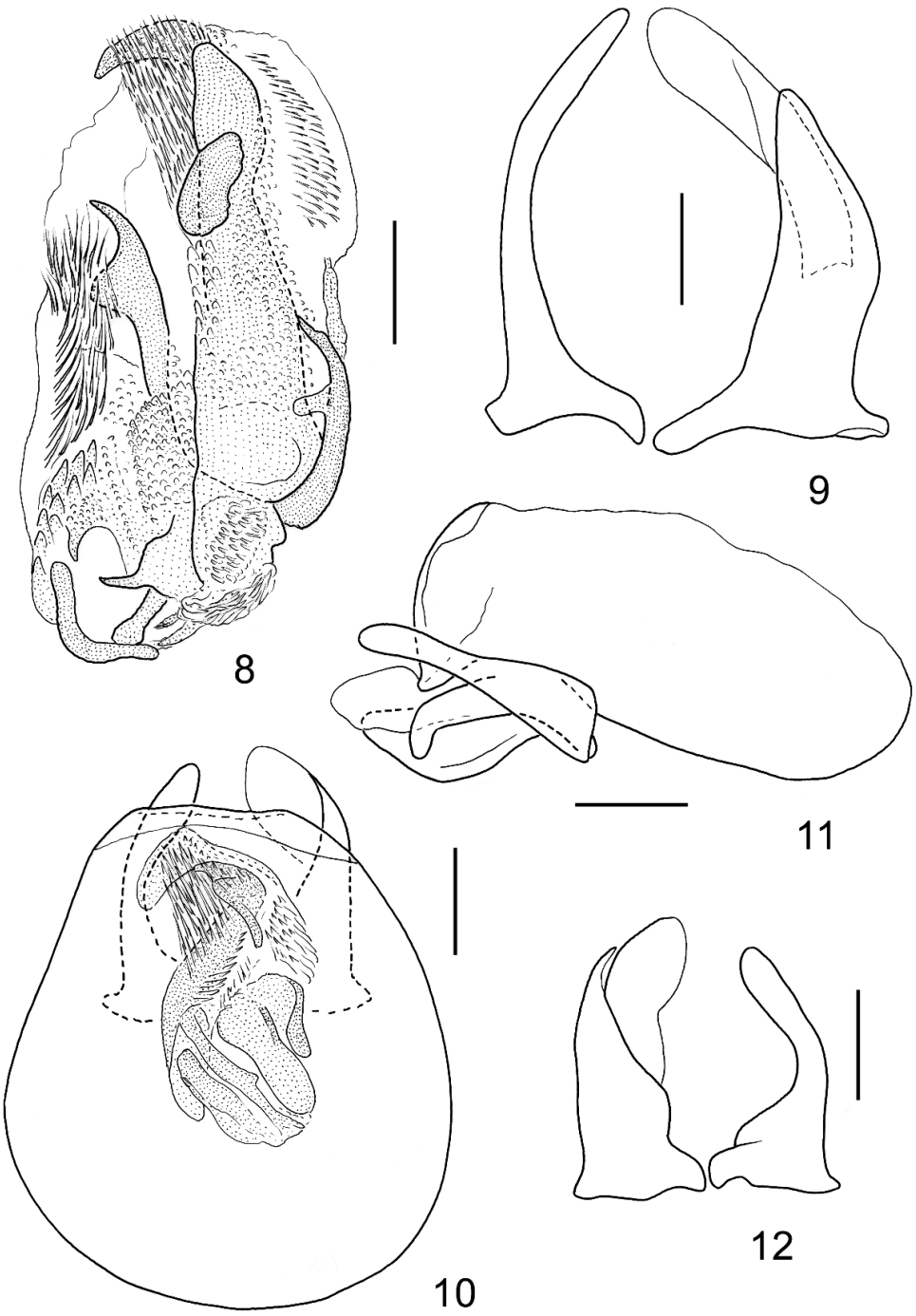

Figures 8-12. Male genitalia. 8, 9. *Baeocera alamada* sp. nov., aedeagus; 8. Internal sac, scale = 0.1 mm; 9. Parameres in ventral view, scale = 0.1 mm; 10-12. *Baeocera roxas* sp. nov.; 10. Aedeagus in dorsal view, scale = 0.1 mm; 11. Aedeagus in lateral view, scale = 0.1 mm; 12. Parameres in ventral view, scale = 0.1 mm.

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40/13: IX 53/18 (segments X of both antennae broken off posterior of base and segments XI missing). Lateral margins of pronotum and elytra separately rounded. Pronotum with lateral margin carinae hardly visible in dorsal view, discal punctation very fine. Hypomera impunctate. Scutellum triangular, small. Elytra weakly narrowed apicad, lateral margins nearly evenly arcuate, lateral margin carinae exposed throughout in dorsal view, sutural striae deep, curved near base and extending lateral to form basal striae gradually approximating basal margin and joining lateral striae. Punctation on adsutural areas, near base and near lateral margins about as fine as that on pronotum; punctation coarse and dense on lateral area situated between basal and apical third of disc, with punctures to part as large as puncture intervals; punctation rather fine and sparse on remaining surface. Exposed tergites very finely punctate. Mesoventrite hardly convex in middle, with three mesal longitudinal striae. Mesepimeon large, about 4 times as long as wide and 5 times as long as interval to mesocoxa. Metaventrite convex in middle, with U-shaped row of coarse punctures anterior of metacoxal process, mesal area appearing impunctate, lateral areas very finely and sparsely punctate; submesocoxal areas 0.03 mm long, with coarse marginal punctures extending posterior of mesepimeral tip. Metanepisternum convex, about 0.12 mm wide, gradually narrowed anteriad, with suture impunctate, nearly straight, reaching margin of metepimeron. Protibiae and mesotibiae straight, metatibiae slightly curved. Abdomen lacking microsculpture. Ventrite I with basal punctures coarse, not elongate; remaining abdominal punctation very fine and sparse.
Male. Protarsomeres I to III weakly widened and bearing tenet setae, protarsomere I narrower than apex of protibia (mesotarsomeres broken off and missing). Lobe of ventrite VI 0.05 mm long, with rounded tip. Aedeagus as Figs 10-12, 0.59 mm long, strongly sclerotized.
Female. Unknown.

Etymology. The species epithet is a noun, the name of the type locality.

Diagnosis. *Baeocera roxas* is also a member of the *B. monstrosa* group and similar with *B. alamada* has the aedeagus with the apical process of the median lobe overlapped by the basal bulb, a simple right paramere and a lobed left paramere. It is distinguished from other species sharing these features by the shape of the parameres and the structure of the internal sac. It differs notably from *B. alamada* and *B. alticola* by the antennomere V much longer than antennomere IV and the pattern of elytral punctation.

Competing interest
The author declares there is no competing interest in the present study.

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