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TAXONOMIC REVIEW OF THE SOUTHEAST ASIAN GENUS *RHINACOSMUS* KRAATZ (COLEOPTERA: CETONIIDAE)

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With 20 text-figures and one plate

ABSTRACT

The Southeast Asian genus *Rhinacosmus* Kraatz is diagnosed and discussed, the species are keyed, a checklist of the species is given, and the Leiden collection is recorded. Four species are recognized, including *R. javanus* sp. nov. (West Java). For *R. pilosus* (Mohnike) and *inermis* (Janson) lectotypes are designated; the former name appears to be a senior synonym of *R. knirschi* Schürhoff.

INTRODUCTION

This review is part of a series in which special attention is given to the generic features of cetoniine beetles and to the material kept in the Leiden museum. In this paper the Southeast Asian genus *Rhinacosmus* Kraatz, 1895, is dealt with. The genus is diagnosed and discussed, and its range is mapped; the infrageneric classification is examined; a key to the species and an annotated checklist are given. The generic section is followed by the description of a new species, and by notes on and records of the other species.

The specimens mentioned below are all in the Leiden museum, abbreviated L. Two further abbreviations concerning collections incorporated in L are:

J — O. E. Janson (collection acquired by Valck Lucassen in 1928).

VL — F. T. Valck Lucassen (collection acquired by L in 1940).

Approximate total lengths were measured with head of beetles extended.

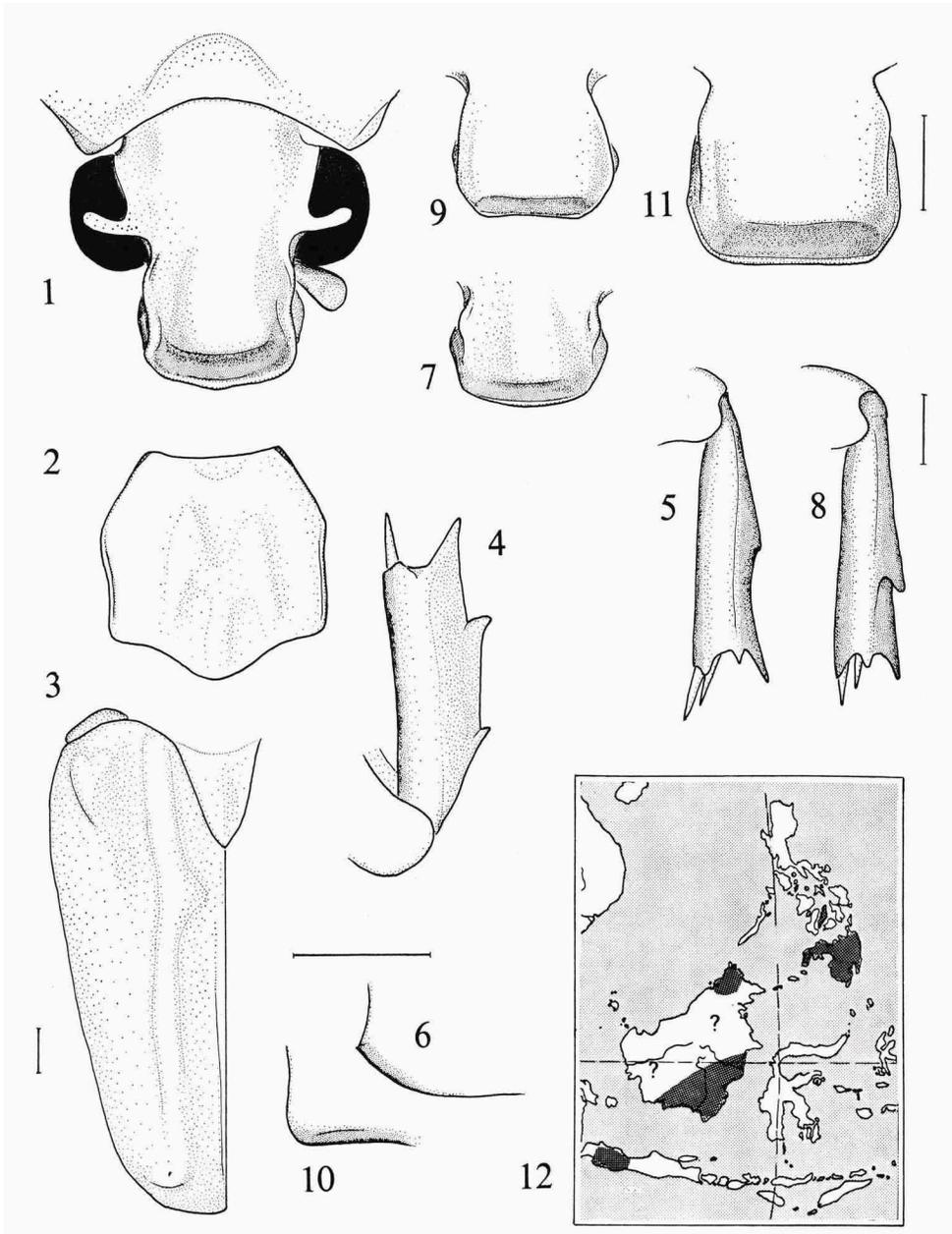
In the checklist each species-group name is followed by: author and reference to first description; original status, if different from present; (reputed) location of type(s); any synonyms; approximate distribution, type-locality.

Rhinacosmus Kraatz

In 1895 Kraatz proposed this genus for a single new species from the Philippines, *R. zebuanus* Kraatz. He was not aware that in 1873 Mohnike had already described a close relative of his *R. zebuanus* under the name *Macronota pilosa*, also from the Philippines. A species from Borneo was in 1903 described by Janson as *Mycteristes inermis*. Two more Philippine species were added by Schürhoff (1933). Recently Mikšić (1972, 1974, 1977) re-examined *Rhinacosmus*, finally recognizing three species in what he considers a subgenus within *Mycteristes* Castelnau. Until a critical phylogenetic analysis of *Mycteristes*, *Rhinacosmus*, and the other Phaedimini has been attempted, I consider the ranks of the species-groups included in *Mycteristes* by Mikšić (1977) unsettled, and prefer, for practical purposes, a generic rank for *Rhinacosmus*. Mikšić gave useful descriptions, but was unable to interpret *Macronota pilosa* Mohnike correctly. Having encountered a type of this species in L, I can now establish a correct synonymy. Among some unidentified Taenioderina (= *Macronotides* sensu Schenkling, 1921, part) from Java I found a fourth *Rhinacosmus* species, which is described below.

Generic diagnosis. — Clypeal shape squarish (figs. 1, 7, 9, 11); anterior side reflexed, lateral sides more or less elevated; general surface of clypeal disc flat, laterally somewhat concave. Frontoververtex unmodified (fig. 1). Pronotum unarmed, its general surface convex, with anteromedian and posterior depressions (fig. 2).

Dorsal outline of pronotum subhexagonal with basal lobe. Lateral borders of pronotum more or less marginate, noto-pectoral transition abrupt. Scutellum elongately subtriangular, with acute apex. Elytron elongate, with characteristic set of elevations and impressions (fig. 3), lacking striations; apico-sutural angle distinct or rounded off; posthumeral emargination of elytron absent; humeral and apical umbones distinct. Mentum bilobate in front; palpi unmodified. Antenna with simply claviform scapus and unmodified lamellae, which are slightly longer than antennal segments 2-7 combined. Preprosternum tectiform, unmodified. Mesosternal collum unmodified. Mesepimeron in dorsal view broadly distinct. Middle coxae separated by short mesometasternal protrusion, its apex rounded or more or less prow-shaped, shortly angulate or rounded in profile (figs. 6, 10). Abdomen with (1) + 6 visible sternites, which are medially impressed in the male sex; dorso-ventral transition of sternites gradually convex, (at most) just visible from above; propygidial and proximal abdominal spiracles more or less exposed. Pygidium transverse, with feebly convex general surface, visible from above.



Figs. 1-11. Contours of: 1-6, *Rhinacosmus javanus*, holotype; 7, 8, *inermis*, lectotype; 9, 10, *pilosus*, lectotype; 11, *zebuanus*, ♂ Tangcolan. — 1, head, full-face view; 2, pronotum, dorsal; 3, left elytron, dorsal; 4, right fore-tibia; 5, 8, left hind tibia; 6, 10, mesometasternal protrusion, lateral view, cephalad to left; 7, 9, 11, clypeus, full-face. — Scale-lines = 1 mm; 1, 4, 7, 9, 11, same scale; 2, 3, same scale. Fig. 12. Approximate known range of *Rhinacosmus* in the Indo-Australian archipelago.

Fore-tibia with three external denticles, its underside unmodified; terminal spur long, acuminate. Middle- and hind-tibiae with variably developed external protrusion, their apices bidentate(-lobate) and tridentate(-lobate), respectively. Femora unmodified. Hind coxa invisible in dorsal view, laterally ridged, with subdistinct posterolateral angle. Tarsi all long and slender, with large sickle-shaped claws. Parameres distally with variably developed lateral expansion. Habitus elongate, resembling the forms formerly united in *Macronota*. Total length 1-2 cm, usually ca. 1.5 cm. Derm generally striolate; pilosity very distinct, white. Colour of derm reddish-brown to green, rather uniform, more or less opaque. Sexual dimorphism primarily evident in shape of abdomen.

Type-species. — *Rhinacosmus zebuanus* Kraatz, by monotypy.

Affinities. — *Rhinacosmus* belongs in the tribe Phaedimini on account of both the pronotal shape with its shortly lobate base and the entire, i.e. non-emarginate, lateral declivity of the elytron. At first sight *Rhinacosmus* resembles the forms united in the Taenioderina (especially *Macronota auctorum*), and the genus may indeed constitute a link between the Phaedimini and the Taenioderina. The current poorly studied suprageneric classification of the Cetoniinae precludes stronger statements. Mikšić (1977) considers *Rhinacosmus* a subgenus within *Mycteristes* Castelnau, and it cannot be denied that the type-species of *Mycteristes*, *M. rhinophyllus* (Wiedemann), is a close relative of *Rhinacosmus*, but I prefer to maintain the genera as listed by Schenkling (1921) as far as they seem to be homogeneous (see also remarks above, under the generic heading).

Infrageneric classification. — An analysis of the more important characters of the species is given in the synoptic table below. There is no firm basis for a phylogenetic interpretation of these characters. The overall similarity, as deductable from the synoptic table, suggests that *Rhinacosmus inermis* and *javanus* are most closely related, and that the other two species are about equally remote from each other and from the first-mentioned pair. The species are here arranged accordingly.

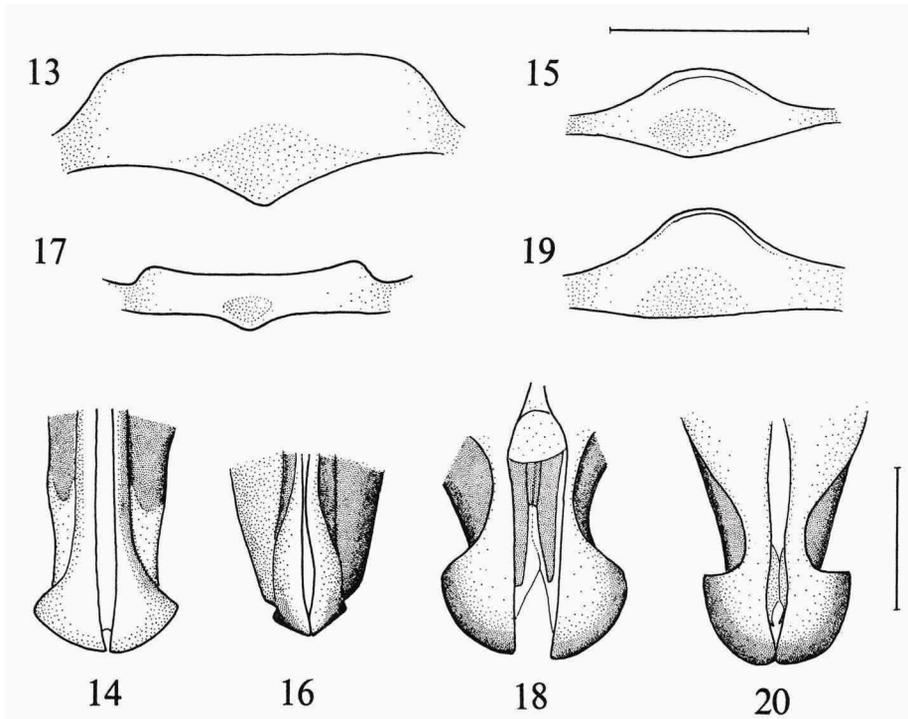
Distribution. — Oriental Region: few localities in the southern Philippines, Borneo and Java. Map, fig. 12.

Bionomics. — Unknown.

SYNOPTIC TABLE OF CHARACTERS

The following characters proved to be useful in the delimitation of species:

1a, reflexed anterior margin of clypeus medially emarginate (fig. 17) or straight (fig. 13); b, medially lobate (figs. 15, 19).



Figs. 13-20. Contours of: 13, 14, *Rhinacosmus zebuanus*, ♂ Tangcolan; 16, 17, *pilosus*, lectotype; 15, 18, *inermis*, lectotype; 19, 20, *javanus*, holotype. — 13, 15, 17, 19, anterior side of reflexed clypeal margin; 14, 16, 18, 20, apex of parameres. — Scale-lines = 1 mm; same elements, same scale.

2a, lateral declivity of clypeus in full-face view large (figs. 1, 7, 11); b, small (fig. 9).

3a, pronotum with much relief, including an anteromedian depression (fig. 2); b, with little relief.

4a, apicosutural angle of elytron pointed; b, rounded off (fig. 3).

5a, mesometasternal protrusion (lateral view) rounded (fig. 10); b, angulate (fig. 6).

6a, parameres distally expanded (figs. 14, 18, 20); b, not expanded (fig. 16). Parameral shape in details characteristic for each species.

7a, external protrusion of middle- and hind-tibiae spiniform (fig. 8); b, obsolescent (fig. 5).

8a, dorsal pilosity predominantly setiform; b, squamiform.

9a, approximate total length usually under 16 mm; b, over 16 mm.

The distribution of these character states over the four known species is given in the following table:

	characters								
	1	2	3	4	5	6	7	8	9
<i>Rhinacosmus</i>	states								
<i>zebuanus</i>	a	a	b	a	a	a	a	a	b
<i>pilosus</i>	a	b	a	a	a	b	a	a	a
<i>inermis</i>	b	a	a	a	b	a	a	a	a
<i>javanus</i>	b	a	a	b	b	a	b	b	a

KEY TO SPECIES

For additional characters see synoptic table above

1. Anterior margin of clypeus straight or emarginate (adaxial view, figs. 13, 17). Mesometasternal protrusion in profile rounded (fig. 10) 2
 — Anterior margin of clypeus lobate (figs. 15, 19). Mesometasternal protrusion in profile pointed (fig. 6) 3
2. Parameres distally distinctly expanded, fig. 14. Shape of clypeus, figs. 11, 13. Length 16-20 mm. Pronotum with little relief. Dorsal pilosity predominantly squamiform *zebuanus*
 — Parameres distally angulate, not expanded, fig. 16. Shape of clypeus, figs. 9, 17. Length 14.5-16.5 mm. Pronotum with distinct elevations and depressions. Dorsal pilosity predominantly setiform *pilosus*
3. Parameres, fig. 18. Elytral apicosutural angle pointed. External protrusion of middle- and hind-tibiae spiniform (fig. 8). Anterior margin of clypeus, fig. 15; clypeus short (fig. 7) *inermis*
 — Parameres, fig. 20. Elytral apicosutural angle rounded off (fig. 3). External protrusion of middle- and hind-tibiae obsolescent (fig. 5). Anterior margin of clypeus, fig. 19; clypeus long (fig. 1) *javanus*

ANNOTATED CHECKLIST

Rhinacosmus Kraatz, 1895: 108, type-sp. *R. zebuanus* Kraatz (monotypy). — Oriental: Philippine and Sunda Islands, 4 species. — Latest synopsis: Mikšić, 1977.

Described species

inermis (Janson, 1903: 306, *Mycteristes*), lectotype in L. — Borneo (type-loc. Mt. Kinabalu).

javanus Krikken (present paper), holotype in L. ♀ unknown. — Java (type-loc. Sukanegara).

pilosus (Mohrnik, 1873: 148, *Macronota*), lectotype in L. Syn. *Rhinacosmus knirschi* Schürhoff, 1933. — Mindanao (type-loc. ditto).

zebuanus Kraatz, 1895: 109, holotype in Senckenberg. Syn. *Rhinacosmus kuntzeni* Schürhoff, 1933. — Zebu (also type-loc.) and Mindanao.

DIAGNOSES, RECORDS, ETC.

Rhinacosmus zebuanus Kraatz (figs. 11, 13, 14, pl. I fig. 2)

Identification. — On average *R. zebuanus* is larger than the other species. It has, contrary to its closest known relative, *pilosus*, the parameral apex distinctly dilated. The elevations and impressions of the pronotal disc are scarcely developed and the reflexed anterior margin of the large clypeus is very broad.

Material in L. — One male from the Philippines: Mindanao: Bukidnon: Tangcolan, leg. Baker (ex VL). Length ca. 18.5 mm.

Rhinacosmus pilosus (Mohnike) (figs. 9, 10, 16, 17, pl. I fig. 1)

Identification. — This species is smaller than *zebuanus* and it does not have the parameral apex expanded. The pronotal disc shows more relief and the reflexed margin of the clypeus is much narrower. Usually the elytron has a discal concentration of whitish setae, which seems absent from the elytra of the other species.

Note. — *Macronota pilosa* Mohnike is a senior synonym of *Rhinacosmus knirschi* Schürhoff (1933: 90) (syn. nov.). Mikšić's description of *knirschi* (1977: 109), based on type-material, agrees with the syntype of *Macronota pilosa* in L, which is here designated lectotype to prevent any further confusion.

Material in L. — 3 ♂, 4 ♀.

Male from "Mindanao // G. Semper" ex VL-J, length ca. 15 mm, here designated lectotype; further material from Mindanao: Iligan, leg. Baker (1 ♀); Kolambugan, leg. Baker (1 ♀); Imugan, 30.viii, 4.ix.1916 (1 ♂, 1 ♀) (all ex VL); Mindanao, without details (1 ♂, 1 ♀, ex VL-J-Van de Poll).

Rhinacosmus inermis (Janson) (figs. 7, 8, 15, 18, pl. I fig. 3)

Identification. — *R. inermis* is primarily distinguished by its non-angulate, broadly dilated parameral apex, its short clypeus, the distinct apicosutural angle of the elytron, and the distinct spine on the outer side of middle- and hind-tibiae. Its closest known relative is *R. javanus*, described below.

Material in L. — A male lectotype (here designated) from "Kinabalu / N. Borneo // Waterstradt" ex VL-J, length ca. 14.5 mm. Two females, one from S.E. Borneo: Pengaron (ex VL-J-Van de Poll), one from Borneo, leg. Wahnes (ex ditto).

Length 14.5-16 mm.

Rhinacosmus javanus sp. nov. (figs. 1-6, 19, 20, pl. I fig. 4)

Holotype (male). — Approximate length 14 + 2, width 7, height 5 mm. Dark reddish-brown, with greenish reflection on pronotum; pronotum and elytra opaque, other parts more or less shiny. Derm striolate-punctate, arcuate-striolate, or braidedly striolate, with numerous white complanate setae. Habitus, pl. I fig. 4.

Cephalic contours, fig. 1. Clypeus with characteristic anterior lamina (fig. 19); anterolateral corner of clypeus concave, separated from lateral declivity by well-pronounced ridge; clypeal setae small, more or less erect. Maximum width of head capsule (including eyes) 2.9, of clypeus 1.6 mm.

Pronotal contours, fig. 2; general surface convex with distinct antero-median and mediobasal depression; only posterior section of lateral border distinctly marginate. Derm of pronotum densely arcuate-striolate, except on aforesaid depressions and on M-shaped, elevated discal area; number of setae on pronotal centre 40-50 / sq. mm. Median length of pronotum 4.3, maximum width 4.5 mm. Scutellum (fig. 3) only basally and apically with some short striolae.

Elytral contours and disposition of elevations, fig. 3; elytron without posthumeral emargination; prediscal area depressed, juxtasutural zone of elytron increasingly raised caudad, humeral impression distinct; paradiscal costa strongly pronounced, impunctate; humeral umbone with indication of longitudinal costa; apical umbone distinct; apicosutural angle rounded off; discal longitudinal impression of elytron obliquely striolate, separated from juxtasutural zone by continuous longitudinal striola; lateral declivity with short, arcuate, marginally almost punctiform striolae, all densely set. Sutural length of elytra 7.2, maximum width combined 6.9, maximum (longitudinal) length 10.2 mm.

Antennal club long, longer than segments 2-7 combined. Lateral parts of pectus and abdomen, coxae, femora, all braidedly striolate with abundant, more or less appressed setae, which are mostly finer than on dorsum. Meso-metasternal protrusion approximately as wide as middle tibia, pointed both in ventral view and in profile (fig. 6). Median zone of metasternum almost glabrous. Hind coxa with posterolateral border virtually rectangular, but slightly rounded off; lateral ridge moderately pronounced. Abdomen with (1) + 6 visible sternites, 3-6 medially impressed, 3-5 medially with dense, appressed pilosity; anal sternite laterally with fine, transverse, braided striolation; lateral dorso-ventral transition of sternites gradually convex. Pygidium feebly convex, with sharply pronounced, dense, braided, concentric striolation, and numerous, variably appressed setae.

Fore-tibia (fig. 4) with 3 external denticles; terminal spur slender, tapering, reaching to near apex of tarsal segment 2. Middle-tibia without, hind-tibia (fig. 5) with very slight indication of external elevation, their apices bidentate and tridentate, respectively; terminal spurs of middle and hind tibiae slender, tapering, those of hind tibia longer, reaching apex of tarsal segment 2. Tibiae all longitudinally striolate, abundantly setose. Tarsi all long and slender, with large sickle-shaped claws. Femora also slender, striolate-setose.

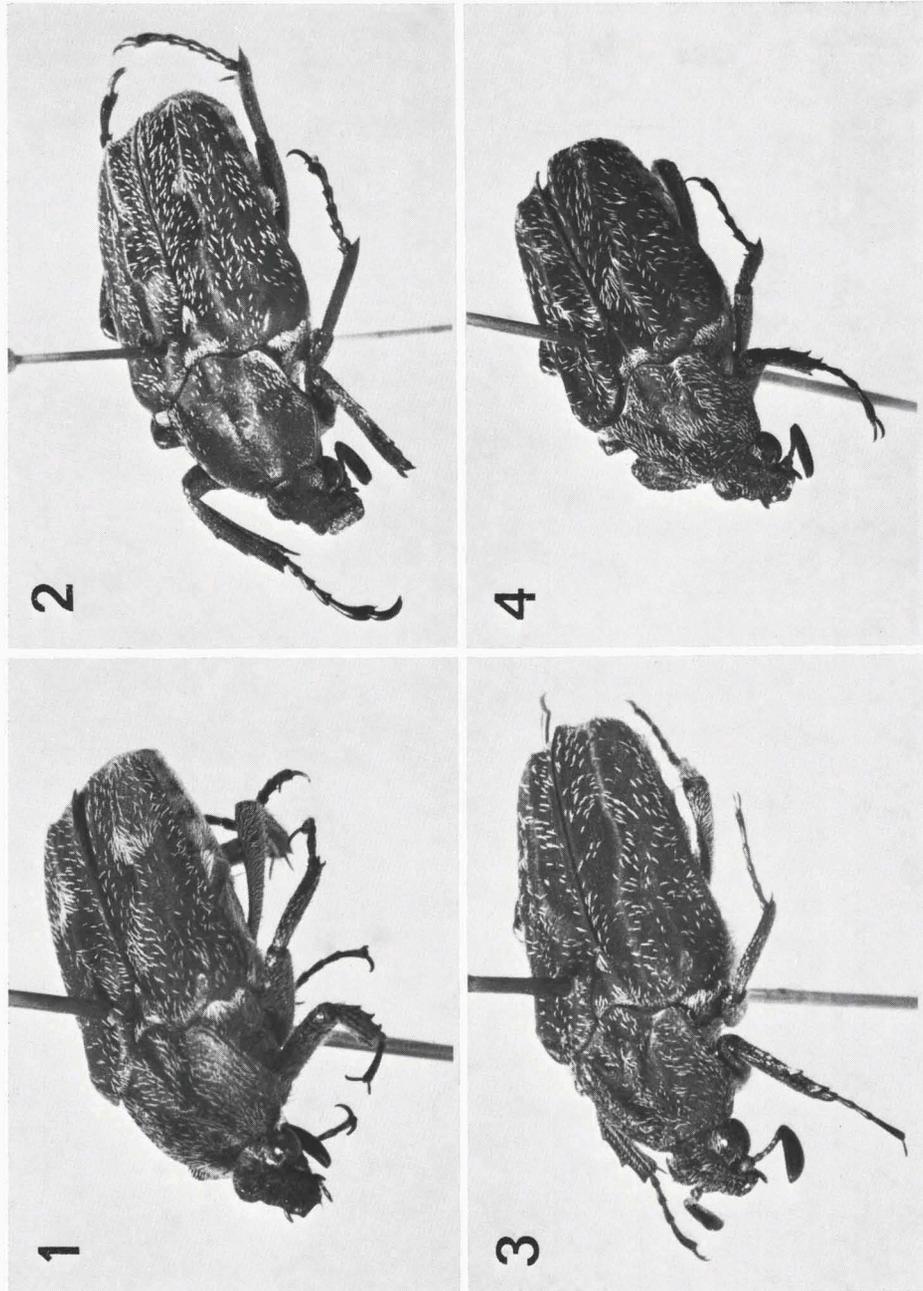
Parameres distally with external lamina, fig. 20.

Identification. — *Rhinacosmus javanus* is primarily distinguished by the long clypeus, the broadly dilated, angulate parameral apex, the rounded apicosutural angle of the elytron, and the poorly developed external elevation of the middle- and hind-tibiae. An additional character may be the M-shaped elevation of the pronotal disc.

Material in L. — Holotype from West Java: Djampang: env. Sukane-gara, 700-1000 m, x.1937, L. J. Toxopeus.

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Figs. 1-4. *Rhinacosmus* species. 1, *R. pilosus*, ♂ Mindanao, ca. 15 mm; 2, *zebuamus*, ♂ Tangcolan, 18.5 mm; 3, *inermis*, lectotype, 15 mm; 4, *javensis*, holotype, 16 mm.