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## Study on the Tribe Ochyromerini (Coleoptera, Curculionidae) from East Asia II, Genus *Imerodes* Marshall<sup>1)</sup>

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**Abstract** Taxonomic study of the genus *Imerodes* Marshall deals with four species including a new species, *I. sabanus* sp. nov. from E. Malaysia, and the genus is newly transferred to the tribe Ochyromerini. *I. rufescens* (Motschulsky) is recorded from Singapore and E. Malaysia and *I. rufus* (Voss) is from Taiwan for the first time. Key to species, habitus photographs and line illustrations of important features are provided.

The genus *Imerodes* was erected by Marshall for *Amorphoidea rufescens* Motschulsky with *A. angusticollis* Motschulsky in the subfamily Tychiinae. The member of this genus is very similar to that of *Amorphoidea* Motschulsky by having exposed pygidium, but clearly different from it by the venter of 2-4 segments which are more or less curved backward at the sides of the posterior margin.

Voss (1953) established *Homacalyptus* for *rufus* Voss from China (Fukien) in the tribe Acalyptini of the subfamily Anthonominae, but this genus was synonymized afterward with *Imerodes* of the subfamily Tychiinae by him (1957). As a result, three species, *rufescens* (Java), *angusticollis* (Sumatra, Java) and *rufus* (China) are comprised in this genus up to the present.

In this paper, we describe a new species from E. Malaysia (Sabah), record *rufescens* from Singapore and E. Malaysia (Sarawak) and *rufus* from Taiwan for the first time, and transferred this genus into the tribe Ochyromerini of the Tychiinae by the characters of the aedeagus, metendostemite and so on.

Genus *Imerodes* Marshall

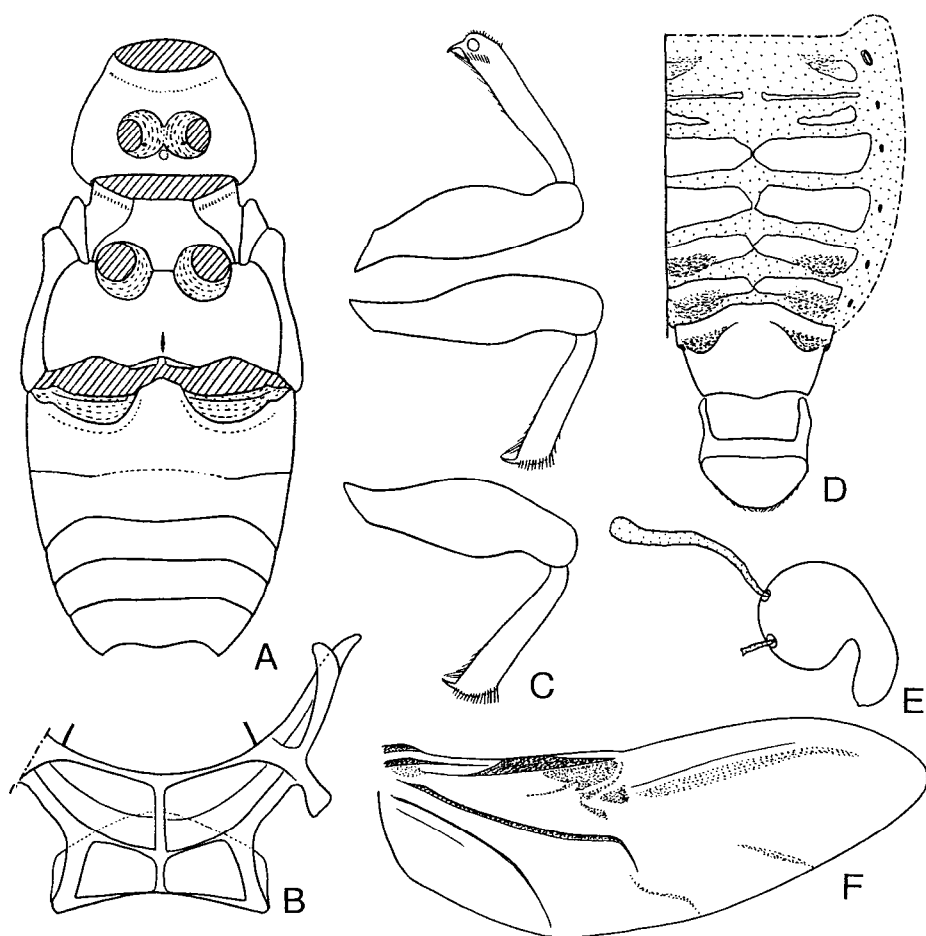
*Imerodes* Marshall, 1926, Treubia, 8: 347 (type species: *Amorphoidea rufescens* Motschulsky). - Voss, 1957, Treubia, 24: 20 (= *Imerodes*; key to spp.). - Voss, 1958, Decheniana, Beihefte 5: 113 (foot note).

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1) Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 4, No. 80).

***Homacalyptus*** Voss, 1953, Ent. Bl., 49: **61**. - Voss, 1958, Decheniana, Beihefte 5: 113 (Anthominae, Acalyptini).

Derm thinly clothed with setae, excepting scutellum. Forehead between eyes widely separated, a little narrower than the base of rostrum, without median fovea. Eyes large, convex from temples. Rostrum with antennal scrobes running obliquely beneath the base of rostrum, the upper carina running toward a little beneath the middle part of eye. Antennae with six segments in the funicle, scape reaching the anterior part of eyes, but not touching eyes, club oval.



**Fig. 1.** A, B, D, F, *Imerodes angusticollis* (Motschulsky); C, E, *I. rufus* (VOSS). - A, Ventral side, male; B, metendostemite; C, legs; D, tergite, male; E, spermatheca; F, hind wing.

Prothorax subparallel-sided at basal half or widest at the base, not constricted at the base, then narrowing to the apex. Elytra with oblique shoulders; apices of elytra separately rounded. Pygidium exposed. Femora unarmed. Each tibia uncinat from inner angle, hind pair often with an indefinite uncus especially in the female. Claws widely divergent, each with a broad, flat basal process.

Prosternum with coxae located behind the middle, the distance between the coxae and submarginal sulcus greater than that between this sulcus and anterior margin. Venter with second ventrite as long as third and fourth ventrites combined and the posterior margin broadly curved posteriorly at sides. Seventh tergite without scrapers of stridulatory organ. Metendosternite with anterior tendon widely separated and arisen from the base of anterior arm. Aedeagus with median lobe freely articulated with struts, internal sac with flagellum; tegmen ringed, without paramere. Spermatheca with lateral lobe absent.

**Discussion.** Though Marshall (1926) and Voss (1957) treated this genus in the Tychiinae by the character of venter, Clark *et al.* (1977) did not included it in their review of the Tychiinae. As this fact indicates, there have been no comment on the systematic position of this genus. In this paper, we support the treatment by Marshall (1926) and Voss (1957) in the Tychiinae and newly classified it in the tribe Ochyromerini by the following characters: venter with second ventrite broadly curved posteriorly at sides, but not covered succeeding ventrites; metendosternite with tendons widely separated; aedeagus with struts freely articulated with median lobe and spermatheca with lateral lobe absent.

This genus is closely related to *Gryporthynchus* Roelofs, but separable from it by the following features: derm thinly clothed with setae; pronotum widest at the base or subparallel-sided at basal half; each tibiae uncinat from inner angle; each femur without any trace of tooth and seventh tergite without a pair of scrapers.

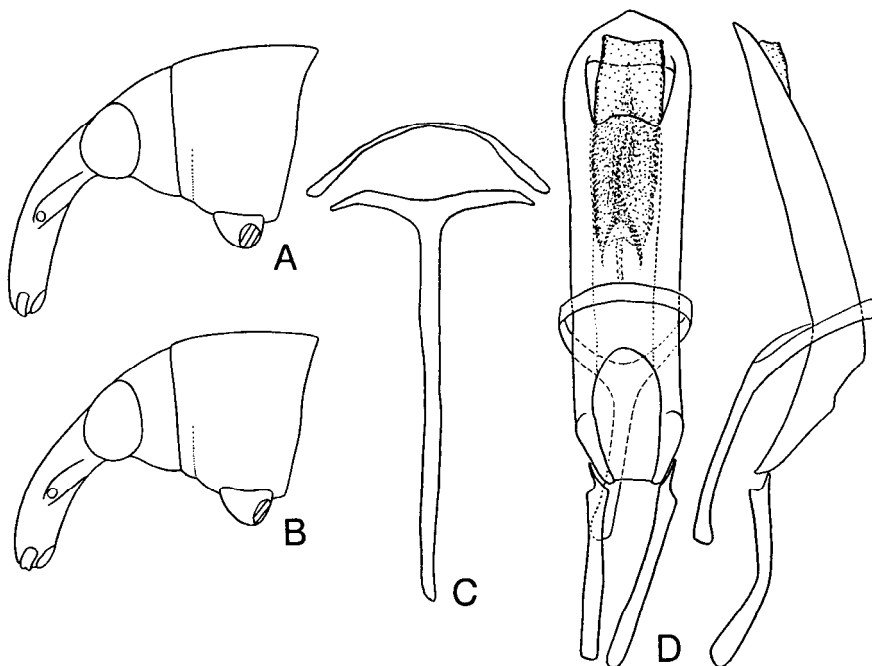
### Key to species

- 1(4): Each interval of elytra much wider than the stria. Body length more than 2.5 mm.
- 2(3): Rostrum strongly curved, a little longer than pronotum in the female. Aedeagus with median lobe subtruncate at the apex. .... *angusticollis* (Motschulsky)
- 3(2): Rostrum not strongly curved, longer than pronotum (3: 2) in the female. Aedeagus with median lobe rounded at the apex. .... *rufus* (Voss)
- 4( 1): Each interval of elytra as wide as the stria near the base. Body length less than 2.5 mm.
- 5(6): Body somewhat thinner, elytra 1.30-1.35 times as long as wide. .... *rufescens* (Motschulsky)
- 6(5): Body somewhat robust, elytra 1.2-1.3 times as long as wide. .... *sabanus* sp. nov.

### *Imerodes rufescens* (Motschulsky)

(Figs. 2; 6A, B)

*Amorphoidea rufescens* Motschulsky, 1858, Etud. Ent., 7: 82 (Indes orientales). - Schenkling and Marshall, 1939, Coleopt. Cat., 168 Curculionidae Addenda: 10 (Eirirrhinae).



**Fig. 2.** A, *Imerodes rufescens* (Motschulsky)- A, Head and prothorax, female; B, ditto, male; C, eighth sternite and spiculum gastrale; D, penis.

***Imerodes rufescens*:** Marshall, 1926, Treubia, 8: 347 (Tychiinae). - Voss, 1957, Treubia, 24: 20, 21 (Tychiinae).

Male and female. Brown to dark brown, antennae and legs yellowish brown.

Forehead between eyes  $4/5$  times as wide as the base of rostrum. Eyes large, strongly convex from temples. Rostrum as long as (female) or a little shorter than (male) pronotum, curved, confluent punctured, with a row of carina on each side of basal half. Antennae inserted just a little behind the middle (female) or the middle (male) of rostrum; scape longer than funicle (3 : 2); funicle with first segment a little longer than broad, second about half as long as first, third to fifth subequal in length, just a little shorter than second, sixth a little longer than fifth; club as long as basal four segments of funicle combined.

Prothorax 1.20-1.25 times as wide as long, subparallel-sided at basal  $2/3$ , thence narrowing toward the apex, feebly constricted at the apex; dorsum densely and shallowly punctured, thinly clothed with recumbent pale setae. Scutellum longer than wide, densely clothed with recumbent pale setae. Elytra 1.30-1.35 times as long as wide, widest at the middle, each interval wider than stria, a little wider than stria near the base, thinly clothed with recumbent pale setae. Legs with hind tibiae indefinitely uncinatae.

Length: 1.6-2.1 mm.

**Specimens examined.** 2 females, Singapore, 22. xi-19. xii, 1915, Dr. M. Cameron leg. 2 females, Mt. Matang, W. Sumatra, xii. 1913, G. E. Bryant leg. 2 males, Bunkit Timah, Singapore, 7. viii. 1989, T. Yasunaga leg.

**Distribution.** Java, E. Malaysia (Sarawak, new record), Singapore (new record).

**Remarks.** This species is close to *I. sabanus* sp. nov., but the body is somewhat thinner and eyes are large.

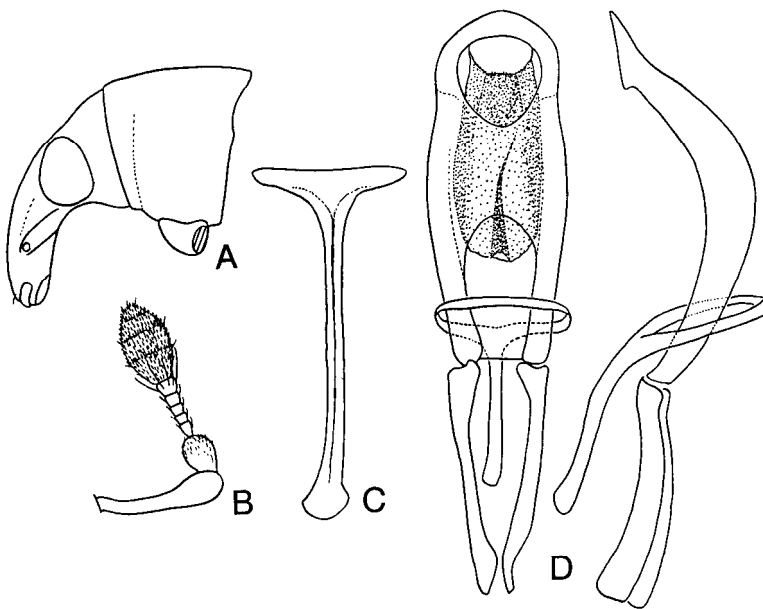
*Imerodes sabanus* sp. nov.

(Figs. 3; 6C, D)

Male. Dark brown, antennal scape, often funicle and legs lighter.

Forehead between eyes  $4/5$  times as wide as the base of rostrum. Eyes convex from temples. Rostrum robust, shorter than pronotum, confluent punctured, with two rows of carinae on each side behind the antennal insertion. Antennae inserted a little before the middle of rostrum; scape longer than funicle; funicle with first segment a little longer than wide, second less than half as long as first, third to fifth subequal in length, just a little longer than second, sixth a little longer than fifth; club as long as basal four segments of funicle combined.

Prothorax 1.2-1.3 times as wide as long, subparallel-sided at basal  $2/3$ , thence narrowing toward the apex, weakly constricted at the apex; dorsum thinly clothed with recumbent pale setae, densely and shallowly punctured. Scutellum longer than wide, densely clothed with recumbent pale setae. Elytra 1.2-1.3 times as long as wide, widest a little behind the middle; each interval a little wider than stria, as wide as stria near the base and thinly clothed with recumbent pale setae and medially a row of longer recumbent pale setae. Legs with hind tibiae indefinitely uncinatae.



**Fig. 3.** *Imerodes sabanus* sp. nov., male. - A, Head and prothorax; B, antenna; C, spiculum gastrale; D, penis.

Female. Unknown.

Length: 1.9 mm.

Holotype: male (Type No. 2991, Kyushu Univ.), Poring Hot Spring, Sabah, Borneo Is., E. Malaysia, 20-26. iii. 1993, H. Kojima leg.

Paratypes: 2 males, same data as holotype.

Distribution. E. Malaysia (Sabah).

Remarks. This species is close to *I. rufescens* (Motschulsky), but the body shape is different.

*Imerodes angusticollis* (Motschulsky)

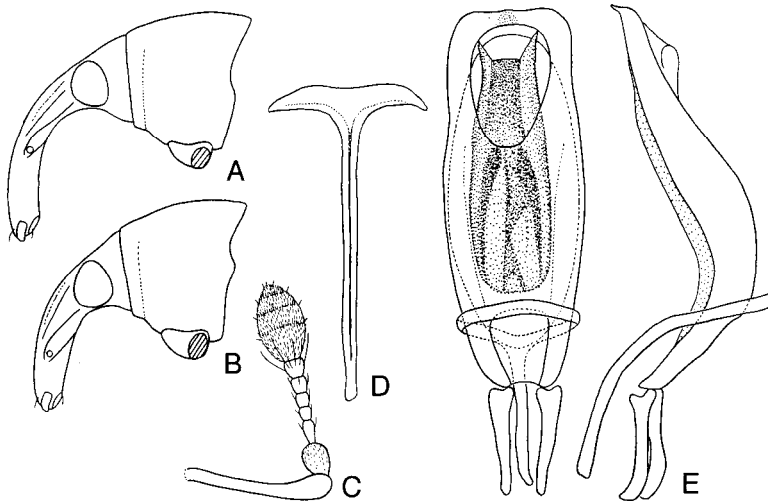
(Figs. 1A, B, D, F; 4; 6E-H)

*Amorphoidea angusticollis* Motschulsky, 1858, Etud. Ent., 7: 82 (Indes orientales). - Schenkling and Marshall, 1939, Coleopt. Cat., 168 Curculionidae Addenda: 10 (Eirrhiniinae).

*Imerodes angusticollis*: Marshall, 1926, Treubia, 8: 347 (Tychiinae). - Voss, 1957, Treubia, 24: 20, 21 (Tychiinae).

Male and female. Dark brown to blackish, antennae and legs lighter.

Forehead between eyes 4/5 times as wide as the base of rostrum. Eyes convex from temples. Rostrum strongly curved in female, a little shorter (male) or a little longer (female) than pronotum, confluent punctured, with two rows of carinae on each side behind the antennal insertion. Antennae inserted a little before the middle (male) or the middle (female) of rostrum;



**Fig. 4.** *Imerodes angusticollis* (Motschulsky). - A, Head and prothorax, female; B, ditto, male; C, antenna; D, spiculum gastrale; E, penis.

scape a little longer than funicle; funicle with first segment 1.5 times as long as broad, second  $\frac{3}{5}$  times as long as first, third and fourth subequal in length,  $\frac{2}{3}$  times as long as second, fifth and sixth subequal in length, a little longer than fourth; club nearly as long as basal three segments of funicle combined.

Prothorax 1.2 times as wide as long, widest at the base, slightly narrowing to apical one-third, thence rapidly narrowing toward the apex and weakly constricted at the apex; dorsum slightly glossy, thinly clothed with pale setae. Scutellum longer than wide, densely covered with recumbent pale setae. Elytra 1.35 times as long as wide, widest at the middle; each interval much wider than stria, very thinly clothed with recumbent pale setae. Legs with each tibiae uncinata, hind pair with a little small uncus in the female.

Length: 2.8-3.0 mm.

*Specimens examined.* 4 males and 2 females, Sumatra, Fort de Kock, 1924, E. Jacobson leg.

*Distribution.* Java, Sumatra.

*Remarks.* This species is close to *I. rufus* (Voss), but the rostrum is strongly curved in the female and the median lobe of aedeagus is subtruncated at the apex.

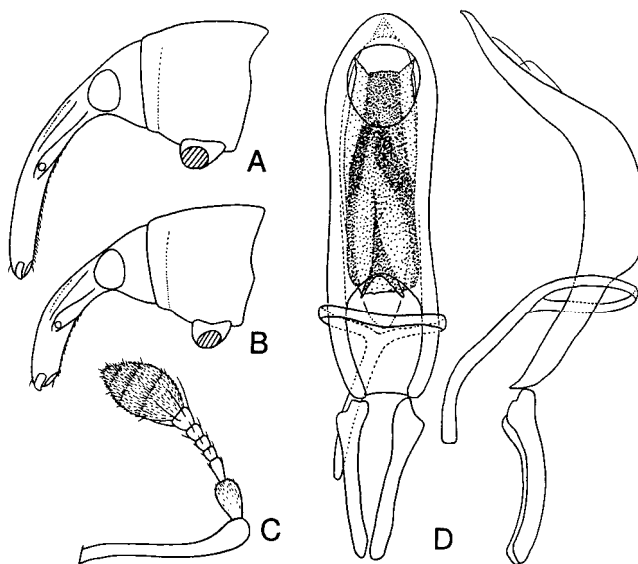
*Imerodes rufus* (Voss)

(Figs. 1C, E; 5; 61-L)

*Homacalyptus rufus* Voss, 1953, Ent. Bl., 49: 62 (China: Fukien; Anthonominae, Acalyptini). - Voss, 1958, Decheniana, Beihefte 5: 113.

*Imerodes rufus*: Voss, 1957, Treubia, 24: 21 (Tychiinae).

Male and female. Reddish brown to dark brown, antennae and legs a little lighter.



**Fig. 5.** *Imerodes rufus* (Voss). - A, Head and prothorax. female; B, ditto, male; C, antenna; D, penis.



Forehead between eyes  $4/5$  times as wide as the base of rostrum. Eyes weakly convex from temples. Rostrum as long as (male) or longer than ( $3 : 2$ , female) pronotum, confluent punctured, with five rows of carinae behind the antennal insertion. Antennae inserted a little before (male) or a little behind (female) the middle of rostrum; scape longer than funicle ( $3 : 2$ ); funicle with first segment about twice as long as broad, second  $2/3$  times as long as first, third and fourth subequal in length, half as long as second, fifth and sixth subequal in length, a little longer than fourth; club as long as basal three segments of funicle combined.

Prothorax 1.10-1.25 times as wide as long, widest at the middle or subparallel-sided at basal  $2/3$ , thence narrowing toward the apex, weakly constricted at the apex; dorsum densely and shallowly punctured, thinly clothed with recumbent pale setae. Scutellum longer than wide, densely clothed with recumbent pale setae. Elytra 1.30-1.35 times as long as wide, widest at the middle; each interval much wider than stria, thinly clothed with pale recumbent setae. Legs with each tibiae uncinata, hind pair with a little small uncus in the female.

Length: 2.6-3.2 mm.

*Specimens examined.* 1 male and 3 females, Keito (1150 m), Formosa, 28. vi. 1961, T. Shirozu leg. 1 male. Alishan, Chia Yi Hsien, Taiwan, 6. vii. 1965, Y. Kurosawa leg. 1 male. Fenchihu, Chia Yi Hsien, Formosa, 11. iv. 1965, S. Miyamoto leg. 1 female. Nanshanchi, Formosa, 6. v. 1965, T. Shirozu leg.; 1 female, 23. vii. 1968, K. Yamamoto leg. 1 female, Yangmingshan, Taipei Hsien, Formosa, 24. vi. 1965, S. Kimoto leg.; 1 female, 28. iii. 1965, Y. Hirashima leg. 1 male, Taibei, Taiwan, 1. iv. 1973, S. Nakamura leg. 1 female, Sha Ping, near Liu Kui, S-Taiwan, 10. iv. 1986, K. Baba leg. 1 female, Paling, Taoyuan Hsien, Taiwan, 5. iv. 1991, H. Kojima leg. 1 male, Kukuan, Taichung Hsien, Taiwan, 11. iv. 1991, H. Kojima leg.

*Distribution.* China (Fukien), Taiwan (new record).

*Remarks.* This species is close to *angusticollis* (Motschulsky), but the median lobe of aedeagus is rounded at the apex.

### Acknowledgements

We wish to express our hearty thanks to Dr. R. T. Thompson of the Natural History Museum in London for his gift of identified specimens and the late Dr. K. Baba, Prof. S. Kimoto, Dr. Y. Kurosawa, Dr. S. Miyamoto, Dr. S. Nakamura, Prof. T. Shirôzu and Dr. T. Yasunaga for their kindness offering materials. Kojima also thanks to Associate Prof. O. Tadauchi, Associate Prof. M. T. Chûjô and Assistant Prof. S. Nomura of Kyushu University for their various cooperations for this study.

ON THE GENUS *IMERODES* MARSHALL

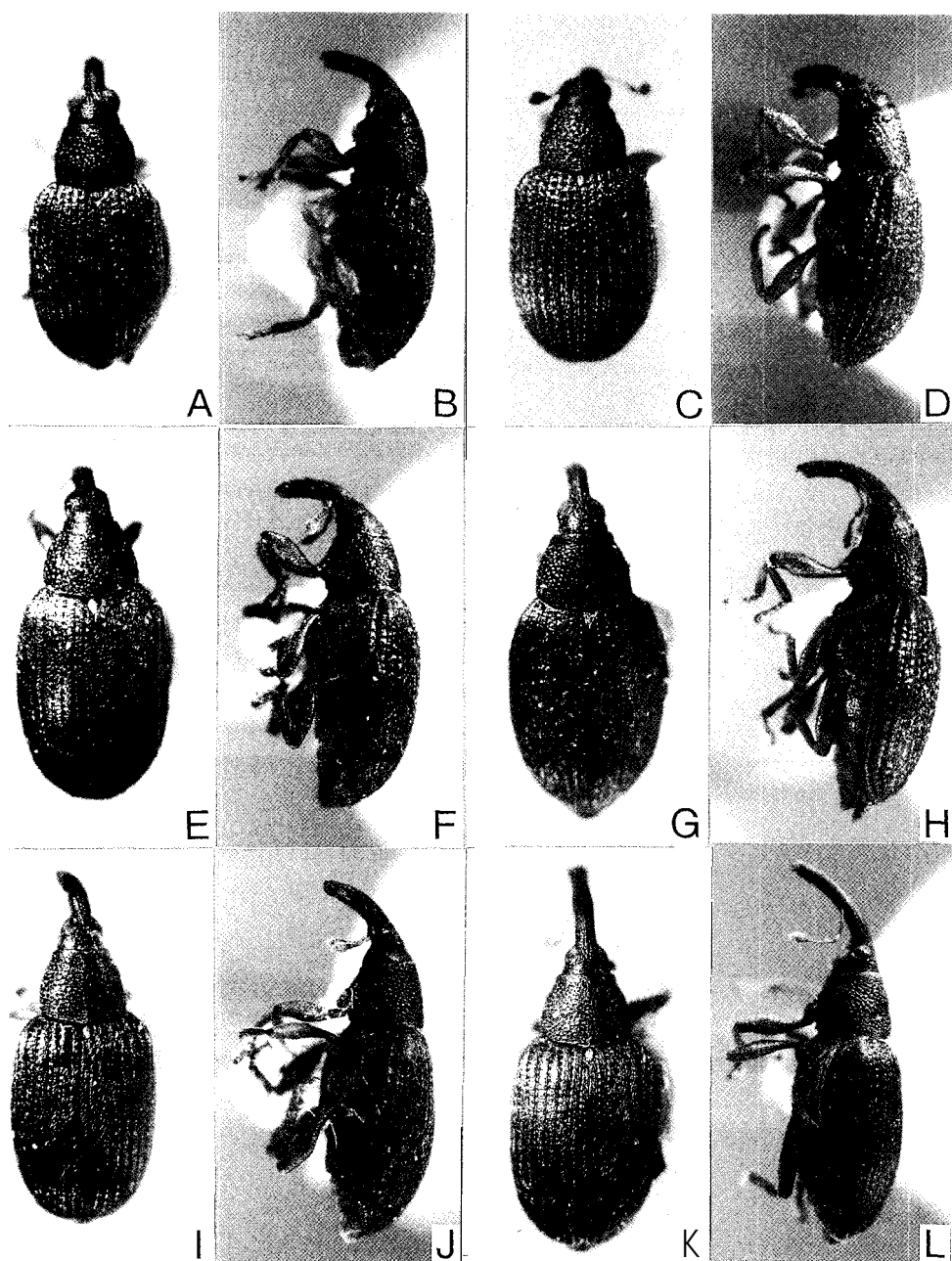


Fig. 6. Photographs of: A, B, *Imerodes rufescens* (Motschulsky), female; C, D, *I. sabanus* sp. nov., male; E, F, *I. angusticollis* (Motschulsky), male; G, H, ditto, female; I, J, *I. rufus* (Voss), male; K, L, ditto, female.

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