

## Broschine Carabid Beetles of the Genus *Eobrosclus* (Coleoptera, Carabidae)

Seiji MORITA

Motoazabu 1–3–28–405, Minato-ku, Tokyo, 106 Japan

**Abstract** A new subgenus belonging to the genus *Eobrosclus* KRYZHANOVSKIJ is erected under the name of *Orobrosclus*, for the type species, *Eobrosclus (Orobrosclus) masumotoi*, from Taiwan and *E. bhutanensis* MORVAN from Bhutan. It is mainly characterized by smooth claw segments and secondary sexual characters in the male. Redescriptions and brief notes are given on all the known species of the genus.

The genus *Eobrosclus* is a small group of medium-sized broscine carabids, originally erected by KRYZHANOVSKIJ (1951, p. 538) for an Asian species. Only a single species, *E. bhutanensis* MORVAN (1982, p. 77), has been added since its establishment. It is mainly characterized by the following points: 1) head with a single supraorbital pore on each side; 2) presence of a deep transverse sulcus on the neck constriction; 3) sides of gula with two oblique foveae on each side; 4) in the male, penultimate sternite with a single tubercle at the median part, and 5) at least, proximal four segments of tarsi strongly rugose dorsad.

Through the courtesy of Dr. S.-I. UÉNO and Mr. K. MASUMOTO, I was able to examine an interesting species of this genus obtained in Taiwan. Judging from the configuration of male genital organ and presence of two pairs of anal setae in the male, the Taiwanese broscine seemed to bear a close relationship with *E. bhutanensis* recorded only from Bhutan. However, I was unable to draw a final conclusion solely on the basis of the original description. In order to clarify its true systematic position, I asked for a loan of the type specimen of *E. bhutanensis* to the Naturhistorisches Museum Basel, and was granted it through the courtesy of Dr. M. BRANCUCCI. After a direct comparative study, it became evident that the Taiwanese specimens must belong to a new species and that both the Taiwanese and Bhutanese forms must be separated subgenerically from the type species of *Eobrosclus*. Their descriptions will be given in the present paper.

The abbreviations used herein are as follows: HW – greatest width of head; PW – greatest width of pronotum; PL – length of pronotum, measured along the median line; PA – width of pronotal apex; PB – width of pronotal base; EW – greatest width of elytra; EL – greatest length of elytra; M – arithmetic mean.

Before going further, I wish to express my deep gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for reading the manuscript of this paper and giving me the opportunity to study on the invaluable material. Thanks

are also due to Mr. Kimio MASUMOTO of Tokyo University of Agriculture for supplying me with broscine specimens, and to Professor Masataka SATÔ of Nagoya Women's University for his kind help. Further, I am deeply indebted to Dr. Michel BRANCUCCI of the Naturhistorisches Museum Basel for the loan of the type specimen of *Eobrosicus bhutanensis* MORVAN under his care.

### Key to the Subgenera

- 1 (2) Anal sternite provided with a pair of setae in ♂, with two pairs of them in ♀; in ♂, proximal three segments of each protarsus furnished beneath with adhesive hairs; claw segments longitudinally strigose on the dorsal surface ..... *Eobrosicus* s. str.  
 2 (1) Anal sternite provided with two pairs of setae in both sexes; in ♂, proximal two segments of each protarsus furnished beneath with adhesive hairs; claw segments smooth on the dorsal surface. . . . . *Orobrosicus* MORITA, nov.

### *Eobrosicus* (s. str.) *lutshniki* (ROUBAL)

[Japanese name: Murasaki-sujiashi-gomimushi]

(Figs. 1–3, 6, 11)

*Brosicus Lutshniki* ROUBAL, 1928, Wien. ent. Ztg., **45**: 90. — JEDLIČKA, 1963, Reichenbachia, Dresden, **2**: 56.

*Eobrosicus lutshniki*: KRYZHANOVSKIJ, 1968, Ent. Obozr., **47**: 173. — ISHIDA, 1971, Ent. Rev. Japan, Osaka, **23**: 63. — NAKANE, 1978, Nat. & Ins., Tokyo, **13**(2): 6. — UÉNO, 1985, Coleopt. Japan Col., Osaka, **2**: 63, pl. 12, fig. 23. — LAFER, 1989, Opred. Nasek. Dal'nego Vostoka SSSR, **3**(1): 126.

*Chilotomus chalybaeus*: KÔNO, 1936, Biogeographica, Tokyo, **1**: 79 [nec FALDERMAN, 1835].

*Eobrosicus richteri* KRYZHANOVSKIJ, 1951, Ent. Obozr., **31**: 538. — NAKANE, 1963, Icon. Ins. Japon. Col. nat. ed., Tokyo, **2**: 22, pl. 11, fig. 21.

*Brosicus richteri*: JEDLIČKA, 1963, Reichenbachia, Dresden, **2**: 54.

*Tosawabrosicus amabilis* S. UÉNO, 1953, Shin Konchû, Tokyo, **6**(7): 49 [nom. nud.]. — ISHIDA, 1958, Akitu, Kyoto, **7**: 17.

Length: 14.61–15.49 mm (from apical margin of clypeus to apices of elytra).

Body elongate, with narrow fore body and relatively short antennae. Colour dark brown with purplish lustre.

Head convex, with frontal furrows very shallowly and widely impressed in front and divergent behind; eyes large; genae relatively convex; lateral grooves deep, situated just inside eyes and a little divergent behind; neck constriction rather distinct with a deep transverse sulcus; mandibles long, hooked at apices, each usually with a single seta; mentum with two pairs of setae; mentum tooth rather wide, more or less bifid or slightly emarginate; submentum with three pairs of setae; gula rarely with transverse wrinkles; each side of gula with two oblique foveae; area between the two foveae strongly convex; apical margin of labrum almost straight, and with six

setae; clypeus with a pair of setae; antennae relatively short; relative lengths of antennal segments as follows: I: II: III: IV: V: VI: XI  $\cong$  1: 0.63: 1.42: 1.22: 1.03: 1.14: 1.20; segment XI pointed at apex; microsculpture almost vanished.

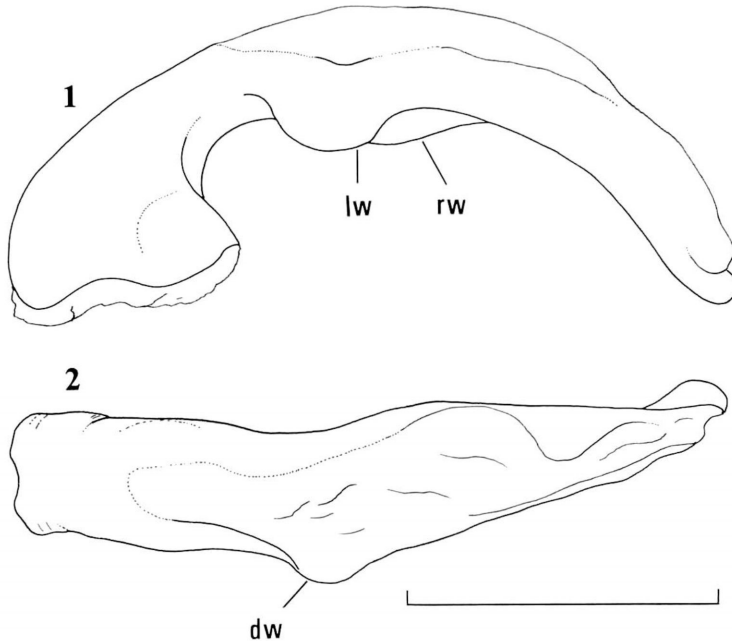
Pronotum cordate and convex, a little wider than long, widest at about three-fifths from base; PW/HW 1.12–1.19 (M 1.17) in 4 ♂♂, 1.14–1.16 (M 1.15) in 4 ♀♀, PW/PL 1.03–1.15 (M 1.09) in 4 ♂♂, 1.00–1.07 (M 1.03) in 4 ♀♀, PW/PA 1.31–1.41 (M 1.34) in 4 ♂♂, 1.31–1.37 (M 1.35) in 4 ♀♀, PW/PB 1.42–1.46 (M 1.44) in 4 ♂♂, 1.42–1.48 (M 1.45) in 4 ♀♀; apex straight, a little wider than base, PA/PB 1.04–1.12 (M 1.08) in 4 ♂♂, 1.06–1.08 (M 1.08) in 4 ♀♀; sides strongly arcuate in front, very weakly sinuate behind and then parallel towards hind angles; reflexed lateral borders very narrow; anterior pair of marginal setae inserted at about a fourth from apex, with no additional seta, posterior one inserted a little before hind angles; median line clearly impressed on the disc, reaching neither apex nor base; basal part with coarse punctures; base weakly arcuate at middle, slightly emarginate near hind angles, and very weakly oblique at the sides; apical transverse impression obsolete; no appreciable basal foveae; hind angles obtuse; microsculpture almost vanished.

Elytra oblong-ovate, widest at about middle or at a level a little behind middle, and more gradually narrowed towards bases than towards apices; EW/PW 1.63–1.68 (M 1.65) in 4 ♂♂, 1.65–1.74 (M 1.70) in 4 ♀♀, EL/EW 1.47–1.58 (M 1.52) in 4 ♂♂, 1.50–1.55 (M 1.53) in 4 ♀♀; striae superficial, weakly punctate, becoming shallower at the sides; basal pore present, being situated on interval 2 and close to stria 2; scutellar striole wanting; intervals flat; apical striole short, very shallow, and free at the anterior end or joining stria 7; a single pore situated inside apical striole; marginal series composed of three pores; microsculpture distinct, consisting of isodiametric meshes in both sexes.

Apical part of prosternum, prepisternum, prepimeron, mesosternum and apical part of metasternum sparsely and coarsely punctate; mesepisternum, metepisternum and sides of basal sternite rarely with coarse punctures; anal sternite with a pair of setae in ♂, with two pairs of them in ♀.

Legs rather long and slender; protibiae straight, gently dilated towards apices, not produced at outer apical angles, and with longitudinal strigae and spines in apical halves; meso- and metatibiae with longitudinal strigae and spines though the proximal portions are smooth; in both sexes, all tarsal segments longitudinally strigose, and proximal three segments usually with additional spine(s) on the dorsal surface (cf. Figs. 3 & 6); in ♂, proximal three segments of each protarsus widely dilated and furnished beneath with adhesive hairs, though not produced inwards at apices, proximal two segments of each mesotarsus also furnished beneath with adhesive hairs.

Aedeagus tubular, arcuate, widely membranous on dorsum, and with three wings (cf. Fig. 1) at about middle; two wings (rw & lw) situated on each lateral edge of the ventral side, and produced ventrad; right wing larger than the left; dorsal surface of dorsal wing (dw) membranous; basal part rather large, with large basal orifice which is open dorsally (cf. BALL, 1956, p. 41); viewed laterally, apical lobe



Figs. 1-2. Aedeagus of *Eobrosicus* (s. str.) *lutshniki* (ROUBAL) from Marunuma, Gunma Pref., Japan; 1, left lateral view (lw: left wing, rw: right wing); 2, dorsal view (dw: dorsal wing). (Scale: 1.5 mm.)

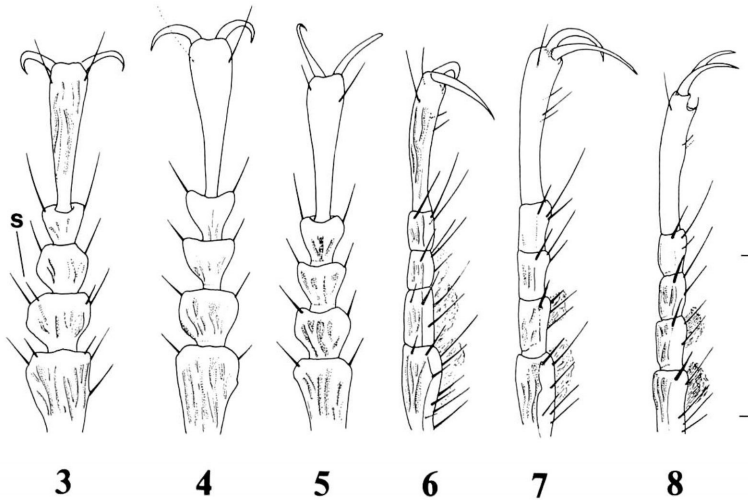
short and widely rounded; viewed dorsally, apical part curved to the right and strongly compressed. Styles rather large and broad at the proximal parts, each bearing long hairs.

*Specimens examined.* 1 ♂, Mt. Kitaguni-yama, Mutsu-shi, Aomori Pref., 30-VI-1985, S. MORITA leg.; 1 ♀, same locality, 23-IX-1985, S. YAMAUCHI leg.; 1 ♀, Ajigasawa, Riv. Akaishi-gawa, Aomori Pref., 25-VIII-1985, S. YAMAUCHI leg.; 1 ♂, Oirase, Fukaura-chô, Aomori Pref., 20-VIII-1989, A. ABE leg.; 1 ♂, 2 ♀♀, Marunuma, Gunma Pref., 31-VIII-1972, S. MORITA leg.; 1 ♂, Mt. Mitô-san, Okutama, Tokyo, 9-VII-1978, S. MORITA leg.

*Range.* Eastern Siberia, Sakhalin, northwestern China and Japan (Hokkaido, Honshu, Shikoku and Kyushu).

*Notes.* This species is usually taken at light in mountainous areas. However, the specimens collected by myself were found from under stones along narrow streams.

According to the drawings given by KRYZHANOVSKIY (1951, p. 539), the continental specimen examined by himself is distinguished from the Japanese one by the following points: 1) submentum with two pairs of setae; 2) genae more convex; 3) apical margin of pronotum weakly emarginate; 4) basal margin of pronotum arcuate, and 5) median line reaching basal margin of pronotum. Unfortunately, it is impossible



Figs. 3–8. Right protarsi in the male of *Eobrosclus* spp.; 3–5, dorsal view; 6–8, right lateral view. — 3, 6. *E. (s. str.) lutshniki* (ROUBAL) (s: additional spine). — 4, 7. *E. (Orobrosclus) bhutanensis* MORVAN. — 5, 8. *E. (Orobrosclus) masumotoi* MORITA, sp. nov. (Scale: 1 mm.)

to determine the presence or absence of a pair of setae near the mentum tooth because of inadequacy of the sketch, but the Japanese form seemed to me to belong to true *lutshniki*.

#### Subgenus *Orobrosclus* MORITA, nov.

Type species: *Eobrosclus masumotoi* MORITA, sp. nov.

As was already shown in the key, this new subgenus is distinguished from the nominotypical one by the following points: 1) anal sternite provided with two pairs of setae in both sexes; 2) in ♂, proximal two segments of each protarsus furnished beneath with adhesive hairs; 3) all tarsal segments without additional spines on the dorsal surface; and 4) claw segments smooth on the dorsal surface.

*Notes.* In the broscine taxonomy, the presence or absence of adhesive hairs on the ventral surface of protarsi and the number of setae on anal sternite in the male are regarded as important key characters at subgeneric or generic level (cf. TOWNSEND, 1971, p. 183; HABU, 1973, p. 85; DOSTAL, 1984, p. 134). Though *Eobrosclus* is characterized by having three wings on the surface of aedeagus, the same genitalic peculiarity is also found in the Nepalese broscine, *Brosocosoma monticola* HABU (1973, p. 87, fig. 6). It had better be regarded as being specific, since the relationship between them does not appear very close.

*Eobrosicus (Orobrosicus) bhutanensis* MORVAN

(Figs. 4, 7, 9–10)

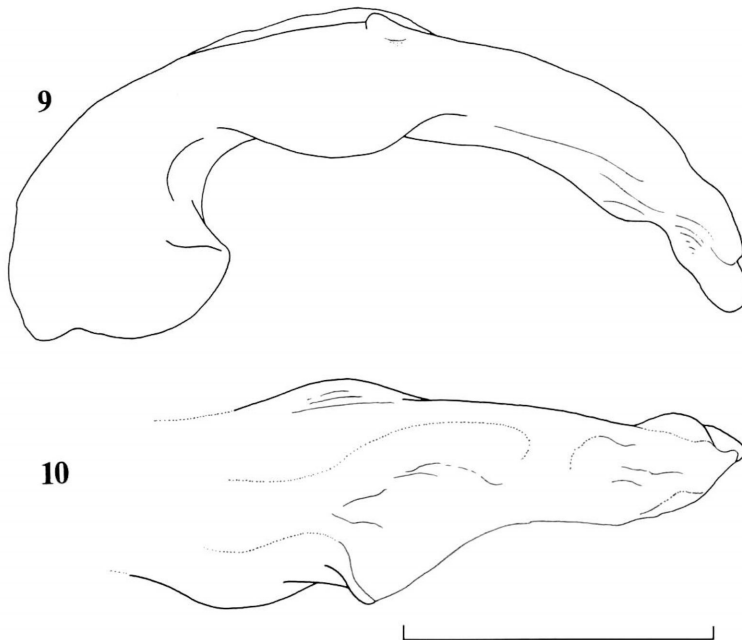
*Eobrosicus bhutanensis* MORVAN, 1982, Ent. basil., 7: 77, figs. 1–8; type locality: Dorjee Khandu, Umgeb. Thimpu, Bhutan.

This Bhutanese species was fully described by MORVAN. It is characterized mainly by rather large body, blackish coloration and wide pronotum. To facilitate comparison, drawings of protarsus and male genital organ are produced herewith.

*Type depository.* Naturhistorisches Museum Basel.

*Range.* Bhutan; known only from the type locality.

*Specimens examined.* 1 ♂ (holotype), “Bhutan Dorjee Khandu”/“Thimphu Umgeb. 1. 9. 1976”/“*Eobrosicus bhutanensis* n. sp. MORVAN”/“HOLOTYPE”.



Figs. 9–10. Aedeagus of *Eobrosicus (Orobrosicus) bhutanensis* MORVAN; 9, left lateral view; 10, dorsal view. (Scale: 1.5 mm.)

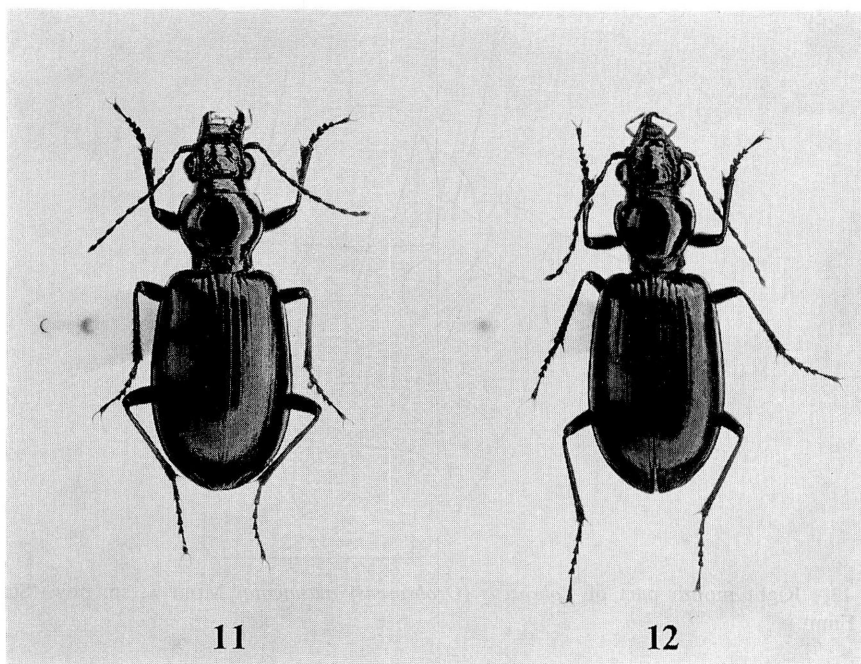
*Eobrosicus (Orobrosicus) masumotoi* MORITA, sp. nov.

[Japanese name: Taiwan-murasaki-sujiashi-gomimushi]

(Figs. 5, 8, 12–18)

Length: 14.51–15.20 mm (from apical margin of clypeus to apices of elytra).

Body elongate, with rather large head. Colour blackish brown with purplish lustre; fore body darker than hind one.



Figs. 11–12. — 11. *Eobrosicus* (s. str.) *lutshniki* (ROUBAL), from Mt. Kitaguni-yama in Japan.  
— 12. *E. (Orobrosicus) masumotoi* MORITA, sp. nov., from A-li Shan in Taiwan.

Head convex, with frontal furrows widely impressed and divergent behind; eyes large; genae relatively convex; lateral grooves situated just inside eyes, straight, and a little diverging and deepening posteriorly; neck constriction rather distinct, with a deep transverse sulcus; mandibles long, hooked at apices, each with a single seta; mentum with two pairs of setae; mentum tooth wide, very slightly emarginate or widely rounded; submentum with three pairs of setae though in the holotype, the right side of submentum bears a single additional seta (cf. Fig. 13); gula almost smooth; each side of gula with two oblique foveae; the area between the two foveae strongly convex; apical margin of labrum almost straight and with six setae; clypeus with a pair of setae; relative lengths of antennal segments as follows: I: II: III: IV: V: VI: XI  $\cong$  1: 0.60: 1.33: 1.01: 0.99: 0.99: 1.21; apex of segment XI strongly pointed; no appreciable microsculpture.

Pronotum cordate and convex, a little wider than long, widest at about seven-tenths from base; PW/HW 1.06 in the holotype, 1.03–1.13 in 2 ♀♀, PW/PL 1.06 in the holotype, 1.10–1.15 in 2 ♀♀, PW/PA 1.27 in the holotype, 1.26–1.31 in 2 ♀♀, PW/PB 1.48 in the holotype, 1.43–1.48 in 2 ♀♀; apex straight, a little wider than base, PA/PB 1.17 in the holotype, 1.09–1.17 in 2 ♀♀; sides moderately arcuate in front, very weakly sinuate and then slightly divergent towards hind angles, which are obtuse; reflexed lateral borders very narrow, but in the allotype, they become wider

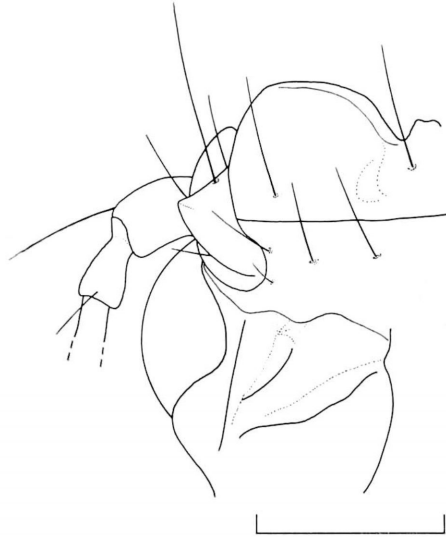


Fig. 13. Right mouth part of *Eobrosus (Orobrosus) masumotoi* MORITA, sp. nov. (Scale: 1 mm.)

from the level of the widest part to apical angles; median line shallow, reaching neither apex nor base; anterior pair of marginal setae situated at about the widest part, with no additional seta, posterior one situated a little before hind angles; basal part sparsely and coarsely punctate; no appreciable basal foveae; base moderately arcuate at middle, weakly oblique close to hind angles; microsculpture almost vanished.

Elytra oblong-ovate, widest a little behind the middle; EW/PW 1.69 in the holotype, 1.62–1.63 in 2 ♀♀, EL/EW 1.58 in the holotype, 1.65–1.69 in 2 ♀♀; striae very shallow, obsolete at the sides though the stria 8 somewhat deepens apically, striae 1–3 indistinctly crenulate; basal pore present, being situated on interval 2 and close to stria 2; scutellar striole wanting; intervals flat; apical striole very shallow and joining stria 7; a single pore present inside apical striole; marginal series composed of three pores; microsculpture distinct, consisting of irregular lines or partially of irregular meshes in ♂, of polygonal meshes in ♀.

Prosternum coarsely and sparsely punctate in the area a little before each procoxa; prepisternum and prepimeron rarely with coarse punctures; sternites except for the anal one with wrinkles and coarse punctures.

In ♂, two proximal segments of pro- and mesotarsi furnished beneath with adhesive hairs; all tarsal segments with no additional spines on the dorsal surface; claw segments almost smooth on the dorsal surface.

Aedeagus tubular, arcuate, widely membraneous on dorsum, and with three wings; two wings (right & dorsal wings) situated at about middle, the remaining one (left wing) situated at 3/7 from base; right wing narrow, with several longitudinal



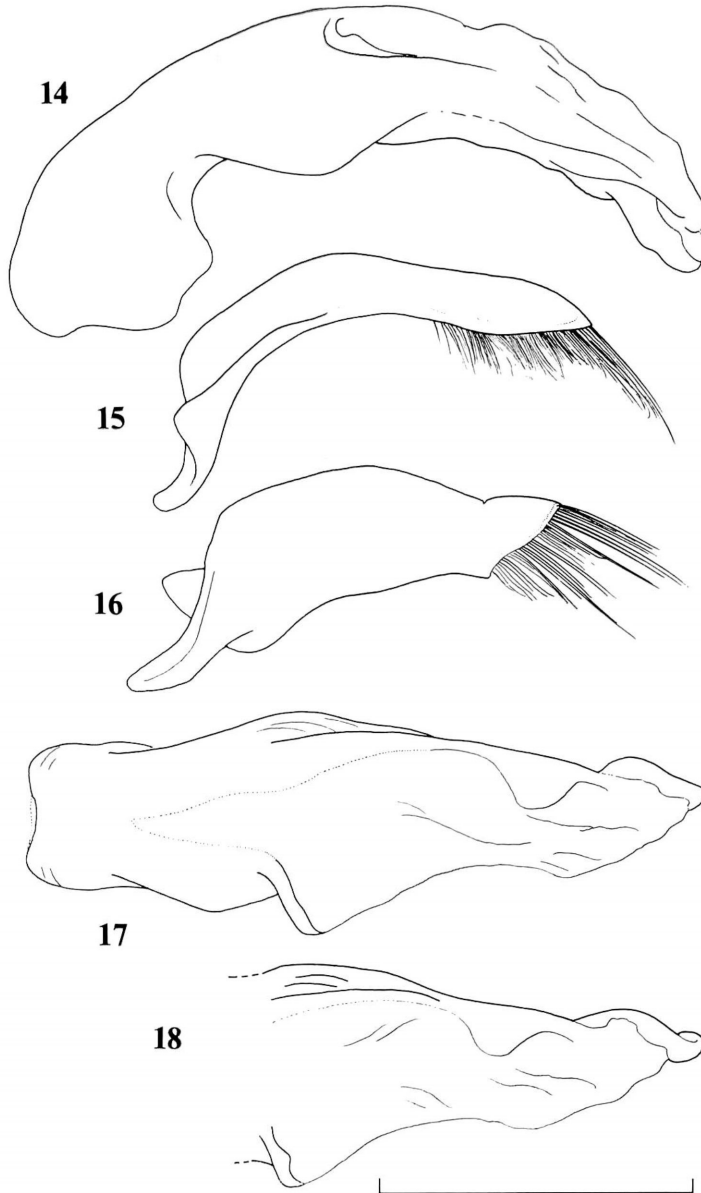


Fig. 14–18. Male genital organ of *Eobrosicus (Orobrosicus) masumotoi* MORITA, sp. nov.; 14, aedeagus, left lateral view; 15, right style, left lateral view; 16, left style, left lateral view; 17, aedeagus, dorsal view; 18, apical part of aedeagus, dorso-apical view. (Scale: 1.5 mm.)

wrinkles at the base; dorsal surface of dorsal wing membranous though the proximal margin is heavily sclerotized; left wing wide and produced ventrad; viewed laterally, apical lobe short and widely rounded; viewed dorsally, apical lobe slightly inclined

to the right and strongly compressed. Styles large and long, right style narrower than the left; each style with a row of hairs.

*Type series.* Holotype: ♂, 25-VI-1981, K. MASUMOTO leg. Allotype: ♀, 8-VIII-1978, Y. SHIBATA leg. Paratype: 1 ♀, 25-VI-1981, K. MASUMOTO leg.

The holo- and allotypes are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo. The paratype is deposited in my collection.

Though aberrant in the number of setae at the right side of submentum (cf. Fig. 13), only the single male specimen available for this study was selected for the holotype.

*Type locality.* A-li Shan in Chia-i Hsien, Taiwan.

*Notes.* Though seemingly different, this new broscine is closely allied to *E. bhutanensis*. It is distinguished from the Bhutanese species by the following points: 1) body smaller; 2) lighter coloration on the dorsal surface with stronger purplish lustre; 3) genae shorter; 4) pronotum less strongly arcuate at the sides; 5) elytra less arcuate at the sides; and 6) aedeagus more robust with shorter apical lobe.

It is expected that more species of this genus will be found by future investigations in a wide blank area between Taiwan and Bhutan, especially in South China.

This new species is dedicated to Mr. Kimio MASUMOTO, one of the collectors of this rare broscine.

## 要 約

森田誠司: ムラサキスジアシゴミムシ属について. — ムラサキスジアシゴミムシ属は, オサムシモドキ亜科 Broscinae に属する小さい一群で, 頸部に横長の深い溝をもつこと, 雄の腹部亜末端節に小突起が認められることなどの主要な特徴をもつ. ここでは, 日本産の標本に基づいてムラサキスジアシゴミムシ *Eobrosicus lutshniki* (ROUBAL) を再記載し, 雄交尾器を図示した. また, 台湾で採集された標本を, ブータンから記載されている *E. bhutanensis* MORVAN の正基準標本と比較検討した結果, 新種とみとめて記載し, *E. masumotoi* と命名した. 両種は, 雄の腹部末端節の剛毛が2対であること, 雄の前付節の基部2節の下面に粘着毛をもつこと, 第5付節背面に縦皺がないことなどの特徴から, 基準種とは亜属を異にするものと考えられるので, 新亜属 *Orobrosicus* を創設した.

## References

- ANDREWES, H. E., 1935. Coleoptera. Carabidae. II. — Harpalinae — I. *Fauna of British India, including Ceylon and Burma*. xvi+323 pp., 5 pls., 1 map. Taylor & Francis, London.
- BALL, G. E., 1956. Notes on the genus *Zacotus* LE CONTE, 1869, and on the classification of the tribe Broscini (=Broscidae *sensu* JEANNEL, 1941. Coleoptera, Carabidae). *Coleopt. Bull., Rochester*, 10: 33–52.
- DOSTAL, A., 1984. Neue taxa aus der Gattung *Chaetobrosicus* SEMIO[sic]NOV 1900 (Coleoptera: Carabidae). *Ent. Z., Frankfurt*, 94: 134–138.
- HABU, A., 1973. On a collection of Carabidae from Nepal made by the Hokkaido University Scientific Expedition to Nepal Himalaya, 1968 (I). *Bull. natn. Inst. agr. Sci., Tokyo*, (C), (27): 81–132.
- ISHIDA, H., 1958. Garaboidea [sic] (Coleoptera) of Ohsugi Valley and Mt. Ohdaigahara (I). *Akitu, Kyoto*, 7: 15–41. (In Japanese.)

- ISHIDA, H., 1971. The specific name of *Eobrosus lutshniki* (ROUBAL). *Ent. Rev. Japan, Osaka*, **23**: 63.
- JEDLIČKA, A., 1963. Monographie des Tribus Broscini aus Ostasien (Coleoptera, Carabidae). *Reichenbachia, Dresden*, **2**: 53–59.
- KŌNO, H., 1936. Die Käfer-Fauna vom Daisetsu Gebirge. *Biogeographica, Tokyo*, **1**: 75–104, 1 pl. (In Japanese.)
- KRYZHANOVSKIĬ, O. L., 1951. *Eobrosus*, novyi rod zhuzhelits (Coleoptera, Carabidae) iz Primorskogo kraia. *Ent. Obozr.*, **31**: 538–540. (In Russian.)
- 1968. New and poorly known ground-beetles (Coleoptera, Carabidae) from the fauna of U. S. S. R. and adjacent countries. *Ent. Obozr.*, **47**: 160–175. (In Russian.)
- LAFER, G. Sh., 1989. Podotriad Adephaga. In LERA, P. A. (ed.), *Opredelitel' Nasekomykh Dal'nego Vostoka SSSR v Shesti Tomakh*, **3**(1): 67–257. (In Russian.)
- MORVAN, P., 1982. Quatre nouveaux Carabiques du Bhoutan (4<sup>e</sup> note) (Coleoptera: Carabidae, Broscini, Pterostichini, Anchomenini). *Ent. basil.*, **7**: 77–88.
- NAKANE, T., 1963. Harpalidae. In NAKANE, T., et al. (eds.), *Iconographia Insectorum Japonicorum Colore naturali edita*, **2**: 22–54, pls. 11–27. Hokuryukan, Tokyo. (In Japanese.)
- 1978. The beetles of Japan (new series). 47. Harpalidae 1. *Nat. & Ins., Tokyo*, **13**(2): 6–11. (In Japanese.)
- & S.-I. UÉNO, 1953. The Coleoptera of Japan [10]. *Shin Konchū, Tokyo*, **6**(7): 43–49. (In Japanese.)
- ROUBAL, J., 1928. *Broscus Lutshniki* sp. n. (Coleopt. Carab.). *Wien. ent. Ztg.*, **45**: 90–91.
- TOWNSEND, J. I., 1971. Entomology of the Aucklands and other Islands south of New Zealand: Coleoptera: Carabidae: Broscini. *Pacif. Ins. Mon.*, **27**: 173–184.
- UÉNO, S.-I., 1985. Carabidae (Nebriinae, Elaphrinae, Loricarinae, Scaritinae, Broscinae, Trechinae). In UÉNO, S.-I., Y. KUROSAWA & M. SATŌ (eds.), *The Coleoptera of Japan in Color*, **2**: 54–88. Hoikusha, Osaka. (In Japanese.)