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STUDIES ON THE LYGAEIDAE X,
DESCRIPTIONS OF THREE NEW SPECIES OF
THE GENUS *BLISSUS* KLUG*

(Heteroptera)

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Blissus japonicus sp. nov. (Fig. 1)

(Brachypterous form). Head, the fourth segment of antennae, buccalae, apex of rostrum, pronotum, and abdomen black; basal halves of the first and third antennal segments, eyes, rostrum, basal transverse band of pronotum (in female this band is narrow), bases of fore and middle coxae, distal segments of tarsi, and metapimera blackish brown; scutellum, clavus, and apical parts of corium dull black; membrane and corium darkish yellow or pale gray; meso- and metathoracic pleura and sternum distinctly grayish blue; outer margin of orifice of scent glands black but its central part brown; connexivum and anterior margins of the fourth, fifth, and sixth abdominal sternites light brown; the second antennal segment and legs brownish yellow; ocelli gray or red.

Head wider than long, pilose, and coarsely punctured; eyes with short hairs; width between ocelli larger than two-thirds the distance between eyes and ocelli; central lobe greatly projecting, lateral lobes broad and inwardly sinuate at the central portion, both lobes impunctate; occiput the narrowest and with irregular, transverse wrinkles; gular region pilose and with small punctures, lora and basal parts of gular with weak and transverse wrinkles; length of head 0.48 mm.; width of head across eyes 0.66 mm.; interocellar space 0.03 mm. Apex of rostrum reaching to middle coxae; the second, third, and fourth segments of rostrum with minute hairs, the first large and not extending to the base of head; the length of each segment of rostrum, I 0.33 mm.; II 0.36 mm.; III 0.23 mm.; IV 0.26 mm. Antennae pilose; the first antennal segment subcylindrical and extending beyond clypeus; the second and third slender, distinctly

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thickened towards the apex, and the second a little longer than the third segment; the fourth segment fusiform, the length of antennal segments I male 0.15 mm.; female 0.18 mm.; II male 0.34 mm.; female 0.38 mm.; III male 0.78 mm.; female 0.30 mm.; IV male 0.56 mm.; female 0.60 mm. Pronotum wider than long, pilose, and coarsely punctured; anterior margin of pronotum roundly sinuate, the posterior margin slightly curved, both margins impunctate; antero-lateral margins broadly rounded and postero-lateral margins narrowly incised; inner parts of the basal one third of the lateral margins transversely concave; length of pronotum 0.73 mm.; its width 0.93 mm.; propleura and prosternum pilose and punctate; coxal clefts indistinct; prothoracic epimera and episterna with a few, transverse wrinkles; meso- and metasterna with long hairs and transverse wrinkles, the former centrally sulcate and obliquely wrinkled; mesosternal ridge not prominent; metapimera sparsely covered with hairs and small punctures, the spout of scent glands densely stippled, the apical margin articulatesly rounded; metasternal plate upheaved and not sulcate. Legs pubescent; fore coxal cavities clearly opened at the posterior margin of prosternum; fore femora greatly swollen and strongly depressed near apical portions of femora beneath (Fig. 7), but in female the apical areas not remarkable; the third segments of fore- and middle tarsi about as long as two basal segments combined together; basal segment of hind tarsi nearly equal to two apical segments combined. Scutellum broader than long, pilose, and with small punctures; the length a little shorter than one third of pronotum, the apex not prominently produced; with a median, longitudinal ridge, but the ridge notably variable (sometimes it is completely obsolete or appears as a transverse ridge somewhere on scutellum), the length of scutellum 0.30 mm.; width 0.46 mm. Costal margin, clavus, apical corial margin, and median vein sparsely covered with long hairs, apex of hemielytra extending to the second abdominal tergite, central part of the clanal margin slightly curved and never touch the sides of scutellum; apical corial margin broadly curved at the apex of clavus; devoid of hind wings. Abdomen pubescent and densely covered with large punctures; apical margin of the fourth abdominal tergite notably convex, central portion of the apical margin of the second, third, and fourth sternites impunctate and with irregular, reticulate wrinkles.

(Macropteruos form). This form is distinguished from the brachypterous form in the following points. Transverse band of the posterior margin of pronotum broadly darkish brown; hemielytra dark white; costal margin,

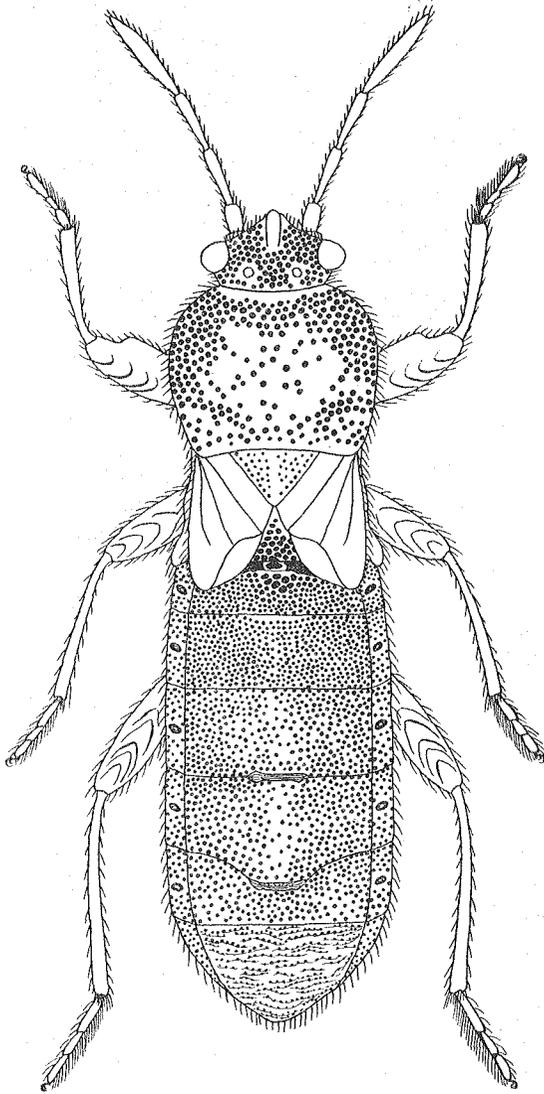


Fig. 1. *Blissus japonicus* sp. nov.

median vein, apical corial margin yellowish brown; clavus, apical one fourth of corium, veins of membrane blackish brown. The first segment of rostrum reaching to base of head; pronotum slightly broadened posteriorly, the length of pronotum 0.86 mm., width of pronotum 1.0 mm., the basal one fourth of pronotum gradually swollen, apex of hemielytra extending to apex of abdomen; veins of membranous part not reaching to the anterior margin, four veins articulate; hind wings long and extending back to the fifth segment of abdomen.

Length of body; male 3.0-3.5 mm., female 4.0-4.5 mm.

Habitat; Japan (Honshu, Shikoku, and Kyushu).

Holotype, male, Hikosan, Fukuoka Pref., Kyushu, 15, VI. 1957 (T. HIDAOKA).

Allotype, female, Kurume, Fukuoka Pref., Kyushu, 1, XII, 1954 (S. MIYAMOTO).

Paratypes (21 males and 21 females), Minamitama, Tokyo, Honshu, 6, VI. 1951, 1 male (M. TAKAHASHI); Kagenobu-yama, Tokyo, Honshu, 6, VI. 1951, 4 males (M. TAKAHASHI); Mitake, Okutama, Tokyo, Honshu, 12, VIII. 1949, 1 female (M. TAKAHASHI); Fucho, Tokyo, Honshu, 29, V. 1951, 1 female (M. TAKAHASHI); Ohiso, Kanagawa Pref., Honshu, 19, X. 1947, 1 male (H. HASEGAWA); Misaka, Matsuyama, Ehime Pref., Shikoku, 13, VII, 1954, 1 male and 1 female (M. MIYATAKE); Kurume, Fukuoka Pref., 1, XII. 1954, 10 males and 9 females (S. MIYAMOTO); Sefuri-yama, Fukuoka Pref., Kyushu, 30, X. 1954, 4 males and 5 females (T. HIDAOKA); Fukuchi-yama, Buzen, Fukuoka Pref., Kyushu, 23, V. 1954, 1 male (T. YOSHIDA) in the collection of Entomological Laboratory, Faculty of Agriculture, Kyushu University.

The present species differs from the Japanese *Blissus pallipes* DISTANT in the following characters. (Brachypterous form), body smaller than that of *Blissus pallipes* DISTANT; basal halves of the first and third antennal segments, and apical one second of cubitus blackish brown; prosternum black and shining, and with punctures; propleura brown and transversely wrinkled; the broad and black portion near coxal cavities of mesosternum; the apical portions of fore femora strongly depressed beneath.

Blissus yakuensis sp. nov. (Fig. 2)

(Macropterous form). Head, pronotum, a pair of large spots of mesosternum, and abdomen black; head beneath, scutellum, prosternum, mesosternum, and metasternum dull grayish black; eyes, ocelli, the third

and fourth antennal segments, rostrum, posterior margin of pronotum, bases of spout of scent glands, and each coxal cleft brown; the first and second antennal segments, anterior margin of prosternum, legs, anterior margin of coxal cavities, the sides of scutellum in female, and hemielytra yellowish brown; clypeus, basal one third of clavus, cubitus, anterior two-thirds of median vein, apical corial margin, large spots on apical area of corium, veins of membrane, the orifice of scent glands, base of metapleura, connexiva, the boundary of third and fourth abdominal tergites, anterior margin of the fourth tergite, central portion of the fifth tergite, and apex of abdomen blackish brown.

Head pilose, coarsely punctured; eyes with minute hairs and distance between eyes narrower than width of shoulder, occiput with wrinkles; head beneath with coarse pilosity and irregular, small punctures; buccalae more or less projecting outwardly; the length of head, 0.46 mm.; width of head across eyes, 0.56 mm.; intercellular space 0.20 mm. Apex of rostrum surpassing middle coxae, the first segment the thickest and extending to the base of head, the second segment the longest, reaching to fore coxae, and with a few, small hairs; the length of rostrum, I 0.28 mm.; II 0.33 mm.; III and IV 0.20 mm. Antennae pilose, the length of antennae, I male 0.13 mm.; female 0.13 mm.; II male 0.26 mm.; female 0.30 mm.; III male 0.25 mm.; female 0.26 mm.; IV male 0.46 mm.; female 0.46 mm. Pronotum pilose, and with large punctures; the lateral margins gradually broadened posteriorly; the length of pronotum 0.60 mm.; its width 0.80 mm.; prosternum pilose, coarsely punctured, and transversely wrinkled; meso- and metasterna finely and irregularly, stippled and pilose; metapleura with longitudinal furrows; the anterior margin of the orifices of scent glands somewhat rounded; central portion of mesopleura with deep, transverse furrows. Scutellum wider than long, and with a few, obscure punctures and minute hairs; the central parts of lateral margins of scutellum distinctly sinuate; lateral margins straight, and somewhat incised near apex of scutellum, in female the lateral margins of scutellum slightly sinuate outwardly; the apex acutely produced; the length 0.26 mm.; the width 0.40 mm. Legs pilose, basal parts of tibiae and tarsi with dense and long hairs; fore femora swollen, beneath slightly depressed towards the apex, and with a few, small thorn-like spines on the depressed area; anterior halves of fore tibiae with dense spines; the first segments of fore tarsi a little shorter than two apical segments combined together; the apical margins of middle femora with six or seven spines; hind tibiae the longest, and the first segment longer than the two anterior

segments combined together. Apex of hemielytra reaching to the sixth abdominal tergite; costal margin with coarse and long hairs, and sinuate inwardly, hemielytra narrower than membrane, pubescent, and with fine claval sutures and median furrows; distance from base to claval apex 0.62 mm.; distance from corial apex to claval apex 0.76 mm.; clavus sloping towards scutellum. Abdomen longer than one second the length of body; central portion of the first abdominal sternite prominently flattened, in female its central part with a ridge; the sides of abdomen slightly parallel.

Length of body male 3.00 mm.; female 3.55 mm.

Habitat, Japan (Kyushu).

Holotype, male, Onoaida, Yakushima, Kyushu, 2. VIII, 1929, (H. HORI).

Allotype, female, Magome-Hetsuka, Sata, Kagoshima Pref., Kyushu, 24. V, 1952, (T. ESAKI and Y. HIRASHIMA).

Paratypes (2 males and 7 females), Cape Sata, Ohosumi, Kagoshima Pref., Kyushu, 25, V, 1953, 1 female (I. HIURA); Anbo, Yakushima, Kagoshima Pref., Kyushu, 25, VIII, 1952, 2 females (C. TAKEYA and Y. HIRASHIMA); Onoaida, Yakushima, Kagoshima Pref., Kyushu, 2. VIII, 1929, 4 males and 4 females (H. HORI) in the collection of the Entomological Laboratory, Faculty of Agriculture, Kyushu University.

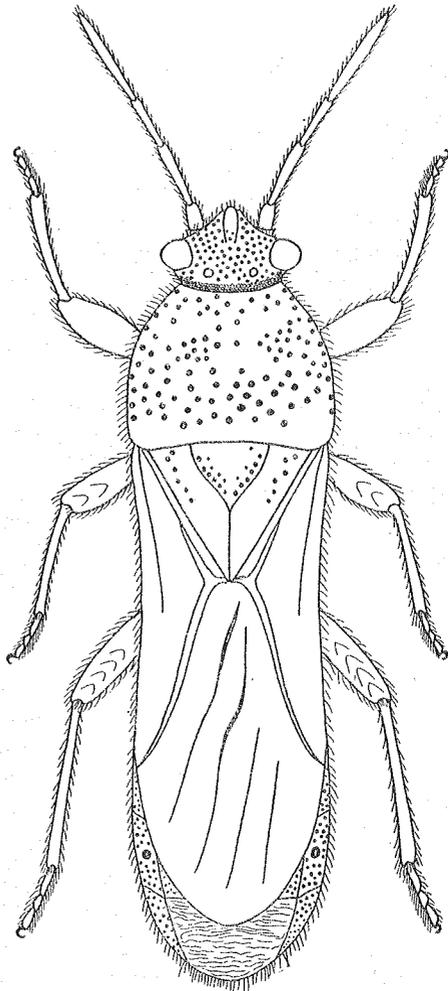


Fig. 2. *Blissus yakuensis* sp. nov.

This species is easily distinguished from *Blissus pallipes* DISTANT and *B. japonicus* sp. nov.; smaller size, the posterior margin and head beneath, prothoracic pleura and sternum dull grayish black; the first and second antennal segments and legs yellowish brown; cubitus and the anterior margin of hemielytra blackish brown; membrane deep black; buccalae very small; pronotum, seen in profile, flat and not upheaved posteriorly; the posterior margin of metapimera prominently curved at the central portion; the basal one third of clavus with a few, obscure punctures.

Blissus kyushuensis sp. nov. (Fig. 3)

(Brachypterous form.) Head, apex of rostrum, pronotum, abdomen black; femora blackish brown; antennae, rostrum, eyes, apex of central and lateral lobes, the posterior margin of pronotum, a pair of large spots of mesosternum, legs, veins of membrane, apex of scutellum, the sixth abdominal tergite, and the fourth, fifth, and sixth abdominal sternites pitchy brown; hemielytra and apical margin of the fourth abdominal tergite yellow; head beneath, prosternum, mesosternum, and scutellum dull grayish black; mesothoracic epimera and metathoracic episterna dull grayish green.

Head a little longer than wide, pilose, and with small furrows among sparse punctures; lateral margins of the central lobe curved outwardly; the central and lateral lobes without hairs, and the gena with a pair of projecting areas; the length of head 0.60 mm.; width of head across eyes 0.73 mm., and interocellar space 0.20 mm. Apex of rostrum reaching to the anterior margin of mesosternum, the first segment reaching to base of head, the second segment slightly passing fore coxae, and the length of each segment of rostrum, I 0.42 mm., II 0.53 mm., III 0.30 mm., IV 0.35 mm. Antennae pilose; the first antennal segment the thickest, subcylindrical, and the apex passing the apex of central lobe, the third prominently narrower than the second, the fourth fusiform, the length of antennal segments I male 0.16 mm.; female 0.16 mm.; II male 0.40 mm.; female 0.41 mm.; III male 0.33 mm.; female 0.35 mm.; IV male 0.56 mm.; female 0.63 mm.. Pronotum with hairs and irregular wrinkles; pronotum broadened towards the apex, anterior half of pronotum, seen in profile, distinctly raised and the posterior half flat, the latter with narrow, transverse furrows; prothoracic pleura closely punctured and with short hairs and irregular furrows; the central part of prosternum with a longitudinal ridge; central part between middle coxae with a longitudinal,

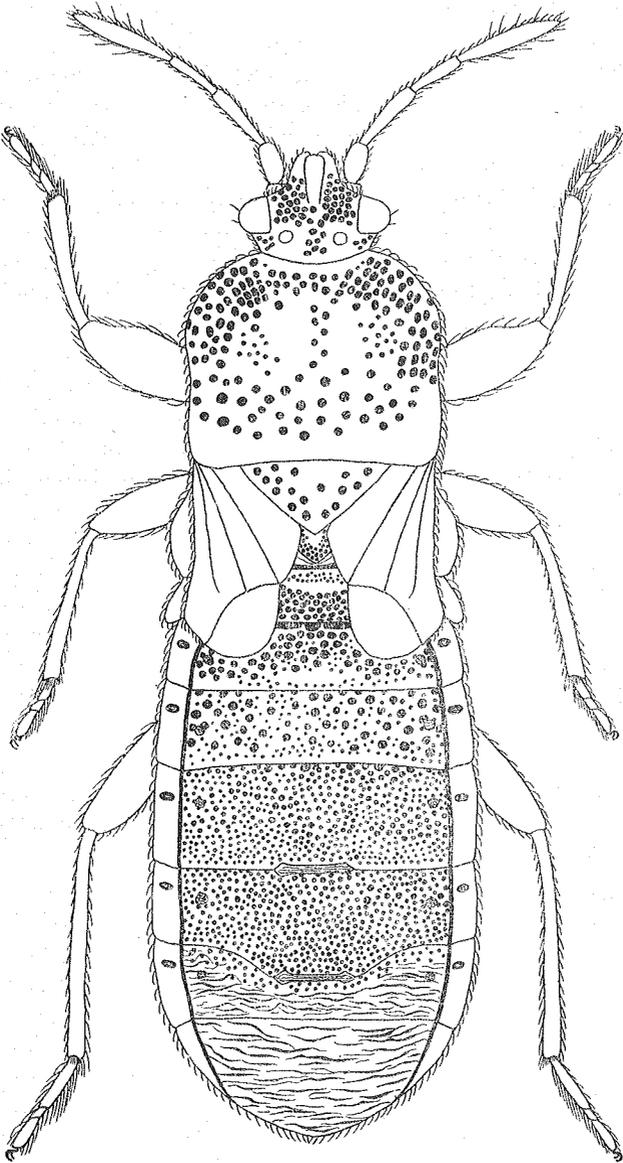


Fig. 3. *Blïssus kyushuensis* sp. nov.

deep stria, and a pair of large spots at the sides of the stria, and mesothoracic epimera and metathoracic episterna with irregular wrinkles and sparse hairs; the posterior margin of metathoracic epimera curved inwardly and with hairs. Legs pilose, the anterior parts of fore femora gently and obliquely sloping, but female not prominently sloping as in male; all coxae with transverse wrinkles; the apices of all tibiae and tarsi with long hairs, and the posterior halves of tibiae with tubercles; the anterior segments of middle tarsi equal to two basal segments combined together in length. Scutellum wider than long, with sparse hairs and punctures; the lateral margins slightly sinuate and the apex weakly produced; the base of scutellum transversely concave. Apex of hemielytra reaching to the anterior margin of the first abdominal tergite; hemielytra with hairs which are seen along the veins; the costal margin curved inwardly and pilose; devoid of hind wings; the length of clavus 0.66 mm., the distance between apex of corium and apex of clavus 0.46 mm. Abdomen pubescent and densely punctured, but the central part of abdominal tergites with sparse hairs; the lateral margins parallel; the anterior margin of the fourth tergite sinuate anteriorly, and abdomen longer than head and thorax combined; the length of abdomen 2.66 mm.

(Macropterous form). The anterior two-fifths of corium and anterior one third of costal margin blackish brown; four veins of membraneous part brown; the posterior margin of pronotum nearly straight; apex of membrane reaching to the fifth abdominal tergite and membrane broader than corium; surface of membrane with wrinkles, transparent, its posterior part semitransparent; the length of clavus 1.20 mm.; the distance between apex of corium and apex of clavus 1.11 mm.; hind wings extending to the anterior margin of the fourth tergite of abdomen.

Length of body male 4.16 mm.; female 5.52 mm.

Habitat, Japan (Kyushu and Shikoku).

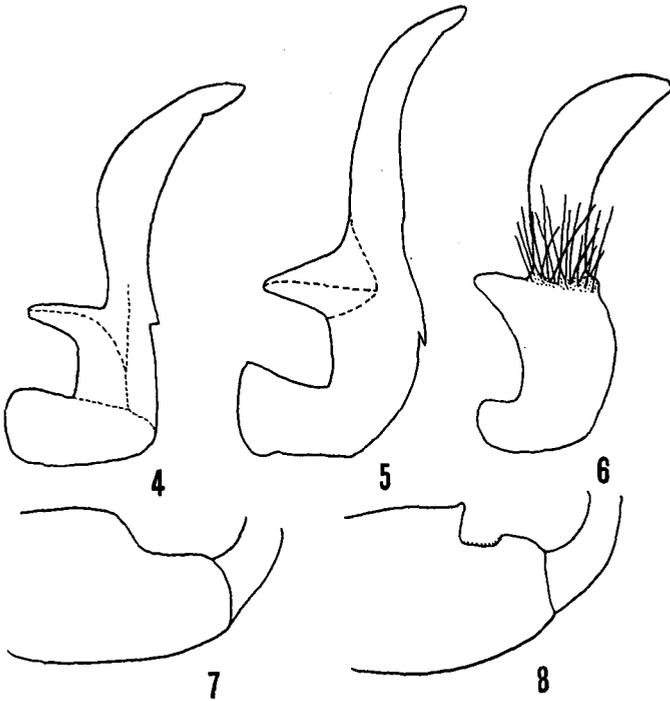
Holotype, male, Magaribuchi, Fukuoka city, Fukuoka Pref., Kyushu, 3. V, 1957, (T. HIDAOKA and M. SONDA).

Allotype, female, Fukuchi-yama, near Nôgata city, Fukuoka Pref., Kyushu, 25. VII, 1954, (T. YOSHIDA).

Paratypes (7 males and 2 females), Fukuoka city, Fukuoka Pref., Kyushu 22. VI. 1930, 1 male (H. HORI); Cape Sata, Satsuma, Kagoshima Pref., Kyushu, 25. V, 1953, 2 males (I. HIURA); Fukuchiyama, near Nôgata city, Fukuoka Pref. 29. IV, 2 males (H. KAMIYA); Magaribuchi, Fukuoka city, Fukuoka Pref., Kyushu, 3. V. 1957, 1 male (T. HIDAOKA and M. SONDA); Nakanoshima, Tokara Is. 3-13. VI, 1953, 1 female (S. UENO);

Tagamisan, Ehime Pref., Shikoku, 12. IV, 1953, 1 male and female (T. TAKAHASHI) in the collection of Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka.

This species differs from *Blissus pallipes* DISTANT and *B. japonicus* sp. nov. in the following points. The central and lateral lobes darkish



Figs. 4-8. 4, right gonostylus of *Blissus japonicus* sp. nov.
 5, right gonostylus of *B. kyushuensis* sp. nov.
 6, right gonostylus of *B. yakuensis* sp. nov.
 7, the lateral view of fore femor of *B. japonicus* sp. nov.
 8, the same of *B. pallipes* Distant.

brown; body with short hairs and their anterior halves curved downwardly; central lobe of head thick and the apex round; lateral lobes sinuate outwardly, the first segment of antennae slightly passing apex of head; gena of head with a pair of raised areas; head beneath, prosternum, and propleura grayish black and with irregular wrinkles; the

anterior part of fore femora slightly depressed beneath in both sexes; the third segment of hind tarsi shorter than the two segments combined together.

Key to the species of the genus *Blissus* KLUG from Japan

1. Body covered with straight hairs; lateral lobes slightly and inwardly sinuate and passing the apex of the central lobe; head beneath flat and sparsely punctured; the first antennal segment clearly passing apex of head; pronotum narrowed towards the apex; the first segment of hind tarsi equal to two following combined in length 2
 - Body covered with curved hairs; central lobe of head thick and round, lateral lobes outwardly sinuate and not passing the apex of central lobe; head beneath with a pair of indistinct projections; the first antennal segment slightly passing the apex of head; pronotum narrowed towards the base; the first segment of hind tarsi shorter than two following segments combined *Blissus kyushuensis* sp. nov.
2. Apices of fore femora sharply depressed beneath in male; the anterior margin of the evaporating areas of scent glands prominently projecting 3
 - Apices of fore femora shallowly depressed in both sexes; the anterior margin of the evaporating areas of scent glands round 4
3. Body small; basal halves of the first and third antennal segments and the anterior one second of cubitus blackish brown; propleura and ternum black and with punctures; apex of scutellum slightly projecting; central part of scutellum raised; apical portions of fore femora incised and without a pair of spines *Blissus japonicus* sp. nov.
 - Body large; the fourth antennal segment blackish brown; lower one second of propleura and prosternum grayish black and with irregular, transverse furrows; apex of scutellum round and with a longitudinal, transverse ridge; the apical portions of fore femora prominently depressed and with a pair of tubercles *Blissus pallipes* DISTANT
- 4 Body oblong; head beneath and sides of propleura black and punctured; antennae and femora blackish brown; apex of rostrum reaching to the median part of mesosternum, a pair of spots at the sides of a longitudinal line of mesosternum

- *Blissus bicoloripes* DISTANT

- Body elongate; posterior margin of head, head beneath, and meta-
 thorax grayish black; first and second antennal segments and legs
 yellow brown; apex of rostrum reaching to middle coxae; me-
 tasternum with a pair of indistinct spots

..... *Blissus yakuensis* sp. nov.

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