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A Revision of the Plant Bug Genus *Lygocoris* REUTER from Japan, Part V[1] (Heteroptera, Miridae, *Lygus*-complex)[2]

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Abstract Three new species, *Lygocoris* (*Apolygus*) *roseofemoralis*, *L.* (*A.*) *insulicola* and *L.* (*A.*) *bipunctatellus*, are described from Japan. The following three known species are redescribed: *Lygocoris* (*Apolygus*) *pulchellus*, *L.* (*A.*) *subpulchellus* and *L.* (*A.*) *nigritulus*. Notes on two recently described species, *L.* (*A.*) *pallens* and *L.* (*A.*) *ejimai*, are provided.

Key words: Revision; Miridae; *Lygocoris*; *Apolygus*; new species.

Lygocoris (*Apolygus*) *pulchellus* (REUTER, 1906)

(Figs. 1 A–D, 3 A)

Lygus pulchellus REUTER, 1906, Annls. Mus. zool. St. Pétersb., **10**: 33.
Lygocoris (*Apolygus*) *pulchellus*: KERZHNER, 1972, Trudy zool. Inst. Leningr., **52**: 287; YASUNAGA, 1989, Koganemushi, (48): 36; YASUNAGA, 1991, Trans. Nagasaki biol. Soc., (38/39): 60.
Apolygus pulchellus: YASUNAGA *et al.*, 1989, Fauna Flora Nagasaki Pref., p. 227; YASUNAGA, 1989, Koganemushi, (50): 51.
Lygus adustus var. *pulchellus*: HSIAO, 1941–42, Iowa St. Coll. J. Sci., **16**: 266.

Description. Body oval; dorsal surface pale brown, covered with golden suberect pubescence.

Head shining pale brown, vertical, with erect hairs; vertex 0.38 times as wide as head in male, 0.40 times in female, with a distinct basal transverse carina; apical half of tylus dark; jugum sometimes slightly darkened. First and 2nd antennal segments pale brown; narrow apical part of 2nd, entire 3rd and 4th segments dark brown; 2nd segment shorter than pronotal width; proportion of 1st to 4th segments as 16: 48: 25: 22 in male, 16: 48: 27: 20 in female. Rostrum pale brown, scarcely reaching hind coxae; apical half of 4th segment dark brown; proportion of 1st to 4th segments as 13: 17: 11: 15 in male, 15: 17: 12: 15 in female.

Pronotum pale brown, shining, shallowly and finely punctate, covered with

1) Part I, Jpn. J. Ent., **59**: 435–448; Pat II, *Ibid.*, **59**: 593–609; Part III, *Ibid.*, **59**: 717–733; Part IV, *Ibid.*, **60**: 10–25.

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suberect pubescence: scutellum paler, weakly rugose. Hemelytra pale brown, shallowly and irregularly punctate, densely covered with silky pubescence; apical part of corium narrowly dark; apex of cuneus dark; membrane grayish brown. Legs pale brown; hind femur with two apical reddish rings; tibial spines dark brown, prominent; apical half of 3rd tarsal segment dark brown; proportion of hind femur: tibia: tarsus as 35: 46: 10 in male, 34: 51: 11 in female; that of 1st to 3rd segments of hind tarsus as 6: 7: 9 in male, 5: 7: 9 in female.

Abdomen pale brown. Left paramere with developed sensory lobe (Fig. 1 C); right paramere with hooked hypophysis (Fig. 1 D). Vesica with needle-shaped spicule; ventral sclerite pointed at apex; wing-shaped sclerite wide and subtriangular; sublateral sclerite weak; lateral sclerite long and slender (Fig. 3 A).

Measurements: In male body length 4.3 mm, head width 1.1 mm, pronotal width 1.8 mm and width across hemelytra 2.1 mm. In female 4.5 mm, 1.1 mm, 1.8 mm and 2.2 mm, respectively.

Specimens examined. JAPAN: 7 males, 6 females, Yanagida, Iki Is., Nagasaki Pref., Kyushu, 15. v. 1985, M. EJIMA *et al.* leg.; 3 males, Tsukui, Yokosuka C., Kanagawa Pref., Honshu, 15. v. 1988, M. TOMOKUNI leg. (NSM). KOREA: 1 male, 1 female, 17. viii. 1977, M. JOSIFOV leg. (ZIASL).

Distribution. Japan (Honshu, Kyushu, Iki Is.), China, Korea.

Remarks. This species is rather rare in Japan, while it has a wide distribution. Its host plant seems to be *Lespedeza* (Hagi), but in Kanagawa Prefecture it is known as a pest of the orange trees, together with the following species, *L. subpulchellus*, injuring the newly developed leaves and stems (TOMOKUNI, pers. comm.).

Lygocoris (*Apolygus*) *subpulchellus* KERZHNER, 1987

(Figs. 1 E–H, 3 B)

Lygocoris (*Apolygus*) *subpulchellus* KERZHNER, 1988 (1987), Nov. maloiz. poluzh. Nasek. Dal. Vost. SSSR, p. 23; KERZHNER, 1988, Keys Ins. Far East USSR, 2: 806; YASUNAGA, 1989, Koganemushi, (50): 51; YASUNAGA, 1991, Trans. Nagasaki biol. Soc., (38/39): 61.

Apolygus subpulchellus: YASUNAGA *et al.*, 1989, Fauna Flora Nagasaki Pref., p. 227.

Lygus pulchellus: LINNAVUORI, 1961, Annls. ent. fenn., **27**: 160; LINNAVUORI, 1963, *ibid*, **29**: 81. (Nec REUTER, 1906.)

Lygus adustus hilaris: YASUNAGA, 1986, Koganemushi, (47): 48. (Nec HORVÁTH, 1905.)

Description. Body oval and small; dorsal surface varying from pale brown to brown, uniformly covered with golden hairs.

Head pale brown, shining; vertex about 0.38 times as wide as head in male, 0.36 times in female, with a distinct basal transverse carina; tylus almost entirely blackish. First antennal segment pale brown; the remainder dark brown, except for basal 3/4 of 2nd and bases of 3rd and 4th segments pale brown; proportion of 1st to 4th segments as 14: 46: 23: 20 in male, 14: 43: 25: 20 in female. Rostrum pale brown, except for apical half of 4th segment dark brown, reaching hind coxae; proportion of 1st to 4th segments as 20: 20: 16: 22 in male, 20: 20: 15: 21 in female.

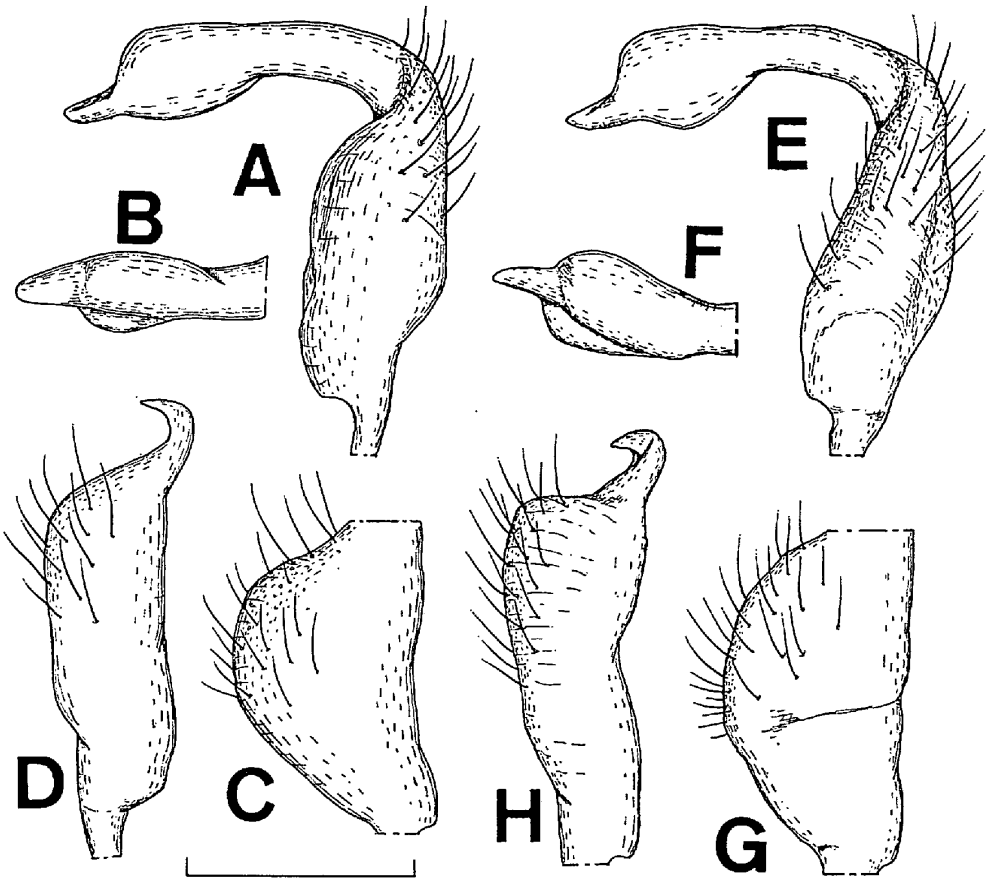

Fig. 1. Parameres of *Lygocoris* spp., A–D, *L. pulchellus*, E–H, *L. subpulchellus*. —— A, E, Left paramere; B, F, hypophysis of left paramere; C, G, sensory lobe of left paramere; D, H, right paramere. Scale: 0.2 mm.

Pronotum varying from pale brown to brown, sparsely and finely punctate, covered with golden pubescence; collar narrow, about as wide as basal transverse carina of vertex; scutellum pale brown. Hemelytra varying from pale brown to brown, coarsely and shallowly punctate, covered with rather long hairs; corium dark brown posteriorly; cuneus dark brown at base and apex, about 1.8 times as long as wide; membrane grayish brown. Legs pale brown; apical half of hind femur tinged with red; tibial spines dark brown; apical half of 3rd tarsal segment dark brown; proportion of hind femur: tibia: tarsus as 25: 35: 8 in male, 25: 36: 9 in female; proportion of 1st to 3rd segments of hind tarsus as 14: 20: 21 in male, 14: 21: 22 in female.

Abdomen reddish pale brown. Left paramere with sensory lobe roundly produced basally (Fig. 1 G), hypophysis widened apically (Fig. 1 F); right paramere with hypophysis rather short, strongly curved (Fig. 1 H). Vesical ventral sclerite short and slender, fused with a membranous lobe; wing-shaped spicule widened; sublateral sclerite small (Fig. 3 B).

Measurements: In male body length 4.0 mm, head width 1.0 mm, pronotal width 1.7 mm and width across hemelytra 2.1 mm. In female, 4.0 mm, 1.0 mm, 1.8 mm and 2.2 mm, respectively.

Specimens examined. JAPAN: [Honshu] 3 males, Tanosawa, Fukaura-machi, Aomori Pref., 19. vii. 1986, T. ICHITA leg. (IC); 1 male, 1 female, Hiratakinuma, Kizukuri-machi, Aomori Pref., 24. viii. 1986, T. ICHITA leg. (IC); 2 males, 2 females, same locality, 16. vii. 1988, T. ICHITA leg. (IC); 3 males, Tsukui, Yokosuka C., Kanagawa Pref., 15. v. 1988, M. TOMOKUNI leg. (NSM). [Kyushu] 3 males, 2 females, Mt. Hikosan, Fukuoka Pref., 5. viii. 1987 (light trap), T. YASUNAGA leg.; 5 males, 3 females, same locality, 3–4. viii. 1988 (light trap), T. YASUNAGA leg.; 1 female, Hakomatsu, Fukuoka C., Fukuoka Pref., 29. vi. 1988 (at light), T. YASUNAGA leg.; 1 male, Nameshi-cho, Nagasaki C., Nagasaki Pref., 28. viii. 1987 (at light), T. YASUNAGA leg.; 2 males, 2 females, Nagayo-cho, Nagasaki Pref., 28. v. 1985 (light trap), M. EJIMA *et al.* leg.; 1 male, Mehoro, Tsushima Is., Nagasaki Pref., 3. vi. 1988 (light trap), K. YAHIRO leg.; 1 female, Mt. Tatera, Tsushima Is., Nagasaki Pref., 2. vi. 1988 (light trap), K. YAHIRO leg.; 1 male, Mt. Shiratori (700–900 m), Izumi-mura, Kumamoto Pref., 5–6. viii. 1988, T. YASUNAGA leg. RUSSIA: 1 male, Primorskij, 4. viii. 1982, I. M. KERZHNER leg. (paratype, ZIASL); 2 females, same locality, 24. vii. 1982, I. M. KERZHNER leg. (paratypes, ZIASL).

Distribution. Japan (Honshu, Shikoku, Kyushu, Tsushima Is.), Russia (Primorskij).

Remarks. This species is closely allied to the preceding one, from which it can be distinguished by the reddish abdomen and different vesical form. Dorsal surface of the specimen collected in northern region is sometimes darkened.

The known host plants are *Lespedeza* (Hagi) and *Castanopsis* (Shiinoki), but it is also known as a pest of orange. It is a common species in Japan.

Lygocoris (*Apolygus*) *pallens* YASUNAGA, 1991

(Figs. 2 A–D, 3 C)

Lygocoris (*Apolygus*) *pallens* YASUNAGA, 1991, Trans. Nagasaki biol. Soc., (38/39): 57.

Lygocoris (*Apolygus*) sp. YASUNAGA *et al.*, 1989, Fauna Flora Nagasaki Pref., p. 227 (Japanese name, Koakaso-mekuragame); YASUNAGA, 1989, Koganemushi, (60): 51 (with figs. of male genitalia).

Note. This species is allied to *L.* (*A*). *pulchellus*, from which it can be distinguished by the entirely pale tylus, longer 4th antennal segment, tumid pronotum, pale hind femur which is not tinged with red, subtriangularly produced sensory lobe of the left paramere and slender and elongate vesical ventral sclerite.

Lygocoris (*A.*) *pallens* is collected by sweeping the flower of *Boehmeria spicata* (Koakaso), which is probably its host plant, and it is frequently attracted to light. This species lives in relatively montane regions.

Distribution. Japan (Honshu, Shikoku, Kyushu).

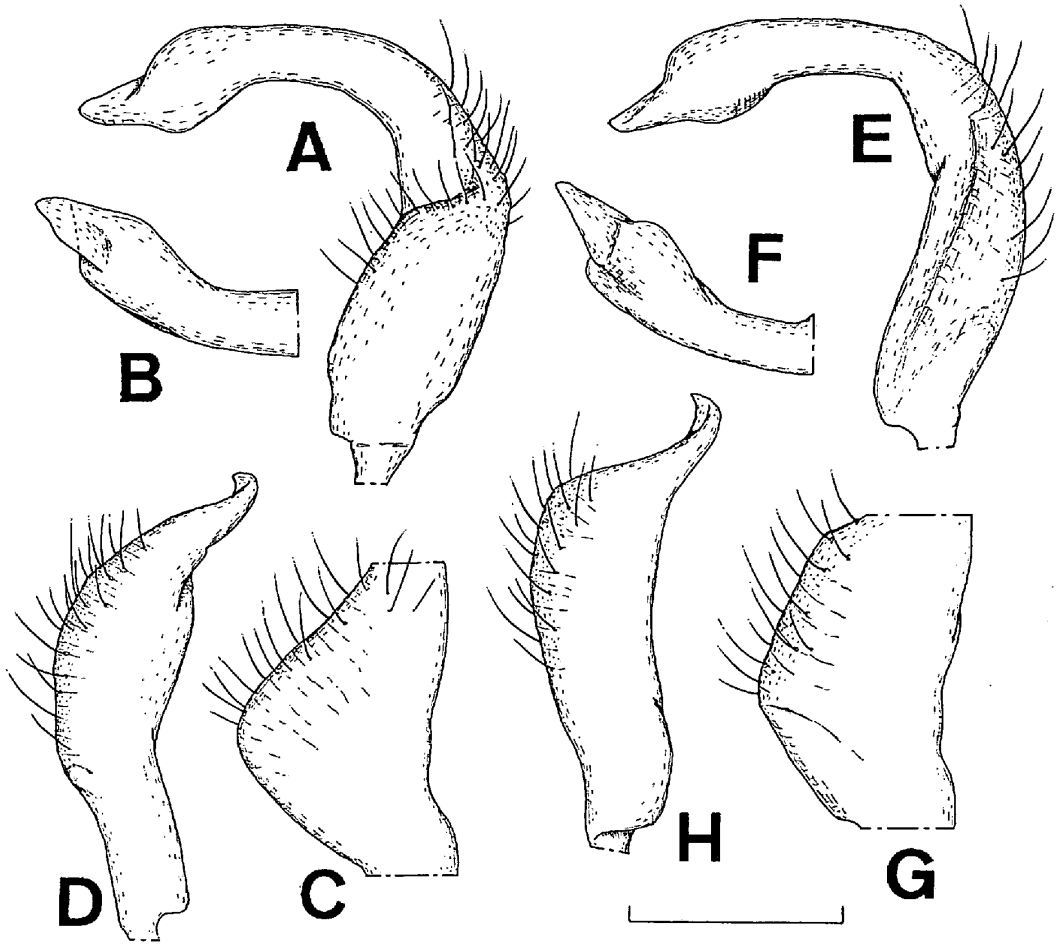

Fig. 2. Parameres of *Lygocoris* spp., A–D, *L. pallens*, E–H, *L. roseofemoralis*. —— A, E, Left paramere; B, F, hypophysis of left paramere; C, G, sensory lobe of left paramere; D, H, right paramere. Scale: 0.2 mm.

Lygocoris (*Apolygus*) *roseofemoralis* sp. nov.

(Figs. 2 E–H, 3 D)

Measurements: In male body length 4.5 mm, head width 1.1 mm, basal width of pronotum 1.9 mm and width across hemelytra 2.4 mm. In female 4.7 mm, 1.2 mm, 2.1 mm and 2.5 mm, respectively.

Coloration: Head pale brown; apex of tylus blackish brown. First antennal segment pale brown; the remainder blackish brown, except for basal 2/3 of 2nd and base of 3rd segments pale brown. Rostrum pale brown, except for 4th segment dark brown.

Pronotum pale brown, rather shining, slightly darker behind calli; mesoscutum and scutellum pale brown. Hemelytra pale brown, with an irregular dark band on posterior margin of corium; apex of cuneus dark brown; membrane pale grayish

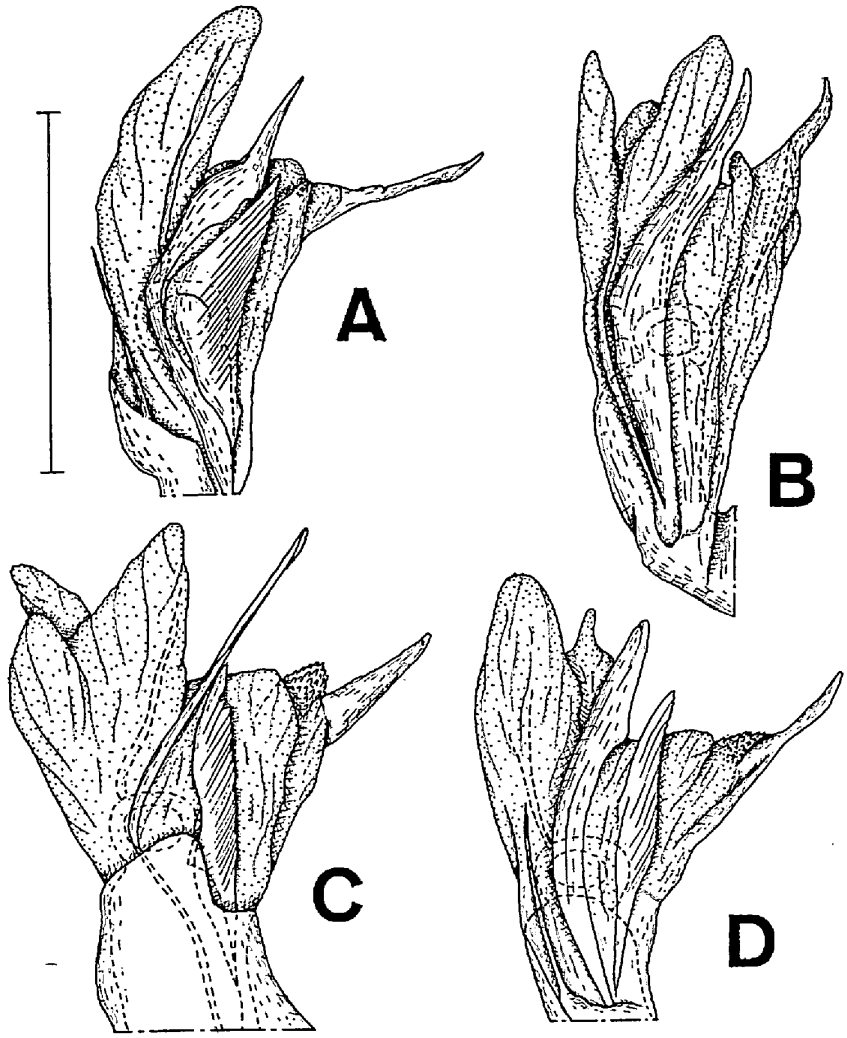

Fig. 3. Aedeagi of *Lygocoris* spp. —— A, *L. pulchellus*; B, *L. subpulchellus*; C, *L. pallens*; D, *L. roseofemoralis*. Scale: 0.5 mm.

brown. Legs pale brown; hind femur somewhat tinged with red; tibial spines blackish brown; 3rd tarsal segment dark brown.

Abdomen pale brown.

Structure: Body oval, uniformly covered with short golden hairs.

Head vertical, with sparse hairs; vertex 0.35 times as wide as head in male, 0.37 times in female, with a basal transverse carina narrowed at middle. Antennae covered with golden pubscence; 2nd segment shorter than pronotal width; relative lengths of 1st to 4th segments as 0.56: 1.56: 0.93: 0.75 in male, 0.59: 1.75: 0.97: 0.75 in female. Rostrum rather short, scarcely reaching hind coxae; relative lengths of 1st to 4th segments as 0.52: 0.48: 0.32: 0.44 in male, 0.46: 0.48: 0.30: 0.44 in female.

Pronotum sparsely and shallowly punctate; collar narrow, about as wide as 4th antennal segment; scutellum with indistinct transverse wrinkles, covered with suberect pubescence. Hemelytra covered with somewhat decumbent hairs, strongly declivous posteriorly; cuneus 1.6 times as long as wide. Legs pubescent; each femur with two spines at apex; proportion of hind femur: tibia: tarsus as 30: 41: 10 in male, 30: 43: 10 in female; proportion of 1st to 3rd segments of hind tarsus as 16: 23: 24 in male, 16: 24: 25 in female.

Left paramere with sensory lobe not strongly produced basally (Fig. 2 G); right paramere with hypophysis rather long (Fig. 2 H). Vesica with needle-shaped spicule ventrally; ventral sclerite gradually curved; wing-shaped sclerite long, dentate laterally; sublateral sclerite spinose (Fig. 3 D).

Holotype: Male (Type No. 2868, ELKU), Mt. Hikosan, Fukuoka Pref., Kyushu, Japan, 3–4. viii. 1988 (light trap), T. YASUNAGA leg. Paratypes: [Honshu] 6 males, Kuzuhara, Fujisawa C., Kanagawa Pref., 26. vii. 1988, M. YAMAMOTO leg.; 1 female, Hirakura, Mie Pref., 22. vii. 1961, Y. WATANABE leg. (TUA); 3 males, 1 female, Saigo, Okinoshima Is., Shimane Pref., 29–30. v. 1967, T. MAENAMI leg. (NIAES). [Kyushu] 1 female, same locality as the holotype, 16. vii. 1986 (light trap), T. YASUNAGA leg.; 55 males, 35 females, same locality, 3. viii. 1986 (light trap), T. YASUNAGA leg.; 24 males, 10 females, same locality, 4. viii. 1986 (light trap), T. YASUNAGA leg.; 46 males, 32 females, same locality, 5. viii. 1986, T. YASUNAGA leg.; 84 males, 44 females, same data as the holotype.

Distribution. Japan (Honshu, Kyushu).

Remarks. I formerly regarded this new species as *L. pulchellus* (REUTER). Through the courtesy of Dr. I. M. KERZHNER, however, I was able to examine the specimens of *L. pulchellus* from Korea and realized that this species is different from *pulchellus*. *Lygocoris* (*A.*) *roseofemoralis* sp. nov. is separable from *L. pulchellus* by the narrowly dark apex of the tylus, thicker ventral sclerite which is not strongly curved subapically, longer wing-shaped sclerite and broader lateral sclerite, besides significantly larger size.

The present new species is common in Kyushu, and frequently attracted to light. Although many specimens have hitherto been collected, its host plant is not determined.

Lygocoris (*Apolygus*) *ejimai* YASUNAGA, 1991

(Figs. 4 A–C, 5 A)

Lygocoris (*Apolygus*) *ejimai* YASUNAGA, 1991, Trans. Nagasaki biol. Soc., (38/39): 56.

Lygus campestris: YAMAGUCHI *et al.*, 1973, Fauna Flora Danjo Isls., p. 88. (Nec LINNAEUS, 1758.)

Note. This species resembles *L.* (*A.*) *subpulchellus* (KERZHNER), from which it is distinguished by the fuscous coloration on the dorsal surface and different male genital structure. It has been known only from the Danjo-Guntô Islands of Naga-

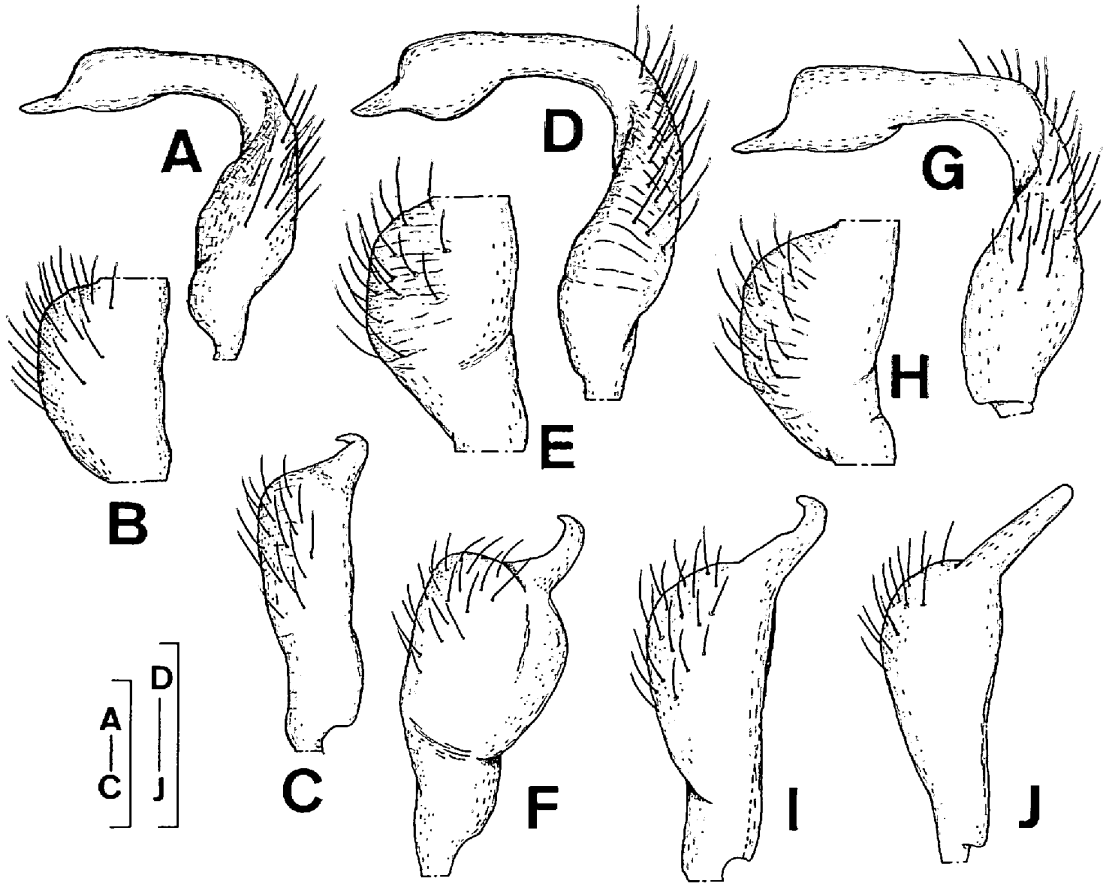

Fig. 4. Parameres of *Lygocoris* spp., A–C, *L. ejimai*, D–F, *L. insulicola*, G–J, *L. bipunctatellus*. —— A, D, G, Left paramere; B, E, H, sensory lobe of left paramere; C, F, I–J, right paramere. Scales: 0.2 mm.

saki Prefecture.

The Danjo-Guntô Islands, which lie west of Kyushu mainland (31°59′N–32°03′N, 128°20′E–128°25′E) and are composed of 5 small islands, exhibit closer faunal and floral relationship to China or the Ryukyus than to the Japanese mainland (Nagasaki Biological Society, 1973). Therefore, *L. ejimai* might be distributed in China or the Ryukyus, if it is not endemic to the Danjo-Guntô Islands.

Its ecology is unknown. The only information is that it is occasionally attracted to light.

Distribution. Japan (Danjo-Guntô Isls.).

Lygocoris (*Apolygus*) *insulicola* sp. nov.

(Figs. 4 D–F, 5 B)

Measurements: In male body length 4.6 mm, head width 1.1 mm, basal width of pronotum 1.7 mm and width across hemelytra 1.8 mm. In female 4.9 mm,

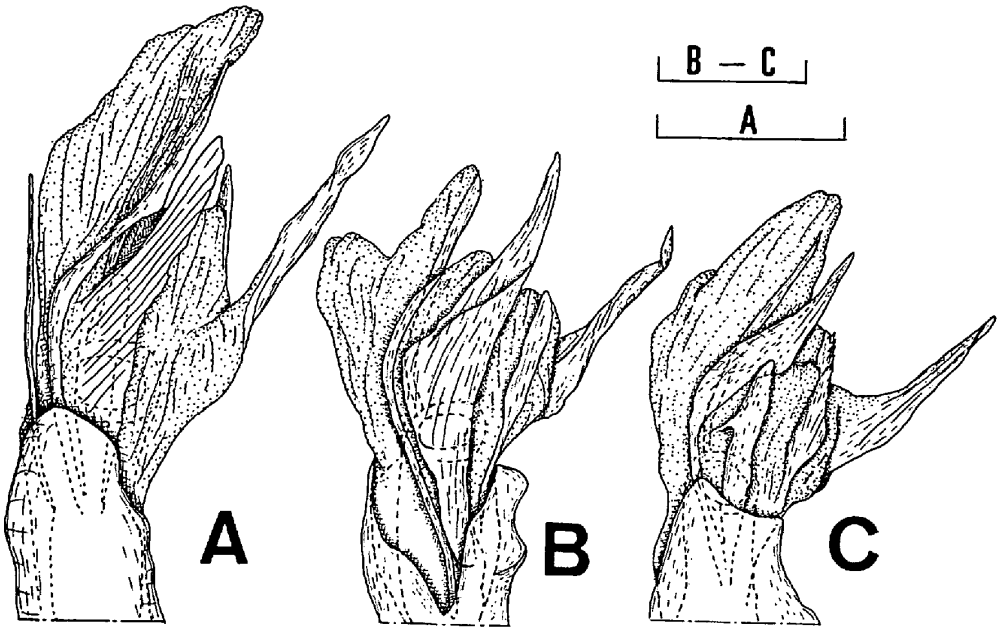

Fig. 5. Aedeagi of *Lygocoris* spp. —— A, *L. ejimai*; B, *L. insulicola*; C, *L. bipunctatellus*. Scales: 0.2 mm.

1.2 mm, 1.7 mm and 1.8 mm, respectively.

Coloration: Head pale brown, shining; basal transverse carina of vertex dark brown; frons with irregular dark markings; tylus entirely blackish brown. First antennal segment pale brown, except for apex blackish; 2nd brown, except for apical part blackish; the following segments dark brown, except for base of 3rd pale brown. Rostrum pale brown; apical 2/3 of 4th segment dark brown.

Pronotum pale brown, with a pair of dark markings anterior to calli, posterior part dark brown but posterior margin pale; mesoscutum and scutellum pale brown, with a large median dark spot. Hemelytra dark brown, with several pale striae on corium, clavus and inner margin of embolium; cuneus pale brown, except for base and apex dark brown; membrane grayish brown. Legs pale brown; hind femur with four distinct dark rings from middle to apex; tibia dark brown basally, with blackish spines; 3rd tarsal segment dark brown.

Abdomen dark brown, except for genital segment pale brown in male, entirely pale brown in female.

Structure: Body oval, slightly elongate in male; dorsal surface covered with golden pubescence.

Head vertical; vertex 0.29 times as wide as head in male, 0.35 times in female, with a distinct basal transverse carina. First antennal segment about as long as 4th; 2nd slightly longer than pronotal width; relative lengths of 1st to 4th segments as 0.56: 1.66: 0.71: 0.59 in male, 0.63: 1.72: 0.88: 0.63 in female. Rostrum reaching hind coxae; relative lengths of 1st to 4th segments as 0.40: 0.44: 0.32: 0.44 in

male, 0.46: 0.48: 0.34: 0.50 in female.

Pronotum rather sparsely and shallowly punctate, covered with short hairs; scutellum with indistinct transverse wrinkles. Hemelytra indistinctly punctate, pubescent; cuneus about 1.7 times as long as wide. Proportion of hind femur: tibia: tarsus as 27: 38: 9 in male, 31: 45: 10 in female; proportion of 1st to 3rd segments of hind tarsus as 15: 20: 29 in male, 16: 23: 25 in female.

Left paramere with sensory lobe roundly produced basally (Fig. 4 E); right paramere with sensory lobe rather tumid, hypophysis short (Fig. 4 F). Vesical ventral sclerite slender and fused with a membranous lobe; wing-shaped sclerite broad, not dentate laterally; sublateral sclerite slenderly extended, not spinose (Fig. 5 B).

Holotype: Male (Type No. 2869, ELKU), Ashiken, Uken-son, Amami-Oshima Is., Kagoshima Pref., Japan, 11. v. 1987 (light trap), T. YASUNAGA leg. Paratypes: [Tokara Isls.] 2 males, 2 females, Nakanoshima Is., 12. vi. 1953, T. NAKANE leg. (MC); 1 female, same locality, 30. v. 1962, M. SATO leg. (Ehime Univ.). [Amami-Oshima Is.] 5 males, 5 females, same data as the holotype; 1 male, Materia waterfall, Fukumoto, Yamato-son, 12. v. 1987 (light trap), T. YASUNAGA leg.; 5 males, 6 females, Chinaze, Naze C., 13. v. 1987 (light trap), T. YASUNAGA leg.; 1 male, Shinmura, 4–5. iv. 1956, S. MIYAMOTO leg. (ELKU); 1 female, same locality, 1. v. 1977 (at light), M. SAKAI leg. (Ehime Univ.); 1 female, Gusuku, Sumiyô-mura, 14. vii. 1933, T. ESAKI & K. YASUMATSU leg. (ELKU); 1 female, Nishinakama, 12. iv. 1962, S. TACHIKAWA leg. (TUA). [Tokunoshima Is.] 1 female, Kamezu, 14. iv. 1962, S. TACHIKAWA leg. (TUA). [Okinawa Is.] 1 male, 2 females, Yona, Kunigami-son, 23. iv. 1962, Y. ARITA leg. (Ehime Univ.); 1 male, same locality, 4. vii. 1965, K. TAKAHASHI leg. (TUA); 1 female, same date and locality, K. MIZUSAWA leg. (TUA); 1 female, same locality, 17. vii. 1965, K. HATTA leg. (Ehime Univ.); 1 female, same locality, 25–27. v. 1974, M. SATO leg. (Ehime Univ.); 1 male, same locality, 19. iv. 1986, T. YASUNAGA leg.; 4 males, Mt. Terukubi, 19. iv. 1986 (light trap), T. YASUNAGA leg.; 1 female, Mt. Awa-dake, 1. vi. 1965, K. TAKAHASHI leg. (TUA). [Ishigaki Is.] 1 female, Mt. Banna, 8. iv. 1986, T. YASUNAGA leg.; 1 female, same locality, 27. v. 1990, M. HAYASHI *et al.* leg.; 2 males, 3 females, Omoto, 11. iv. 1986, T. YASUNAGA leg. [Iriomote Is.] 1 male, 1 female, Urauchi River, Iriomote Is., Okinawa Pref., 12. iv. 1986 (light trap), T. YASUNAGA leg.; 1 male, Funaura, 29. v. 1990 (light trap), M. HAYASHI *et al.* leg.

Distribution. Japan (Ryukyus: Tokara Isls., Amami-Oshima Is., Tokunoshima Is., Okinawa Is., Ishigaki Is. and Iriomote Is.).

Remarks. This new species is closely allied to *L. ejimai*, from which it can be distinguished by the paler head, 4th antennal segment which is equal to the 1st in length, and vesica lacking the needle-shaped spicule.

Lygocoris insulicola is a southern species, occurring in the Ryukyus. Its host plant seems to be *Castanopsis* spp. It is frequently collected by light trap.

Lygocoris (*Apolygus*) *bipunctatellus* sp. nov.

(Figs. 4 G–J, 5 C)

Measurements: In male body length 4.5 mm, head width 1.1 mm, basal width of pronotum 1.7 mm and width across hemelytra 2.0 mm. In female 4.7 mm, 1.1 mm, 1.9 mm and 2.3 mm, respectively.

Coloration: Head pale brown; basal transverse carina of vertex fuscous, except for mesal portion pale; jugum darker; lorum dark anteriorly; tylus and basal half of clypeus dark brown. Antennae dark brown, except for entire 1st, basal part of 2nd and base of 3rd segments pale brown. Rostrum pale brown, except for apical half of 4th segment dark brown.

Pronotum pale brown, with a pair of dark spots anterior to calli; scutellum pale brown, with transversely arranged two dark spots at the middle. Hemelytra pale brown; inner margin of clavus dark brown; corium dark brown posteriorly, sometimes with dark brown oblique stria along claval suture; lateral margin of embolium narrowly dark; base and apex of cuneus dark brown; membrane grayish brown, with slightly paler veins. Legs pale brown; femur with three dark apical rings which are obsolete ventrally; tibial spines blackish brown; apical half of 3rd tarsal segment dark brown.

Abdomen pale brown.

Structure: Body oval, covered with golden hairs.

Head vertical, with sparse hairs; vertex about 0.29 times as wide as head in male, 0.34 times in female, with a distinct basal transverse carina. First antennal segment about half as long as head width; relative lengths of 1st to 4th segments as 0.53: 1.72: 0.81: 0.63 in male, 0.56: 1.59: 0.78: 0.63 in female. Rostrum reaching hind coxae; relative lengths of 1st to 4th segments as 0.40: 0.40: 0.32: 0.42 in male, 0.46: 0.44: 0.36: 0.44 in female.

Pronotum sparsely punctate, clothed with suberect pubescence; collar narrow, about as wide as basal carina of vertex; scutellum with suberect hairs. Hemelytra irregularly and indistinctly punctate, densely covered with hairs; cuneus about twice as long as wide. Femur with several spines at apex; tibial spines rather prominent; proportion of hind femur: tibia: tarsus as 25: 35: 8 in male, 30: 41: 10 in female; proportion of 1st to 3rd segments of hind tarsus as 12: 20: 21 in male, 15: 25: 26 in female.

Left paramere with sensory lobe roundly produced basally (Fig. 4 H), hypophysis relatively large (Fig. 4 G); right paramere with hypophysis rather long (Fig. 4 I–J). Vesical ventral sclerite widened and curved at middle, tapered at apex; wing-shaped sclerite small, dentate laterally; sublateral sclerite broad, with apical part spinose; lateral sclerite rather long (Fig. 5 C).

Holotype: Male (Type No. 2870, ELKU), Fukumoto, Materia waterfall, Yamato-son, Amami-Oshima Is., Kagoshima Pref., Japan, 12. v. 1987 (light trap), T. YASUNAGA leg. Paratypes: [Tokara Isls.] 1 female, Takara-jima Is., 5. vi. 1962,

M. SATO leg. (Ehime Univ.); 1 female, same locality, 17. vii. 1964, M. NISHIKAWA leg. (TUA); 1 male, Ko-takara-jima Is., 1. vi. 1962, M. SATO leg. (Ehime Univ.). [Amami-Oshima Is.] 2 females, Naze C., 25. vii. 1954, S. HISAMATSU leg. (Ehime Univ.); 1 female, same locality, 11. vi. 1955, S. MIYAMOTO leg. (ELKU); 1 female, same locality, 18. vi. 1964, M. NISHIKAWA leg. (TUA); 1 male, 1 female, Shinmura, 18. vii. 1954, T. EDASHIGE leg. (Ehime Univ.); 1 male, same locality, 19. vii. 1954, S. HISAMATSU leg. (Ehime Univ.); 2 females, same date and locality, S. UEDA leg. (Ehime Univ.); 1 female, same locality, 21. vii. 1954, S. HISAMATSU leg. (Ehime Univ.); 1 male, same locality, 23. vii. 1954, S. MIYAMOTO & Y. HIRASHIMA leg. (ELKU); 1 male, same locality, 1. v. 1977 (light trap), M. SAKAI leg. (Ehime Univ.); 2 females, Yuwan, 7–9. iv. 1956, S. MIYAMOTO leg. (ELKU); 1 male, Ashiken, Uken-son, 11. v. 1987 (light trap), T. YASUNAGA leg.; 4 males, 3 females, same data as the holotype; 1 male, Higashi-nakama, 2. viii. 1962, N. OHBAYASHI leg. (Ehime Univ.). [Okinawa Is.] 1 male, Oura, 5. vi. 1990, M. HAYASHI *et al.* leg.; 1 male, 2 females, same locality, 5. vi. 1990 (light trap), M. HAYASHI *et al.* leg.

Distribution. Japan (Ryukyus: Tokara Isls., Amami-Oshima Is. and Okinawa Is.).

Remarks. This new species is related to *L. insulicola*, from which it is easily distinguished by the paler general coloration and two transversely arranged dark spots on the scutellum.

Lygocoris bipunctatellus sp. nov. is occasionally attracted to light. Its host plant is not determined.

Lygocoris (*Apolygus*) *nigritulus* (LINNAVUORI, 1961)

(Fig. 6)

Cyphodema hilare f. *nigritula* LINNAVUORI, 1961, Annls. ent. fenn., **27**: 162.

Lygus nigritulus LINNAVUORI, 1963, Annls. ent. fenn., **29**: 81; MIYAMOTO & LEE, 1966, Sieboldia, **4**: 389.

Lygus (*Apolygus*) *nigritulus*: MIYAMOTO, 1965, Icon. Ins. Jpn., **3**: 100, pl. 50; ZHENG & WANG, 1983, Acta zootax. sin., **8**: 422, 430.

Lygocoris (*Apolygus*) *nigritulus*: KERZHNER, 1972, Trudy zool. Inst. Leningr. **52**: 285; KERZHNER, 1988, Keys Ins. Far East USSR, **2**: 807.

Apolygus nigritulus: MIYAMOTO, 1987, Rostria, (38): 582.

Description. Body oval; dorsal surface very variable in color, but usually blackish.

Head reddish brown, with sparse hairs; vertex 0.37 times as wide as head in male, 0.33 times in female, with a distinct basal transverse carina; jugum and lorum somewhat darker; tylus blackish brown. First antennal segment blackish brown, somewhat pale basally; 2nd pale brown, except for base and apical half blackish brown; the following segments dark brown, except for each base pale brown; proportion of 1st to 4th segments as 16: 43: 27: 22 in male, 17: 42: 25: 20 in female. Rostrum reddish pale brown, except for apical segment dark brown, reaching hind

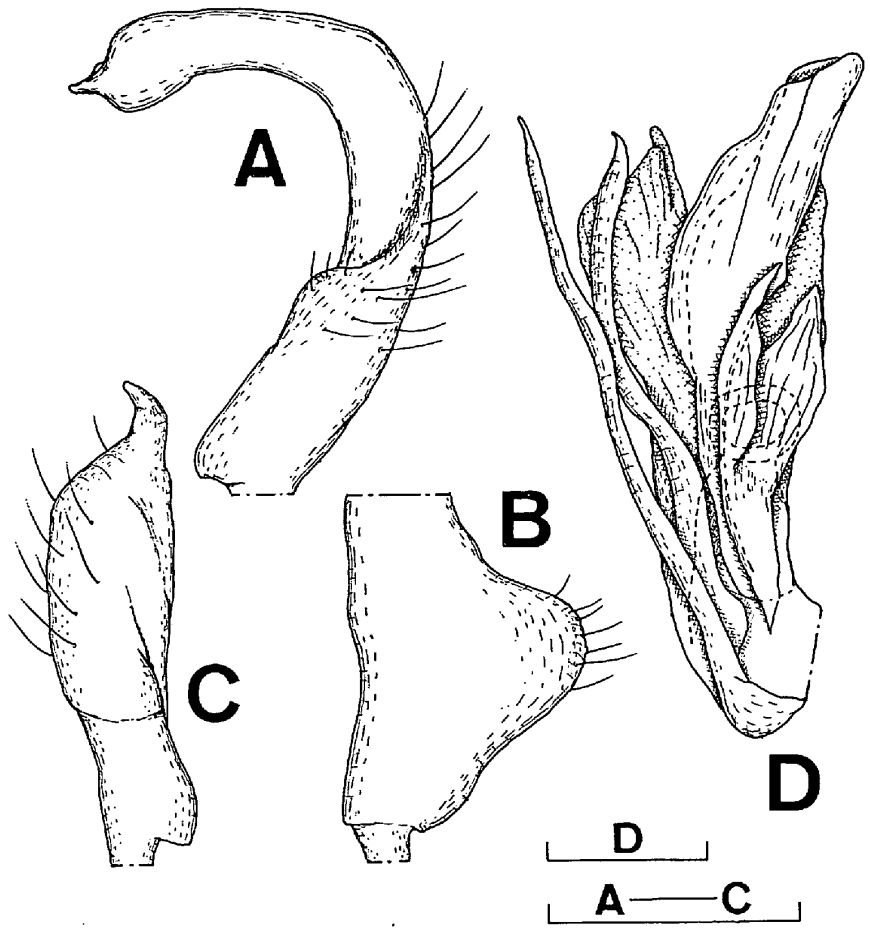

Fig. 6. Male genitalia of *Lygocoris nigritulus*. —— A, Left paramere; B, sensory lobe of left paramere; C, right paramere; D, vesica. Scales: 0.2 mm.

coxae; proportion of 1st to 4th segments as 24: 22: 13: 25 in male, 23: 22: 16: 24 in female.

Pronotum dark brown, shining, usually with a pair of dark spots anterior to calli, sparsely and finely punctate, covered with suberect pubescence; scutellum shining blackish brown, with shallow transverse wrinkles. Hemelytra usually blackish brown: coarsely and shallowly punctate, densely covered with golden hairs; median part of cuneus sometimes pale brown; membrane dark grayish brown. Legs pale brown; femur tinged with red, with two dark apical rings; tibial spines black; 3rd tarsal segment dark brown; proportion of hind femur: tibia: tarsus as 25: 35: 9 in male, 26: 37: 9 in female; proportion of 1st to 3rd segments of hind tarsus as 12: 18: 21 in male, 12: 19: 20 in female.

Abdomen blackish brown. Left paramere with sensory lobe sub-triangularly produced and flattened basally (Fig. 6 B), hypophysis somewhat widened sub-apically (Fig. 6 A); right paramere rather short, with small hypophysis (Fig. 6 C). Vesica peculiar in form, lacking median and lateral sclerites; ventral sclerite divided

into two parts, horn-like; wing-shaped sclerite extremely broad; sublateral sclerite widened and flattened, bifurcated at middle (Fig. 6 D).

Measurements: In male body length 4.0 mm, head width 0.9 mm, pronotal width 1.7 mm and width across hemelytra 2.2 mm. In female, 4.2 mm, 0.9 mm, 1.8 mm and 2.2 mm, respectively.

Specimens examined. [Honshu] 1 male, Mt. Takao-san, 24. vii., JENJURIST leg. (ZIASL). [Kyushu] 1 male, Mt. Hikosan, Fukuoka Pref., 11. viii. 1948, S. MIYAMOTO leg. (holotype, MC); 2 males, same locality, 6. viii. 1974, K. TAKENO leg. (HBLK); 3 males, same locality, 18. ix. 1974, K. TAKENO leg. (HBLK); 2 males, same locality, 5. vii. 1975 (light trap), K. TAKENO leg. (HBLK): 3 males, same locality, 11. x. 1983, K. TAKENO leg. (HBLK); 1 male, 1 female, same locality, 18. x. 1983, K. TAKENO leg. (HBLK); 1 female, same locality, 23. v. 1986, T. YASUNAGA leg.; 3 males, 1 female, same locality, 3–4. viii. 1988 (light trap), T. YASUNAGA leg.; 5 males, 2 females, Mt. SHIRATORI (700–900 m), Izumi-mura, Kumamoto Pref., 5–6. viii. 1988, T. YASUNAGA leg.; 6 males, 3 females, same locality (1,200–1,300 m), 6–7. viii. 1988. T. YASUNAGA leg.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu), Korea, China.

Remarks. This species is separable from other *Apolygus* species by the peculiar form of the vesica.

During summar season *Lygocoris nigritulus* is collected by sweeping the flower of *Boehmeria spicata*, *Hydrangea paniculata* and *Angelica pubescens*, or by light trap. The nymphs are found on *Boehmeria spicata*, which is its host plant.

It hibernates as adult under the litter at the foot of trees. The adult emerging from September to November exhibits seasonal color variation as follows: Pronotum and hemelytra are somber brown; cuneus is pale brown, except for a median dark spot and blackish apex. This variation is supposed to be 'protective coloring' for overwintering because it is harmonious with the coloration of litter.

The overwintered adult is found by early June, and then new fuscous-colored imago as shown in description appears in late July. It seems to be bivoltine.

(To be continued)

Erratum

Neolygus roseus sp. nov. in YASUNAGA, 1991, Jpn. J. Ent., **59**(3): 605, l. 1.
Read *Lygocoris* (*Neolygus*) *roseus* sp. nov.

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