



Title	A revision of the tribe Scymnini from Japan and the Loochoos (Coleoptera: Coccinellidae) : Part 1. Genera Clitostethus, Stethorus and Scymnus (except subgenus Pullus)
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A revision of the tribe Scymnini from Japan and the Loochoos
(Coleoptera: Coccinellidae)¹

Part I. Genera *Clitostethus*, *Stethorus* and *Scymnus*
(except subgenus *Pullus*)

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INTRODUCTION

The small lady birds belonging to the tribe Scymnini include many of the beneficial species, namely predators of such injurious insects as aphids, scale insects and other homopterous insects and mites.

On the other hand, this tribe is the largest group of the family Coccinellidae in Japan, and all the species are very small in size and allied to each other. Therefore, the identification of this tribe has remained very difficult and incomplete. In this paper the author gives the revision of this tribe of Japan and the Loochoos basing upon the result of his long years study.

The first record of the *Scymnus* species from Japan is Weise's paper. Weise (1879) recorded six species based on the collection of the Deutsches Entomologisches Institut: *Sc. bipunctatus* (= *phosphorus*), *Sc. hilaris*, *Sc. ferrugatus*, and three new species, *Sc. dorcatomoides*, *Sc. hareja* and *Sc. hoffmanni*. In one year before the publication of Weise's paper, Harold (1878) described *Scymnus tricolor* from Japan, but this species was later transferred to the genus *Amida* of the tribe Ortalini. In 1885, Weise again recorded one species *brunnescens* (= *fuscatus*).

In 1896, George Lewis, who collected a great number of beetles in Japan, published an excellent paper on the Japanese Coccinellidae treating fifty-seven species in all. In this paper he added seven new species of *Scymnus* to the Japanese fauna, which were *pilicrepus*,

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sylvaticus, *phosphorus*, *niponicus* (= *fuscatus*), *paganus*, *fortunatus* and *patagiatus*.

Sicard's report (1907) which was based on the collection of Harmand and Gallois included the first record of *Stethorus punctillum* and the original description of *Nephus galloisi*, but the former is quite different from the true *punctillum* and a new name *japonicus* was given by H. Kamiya (1959) and the latter is a synonym of *phosphorus* Lewis. Kuri-saki (1923) made a general review of Japanese *Scymnus* but his paper is little taxonomic importance.

The most important study concerning the Japanese Scymnini was made by Ohta in 1929. He revised the tribe Scymnini of Japan and Formosa and described one Formosan new genus, eleven new species, one new subspecies and ten new aberrant forms. Among them Japanese species were the following: *Pullus takabayashii*, *P. rectus*, *P. ruficeps*, *P. sapporensis*, *P. kawamurai* and *Diomus futahoshii* (= *Cryptogonus orbiculus*) and his subspecies *Scymnus hareja seboshii* is a good different species. *Scymnus kuwanai* which was described by Ohta in 1931 is a synonym of *Hyperaspis japonica* Crotch.

Mader's monograph on the Palaearctic Coccinellidae (1955) treated all the Japanese species, but its originality is few.

Bielawski (1957) redescribed the Lewis' type specimens, and M. Miyatake (1957) made *Sc. kuwanai* Ohta as a synonym of *Hyperaspis japonica* Crotch and made *Diomus futahoshii* as a synonym of *Cryptogonus orbiculus*. Also M. Miyatake (1958) revised the identity of *hareja* and *seboshii* Ohta. H. Kamiya (1959) described *Stethorus japonicus* for *punctillum* auct. of Japan.

M. Miyatake (1959) recorded many Coccinellidae from the Loochoos, which included a new species *Sc. kurohime* and new record of two Formosan species *sodalis* and *quinquepunctatus*. On the other hand, Nakane and Araki (1959) described *Sc. takaraensis*, *Sc. miyamotoi* and *Stethorus aptus tsutsuii* and recorded three other species of *Scymnus* from the Tokara Islands.

Up to the present twenty-five species of Scymnini have been known from Japan and the Loochoos. In addition to these the author describes fifteen new species and one newly recorded species in this paper. Therefore, the total number of Scymnini species will become forty-one. As a supplementary note the author records the feeding habits of the Japanese species.

The author wishes to express his thanks to Professor K. Yasumatsu and Professor Y. Hirashima of Kyushu University for constant guidance in the course of the work. The author's thanks are also due to Professor T. Uchida and Professor C. Watanabe of Hokkaido University who were so kind as to give the author the chance to examine Ohta's type specimens preserved in Hokkaido University, Professor T. Nakane

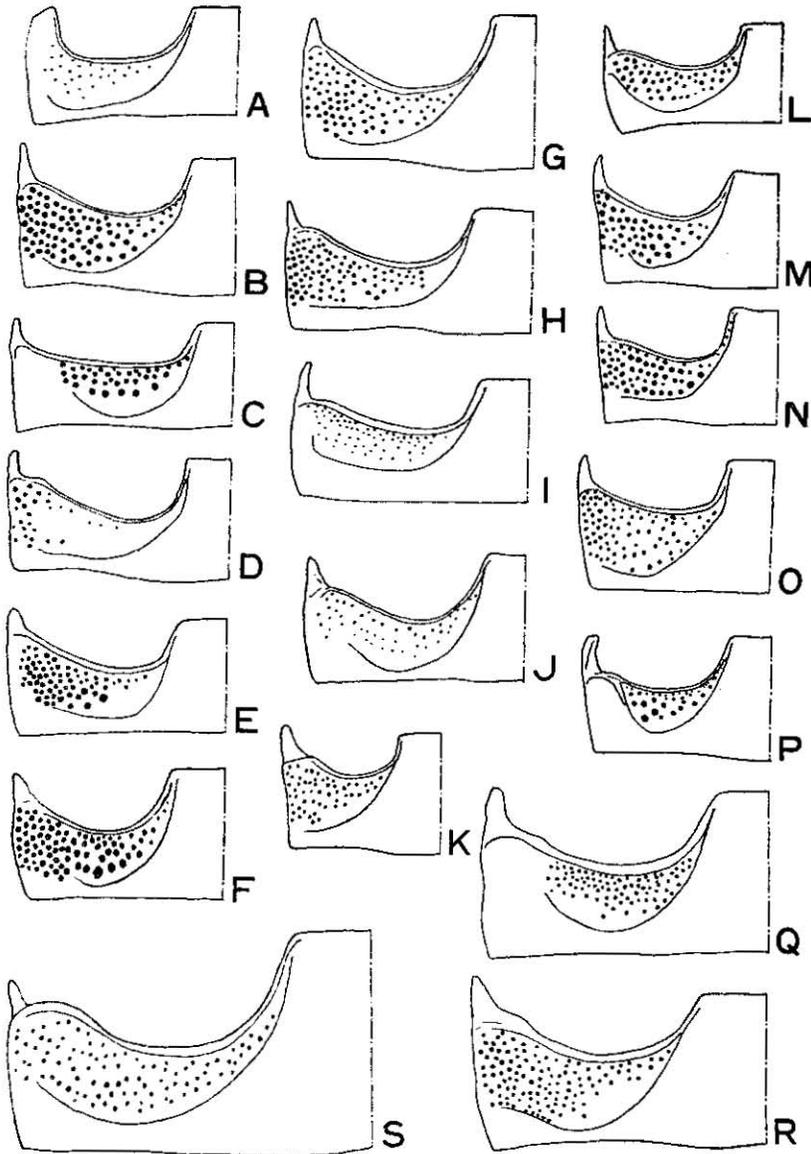


Fig. 1. Halves of the first abdominal sterna of the species of the tribe Scymnini except subgenus *Pullus*, showing the femoral lines.

A. *lewisii*, B. *phosphorus*, C. *miyamotoi*, D. *seboshii*, E. *hareja*,
 F. *marinus*, G. *yotsumon*, H. *quinquepunctatus*, I. *kurohime*, J. *nigrosuturalis*,
 K. *patagiatus*, L. *nagasakiensis*, M. *kompirasanus*, N. *kaiensis*, O. *ryuguus*,
 P. *pirikamenoko*, Q. *paganus*, R. *sylvaticus*, S. *pilicrepus*.

of Kyoto Prefectural University for the loan of his type specimens and many advice, Prof. M. Chûjô of Kagawa University, Mr. M. Miyatake of Ehime University, Mr. Y. Kurosawa of the National Science Museum of Tokyo, Prof. S. Miyamoto, Prof. T. Shirôzu, Dr. K. Morimoto, Mr. S. Kimoto, Mr. T. Saigusa, Mr. Y. Miyatake of Kyushu University, Mr. H. Masumoto, Dr. K. Kurosa, and many other gentlemen for their useful advice or for their gift of the materials.

All the holotypes, the allotypes and some paratypes of new species are preserved in the Collection of the Entomological Laboratory, Kyushu University.

Tribe SCYMNINI

The species of this tribe is distinguishable from any other tribes of the family Coccinellidae in the following characters:

Body small in size, usually less than 4 mm., rarely moderate in size. Body shape variable from elongate oval to hemispherical. Dorsal surface pubescent; antennae rather short, the terminal segment of maxillary palpus not pointed, not strongly securiform but nearly cylindrical. Clypeus not widely expanded underside of eyes, underside of eyes not covered. Elytral epipleuron rather narrow. Abdomen with six visible segments.

There occur three genera of this tribe in Japan and the Loochoos and one of them, genus *Scymnus*, is divided into four subgenera. Each of them are distinguishable as shown in the following key.

Key to the genera and subgenera of the tribe Scymnini of Japan and the Loochoos

- 1(2) Narrow apical margin of frons expanded underside of eyes; basisternum of prothorax before anterior coxae very narrow, thus mouth parts touching anterior coxae.....*Clitostethus*
- 2(1) Eye simple, not margined by expanded frons. Basisternum before anterior coxae more or less long in outer aspect.
- 3(4) Anterior margin of prosternum produced anteriorly at middle, prosternum without any carina, femoral line of the first abdominal sternum complete.*Stethorus*
- 4(3) Anterior margin of prosternum straight or slightly sinuate at middle.*Scymnus*
 - a(d) Prosternal carinae present.
 - b(c) Femoral line of the first abdominal sternum complete.
..... Subgenus *Pullus*
 - c(b) Femoral line incomplete.....Subgenus *Scymnus* s. str.

d(a) Prosternal carina absent.

e(f) Femoral line complete.Subgenus *Nipponopullus*, nov.

f(e) Femoral line incomplete.....Subgenus *Nephus*

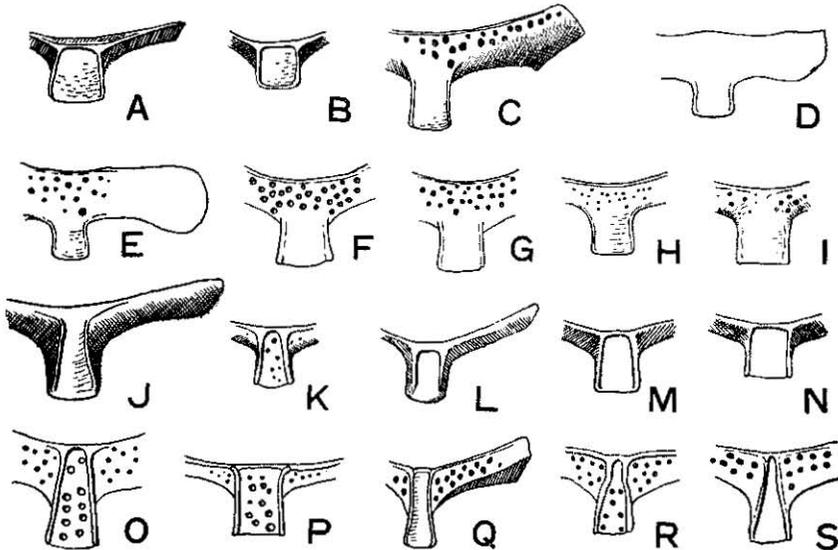


Fig. 2. Prosterna of the species of the tribe Scymnini except the subgenus *Pullus*, ventral aspect.

A. *nagasakiensis*, B. *lewisi*, C. *ryuguus*, D. *patagiatus*, E. *pirikamenoko*,
 F. *yotsumon*, G. *phosphorus*, H. *kompirasanus*, I. *kaiensis*, J. *pilicrepus*,
 K. *kurohime*, L. *seboshii*, M. *quinquepunctatus*, N. *hareja*, O. *paganus*,
 P. *sylvaticus*, Q. *nigrosuturalis*, R. *miyamotoi*, S. *marinus*.

Genus *Clitostethus* Weise, 1885

Best.-Tab. II, ed. 2: 65.

Type: *Clitostethus arcuatus* (Rossi, 1794)

Key to the species of the genus *Clitostethus* of Japan

- 1(2) Dorsal surface pichy black, anterior margin of pronotum and apical margin of elytra yellowish; abdomen yellow.*lewisi*
 2(1) Dorsal surface entirely black; abdomen black.*nagasakiensis*

Clitostethus lewisi H. Kamiya, sp. nov.

(Pl. 38-C; Fig. 1-A, Fig. 2-B)

Body very short oval, pichy black, anterior margin of pronotum

and apical margin of elytra yellowish; clypeus yellowish brown, antennae, mouth parts, legs and abdomen yellow.

Head comparatively large, eyes large in frontal aspect, each eye about one-third as wide as head width; frons rather narrow, very finely punctured, apical margin of frons strongly expanded laterally and underside of eyes, but not covering eyes as the species of the tribe Aspidimerini. Clypeus rather long and distinctly wider than the interval of both antennal sockets, somewhat expanded laterally; anterior margin of clypeus scarcely incised.

Pronotum transverse subpentagonal, lateral margin scarcely arched, strongly convergent anteriorly; basal margin of pronotum bisinuate; somewhat projected posteriorly at middle; lateral margin very narrowly but distinctly margined; margination of basal margin comparatively wide. Anterior angle sharply angulated, posterior angle rather rounded. Punctures of pronotum very fine and dense.

Scutellum small, subpentagonal.

Elytron short, with rounded margin; humeral angle strongly raised. Punctuation of elytron weak and dense but somewhat stronger and sparser than that of pronotum. Direction of hairs on elytron arranged as figured in Pl. 38-C.

Basisternum in front of the coxal cavities very narrow in outer view, prosternal process quadrate, very wide, slightly longer than wide; prosternal process carinated along the sides. Pterothorax strongly convex. Femoral line of the first abdominal sternum incomplete, extending to apical one-twelfth the length of sternum; end of the line bending basally but not strongly. Area surrounded by the femoral line weakly punctured.

Body length: 1.6 mm.; width: 1.3 mm.

Distribution: Japan (Kyushu).

Holotype (♀): Mt. Kompira, Nagasaki City, Kyushu, 4. viii. 1957, H. Kamiya leg.

***Clitostethus nagasakiensis* H. Kamiya, sp. nov.**

(Pl. 38-B; Fig. 1-L, Fig. 2.-A, Fig. 3-D)

Body small in size, short oval, convex; dorsal surface entirely black, head black, antennae, mouth parts, tibiae and tarsi yellowish brown; trochanters and femora pitchy black.

Head comparatively large, eyes large in frontal aspect, inner margins of eyes rounded, divergent both anteriorly and posteriorly in male. This character is indistinct in female. Narrow projection from anterior part of frons expanded laterally under eyes. Clypeus rather long, convergent anteriorly and with the anterior margin not expanded laterally; anterior margin of clypeus nearly straight. Frons closely

punctured.

Pronotum transverse subpentagonal; lateral margin of pronotum slightly arched, somewhat strongly convergent anteriorly, margined; basal margin produced posteriorly at middle; margination of basal margin comparatively narrow; anterior angle of pronotum sharply angulate. Punctuation of pronotum fine and close.

Scutellum small, subpentagonal.

Elytra short, with rounded margin; humeral angle of elytron somewhat strongly raised. Punctuation of elytron stronger and sparser than that of pronotum, a strongly punctured stria running along the elytral suture. Direction of hairs on elytron arranged as figured in Pl. 38-B.

Prosternum nearly similarly structured as the preceding species *lewisi* but prosternal process broadening apically. The femoral line of the first abdominal sternum incomplete; somewhat uniformly arched, extending to apical one-eighth the length of sternum, strongly recurved basally and reaching near the lateral margin of sternum. Area surrounded by the femoral line strongly punctured.

Male genitalia: siphon comparatively long, slender, apical half of siphon scarcely curved outwards; basal half of siphon semicircular, siphonal capsule rather small, without an outer process. Tegmen very slender; median piece of tegmen narrowing apically, with a sharply pointed apex in ventral aspect; lateral lobe of tegmen slender and straight, shorter than four-fifths the length of the median piece; basal piece of tegmen comparatively small; median strut of tegmen very slender and simple, distinctly longer than the remaining part of tegmen.

Body length: 1.5-1.6 mm.; width: 1.2 mm.

Distribution: Japan (Shikoku, Kyushu).

Holotype (♂): Mt. Iwayasan, Nagasaki City, Kyushu, 2. viii. 1959, H. Kamiya leg.

Allotype (♀): Mt. Kompira, Nagasaki City, Kyushu, 4. viii. 1957, H. Kamiya leg.

Paratype: ♀, Mt. Zoozu, Kagawa Pref., Shikoku, 1-2. v. 1958, Y. Miyatake leg.

Genus *Stethorus* Weise, 1885

Best.-Tab. II, ed. 2: 65.

Type: *Stethorus punctillum* Weise, 1891

Stethorus japonicus H. Kamiya, 1959

(Pl. 38-A)

Stethorus japonicus H. Kamiya, 1959: Kontyû 27 (2): 139-142, figs. (Japan: Kyushu).

Stethorus punctillum Sicard (nec. Weise, 1891) 1907: Bull. Mus. nat. Hist., Paris 1907 (3): 212 (Tokio).

Stethorus punctillum Ohta, 1931: Ent. World, Gifu 35 (406): 18 (Tokio).

This species has long been misidentified as *Stethorus punctillum* auct., but may be distinguishable from the latter in the body sharp, punctation, structure of the elytral epipleuron and the male and female genitalia as indicated by H. Kamiya (1959).

Body length: 1.2–1.5 mm.; width: 0.9–1.2 mm.

Distribution: Japan (Hokkaido, Honshu, Shikoku, Kyushu).

Specimens examined: many specimens from the following localities;

Hokkaido: Hakodate (vii, H. Kamiya).

Niigata Pref.: Kurokawa (ii, K. Baba).

Yamanashi Pref.: Shiojiri (viii, S. Miyamoto); Ohtsuki City (iii, T. Saigusa); Kôfu City (vii, xii, T. Saigusa and H. Kamiya).

Tokyo Pref.: Komaba in Tokyo (xii, T. Yôrô).

Wakayama Pref.: Kokawa-chô, Naka-gun (ix, H. Ueno).

Ehime Pref.: Uchiumi, Minami-uwa (x, K. Nohara); Misho, Minami-uwa (x, K. Nohara).

Fukuoka Pref.: Mt. Fukuchi (iv, S. Kimoto); Mt. Sefuri (v, H. Kamiya); Mt. Hikosan (vi, H. Kamiya); Mt. Inunaki (v, H. Kamiya); Fukuoka City and its suburbs (v–vii, ix, H. Kamiya, etc.); Mt. Wakasugi (iv–vi, xii, H. Kamiya, etc.); Mt. Kôrasan (ix, Y. Miyatake).

Nagasaki Pref.: Nagasaki City (ix, Y. Nonaka).

Kagoshima Pref.: Ôdomari (iv, Y. Maeta).

Stethorus aptus tsutsuii Nakane et Araki, 1959

Stethorus aptus tsutsuii Nakane et Araki, 1959: Sci. Rep. Kyoto Pref. Univ. (Nat. Sci. Living Sci.) 3 (1): 48, figs (Nakanoshima, Tokara Is.)

The present species was described by Nakane and Araki (1959) as a subspecies of Chinese species, *aptus* Kapur. This subspecies is very closely allied to the nominate subspecies, *aptus aptus* Kapur and the preceding species, *japonicus* H. Kamiya, but differs from the former in having the meso- and metasternum with coarsely impressed and close punctuation and from the latter in having the upper surface of the body with sparse punctuation and the shape of siphon of male genitalia.

Body length: 1.3 mm.; width: 1.0 mm.

Distribution: The Loochoos (the Tokara Islands, the Amami Islands, Okinawa, Ishigaki-jima, Iriomote-jima).

Specimens examined: 16 exs., Naze, Amami-Ôshima, 17. ix. 1958, T. Hidaka leg.; 2 exs., Ohgachi, Amami-Ôshima, 14. ix, 1958, T. Hidaka leg.; 1 ex., Chinen, Okinawa, 6. xi, 1960, K. Yasumatsu leg.; 1 ex.,

Ôtomi, Iriomote-jima, 21. xi. 1960, K. Yasumatsu leg.; 3 exs., Ishigaki-jima, 23. xi. 1960, K. Yasumatsu leg.

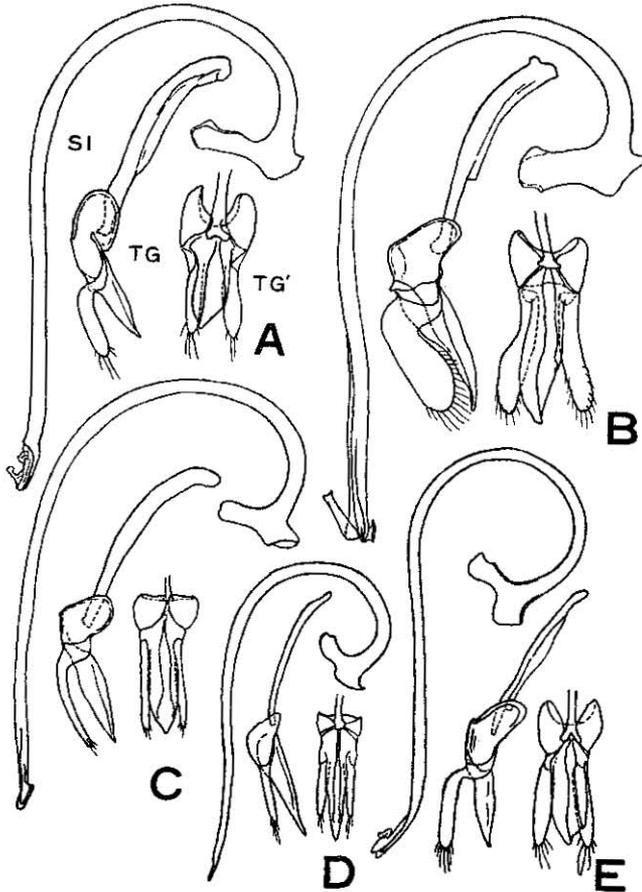


Fig. 3. Male genitalia. A. *Scymnus (Nephus) ryuguus* H. Kamiya, sp. nov., B. *Sc. (N.) yotsumon* H. Kamiya, sp. nov., C. *Sc. (N.) patagiatus* Lewis, D. *Clitostethus nagasakiensis* H. Kamiya, sp. nov., E. *Sc. (N.) phosphorus* Lewis, si: siphus, lateral aspect, tg: tegmen, lateral aspect, tg': tegmen, ventral aspect.

Genus *Scymnus* Kugelann, 1794

Neues Magazin Liegh. Ent. 1 (5): 545-546.

Type: *Scymnus (Scymnus) nigritus* Kugelann, 1794

Subgenus *Nipponopullus* H. Kamiya, subgen. nov.

Type: *Scymnus* (*Nipponopullus*) *pirikamenoko* H. Kamiya, sp. nov.

The present new subgenus differs from any other known subgenus of the genus *Scymnus* in the following characters:

Prosternal carina absent. Femoral line of the first abdominal sternum complete and ending far distant from the lateral margin of the sternum. Distinct cavity for the reception of the femora absent.

Scymnus (*Nipponopullus*) *pirikamenoko* H. Kamiya, sp. nov.

(Pl. 38-D; Fig. 1-P, Fig. 2-E)

Body long oval, moderate in size; black, with an anterior narrow margin of pronotum and latero-apical two-fifths of elytron reddish, as figured in Pl. 38-D. Underside black, lateral portion of the fourth abdominal sternum and the fifth sternum pale in colour; tibiae and tarsi brown, femora blackish brown.

Head small; less than two-fifths time the width of the widest part of the body, eyes small, frons coarsely and rather irregularly punctured; clypeus rather long, weakly convergent apically, anterior margin of clypeus straight and slightly marginated.

Pronotum about twice as wide as long, lateral margins roundly narrowing apically; anterior angles distinctly angulated. Punctuation of pronotum close and somewhat strong.

Scutellum subpentagonal or subtriangular; latero-posterior margin of scutellum rather round.

Elytron long, lateral margin of apical half roundly convergent apically. Punctuation of elytron very close, each puncture large but not deep. Direction of elytral hairs arranged as figured in Pl. 38-D.

Basisternum of prothorax rather long, somewhat closely punctured; prosternal process distinctly shorter than basisternum, lateral margin of the prosternal process weakly marginated but without any carina on prosternum. Mesosternum quadrate, mesosternum except coxal process somewhat wider than its length, mesosternum very strongly punctured. Metasternum rather finely punctured, especially so at the middle portion. Legs slender. Femoral line of the first abdominal sternum complete, strongly arched, extending to apical one-seventh the length of sternum and ending far distant from the lateral margin of sternum. Area surrounded by the femoral line very strongly but not uniformly punctured.

Body length: 1.7 mm.; width: 1.1 mm.

Distribution: Japan (Hokkaido).

Holotype (♀): Kitami, Hokkaido, 10. vii. 1958, S. Miyamoto leg.

Subgenus *Nephus* Mulsant, 1846

Sécuripalp.: 237.

Type: *Scymnus (Nephus) quadrimaculatus* (Herbst, 1783)Key to the species of the subgenus *Nephus* from Japan and the Loochoos

- 1(4) Dorsal surface of body black without any pale marking.
- 2(3) Femoral line of the first abdominal sternum bending basally at its end.....*kompirasanus*
- 3(2) Femoral line of the first abdominal sternum straight at its end.
.....*kaiensis*
- 4(1) Elytra black with red or yellowish markings, or ground colour yellowish.
- 5(6) Body shape long quadrate oval and very flat; elytron with a longitudinal yellow marking, sometimes apex of elytra yellow; pronotum usually yellow with a black basal marking or entirely yellow or entirely black.....*patagiatus*
- 6(5) Body shape long oval and more or less convex; elytron black with one or two red spots, each spot not longitudinal but oval; pronotum black.
- 7(8) Elytron with two red spots.....*yotsumon*
- 8(7) Elytron with one red spot.
- 9(10) Direction of elytral hairs arranged characteristics as shown in Pl. 38-E. Siphon of male genitalia semicircular, less strongly curved at base; median piece of tegmen strongly asymmetrical as shown in Fig. 3-A. Elytral spot rather large, anterior border of the spot situated beyond the middle of elytron.....
.....*ryuguus*
- 10(9) Direction of elytral hairs arranged normally as shown in Pl. 38-H. Siphon of male genitalia strongly curved at the base, forming about three-quarters of circular, median piece of tegmen as shown in Fig. 3-E. Elytral spot usually small, anterior border of the spot not beyond the middle of elytron.....*phosphorus*

Scymnus (Nephus) kompirasanus H. Kamiya, sp. nov.

(Pl. 38-J; Fig. 1-M, Fig. 2-H)

Body oval; dorsal surface entirely black; antennae and the apex of the terminal segment of maxillary palpus brown; underside of the body entirely black, tibiae and tarsi yellowish brown.

Head rather small; eyes moderate in size; frons slightly convex, with regular very close and strong punctures, lateral margins slightly convergent apically; clypeus rather long, with the sides parallel-sided, anterior margin distinctly incised, antero-lateral portion acutely angulated.

Pronotum transverse subpentagonal, each half of basal margin nearly straight, narrowly margined; lateral margins of pronotum straight, weakly rounded at the anterior part, distinctly margined; anterior margin of pronotum bisinuate, margined at lateral part. Punctuation of pronotum regular, close and strong; distinctly weaker near the anterior margin.

Scutellum small, triangular. Elytra long; punctures on elytron irregular in distribution, but very strong and very close, sometimes confluent to each other. Elytral hairs white, direction of the hairs arranged as figured in Pl. 38-J.

Basisternum of prothorax finely and moderately closely punctured; prosternal process longer than wide. Femoral line of the first abdominal sternum incomplete and short, extending one-seventh the length of sternum; end of the femoral line distinctly bending basally.

Body length: 1.6 mm.; width: 1.0 mm.

Distribution: Japan (Shikoku).

Holotype (♀): Mt. Zoozu, Kagawa Pref., Shikoku, 1-2. v. 1958, Y. Miyatake leg.

***Scymnus (Nephus) kaiensis* H. Kamiya, sp. nov.**

(Pl. 38-I; Fig. 1-N, Fig. 2-I)

Very closely similar to the preceding species, *Scymnus (Nephus) kompirasanus* sp. nov., in general characters, but distinguishable from it in the following characters:

1. Pronotum slightly wider than that of *kompirasanus*.
2. Scutellum longer than wide.
3. Anterior angle of pronotum more sharply angulated than that of *kompirasanus*.
4. Punctuation of elytron somewhat strong but distinctly weaker than in *kompirasanus*, and never confluent to each other.
5. Basisternum of prothorax very sparsely and very irregularly punctured.
6. Prosternal process wider than long.
7. Femoral line of the first abdominal sternum longer than that of the preceding species. End of the femoral line not bending basally but straight, parallel to the posterior margin of the first abdominal sternum.

Body length: 1.6 mm.; width: 1.0 mm.

Distribution: Japan (Honshu).

Holotype (♀): Tōkōji-machi, Kōfu City, Yamanashi Pref., 24. xii. 1955, T. Saigusa leg.

Scymnus (Nephus) yotsumon H. Kamiya, sp. nov.

(Pl. 38-F; Fig. 1-G, Fig. 2-F, Fig. 3-B)

Body long oval; black, with two pairs of red spots on elytra; underside of body and legs entirely black. Anterior spot of elytron round, being at one-third from the base; the posterior one round, small in size, being at one-fourth from the apex.

Head rather large, about four-ninths times as wide as the widest portion of the body. Frons scarcely convex, closely and regularly punctured; inner orbits of eyes straight, slightly convergent apically. Clypeus rather long, wider than the interval of the antennal sockets; lateral margins round; anterior margin of clypeus somewhat emarginated.

Pronotum nearly transverse-quadrate, distinctly narrower than the base of elytra; lateral margins of pronotum parallel-sided at the posterior halves and the anterior halves narrowing rounded and converging anteriorly, posterior and lateral margins of pronotum narrowly but distinctly margined. Punctuation of pronotum finer and denser than that of frons, lateral portion of pronotum very closely punctured.

Scutellum rather large, regularly triangular and not convex, with very fine punctures.

Elytra long, punctured much closer and stronger than frons and the middle portion of pronotum. Direction of elytral hairs arranged as figured in Pl. 38-F.

Basisternum of prothorax very strongly and uniformly punctured; prosternal process somewhat broadening apically. Femoral line of the first abdominal sternum incomplete and rather short, ending at one-fifteenth the width of the sternum.

Male genitalia: siph slender, basal half of siph comparatively weakly curved, nearly semicircular; siphonal capsule large but its outer process indistinct; apex of siph not pointed but complicated as shown in Fig. 3-B. Tegmen stout, median piece of the tegmen asymmetrical, opening of the groove of median piece for the reception of siph being at the right side in ventral aspect; lateral lobe of tegmen scarcely shorter than the median piece; lateral aspect of the lateral lobe very wide, bent at right angles at the base, swollen at apical one-third, apex of the lobe rounded. Median strut of the tegmen slightly longer than the remaining portion of the tegmen.

Body length: 1.9–2.1 mm.; width: 1.1–1.4 mm.

Distribution: Japan (Honshu).

Holotype (♂): Tōkōji-machi, Kōfu City, Honshu, 24. xii. 1955, T. Saigusa leg.

Allotype (♀): Ootsuki City, Yamanashi Pref., Honshu, iii. 1956, T. Saigusa leg.

Paratypes: 2 ♂♂ 6 ♀♀, same data as the allotype.

Scymnus (Nephus) phosphorus Lewis, 1896

(Pl. 38–H; Fig. 1–B, Fig. 2–G, Fig. 3–E)

Scymnus phosphorus Lewis, 1896: Ann. Mag. nat. Hist., Ser. 6, 17: 37 (Tagami, near Nagasaki).

Nephus phosphorus Ohta, 1929: Ins. Mats. 4 (1/2): 13.

Scymnus (Nephus) phosphorus Korschefsky, 1931: Junk's Col. Cat. 118: 132.

Nephus galloisi Sicard, 1907: Bull. Mus. nat. Hist., Paris, 1907 (3): 211–212 (Tokio). (syn. nov.).

Scymnus (Nephus) galloisi Korschefsky, 1931: Junk's Col. Cat. 118: 126.

Scymnus bipunctatus Weise (nec Kugelann, 1798), 1879: Deutsch. Ent. Zeit. 1879: 150 (Japan). (syn. nov.).

The present species was originally described by Lewis. On the other hand, Weise (1879) recorded *Scymnus bipunctatus* from Japan and Sicard (1907) described *Nephus galloisi*. The author examined a long series of specimens and came to the conclusion that the two spotted *Nephus* of Japan (excluding the Loochoo Archipelago) may be represented by only one species and differs from the European *bipunctatus* in the coloration of the ventral side of the body and legs and the male genitalia. One of Lewis' cotype specimens was redescribed by Bielawski (1957).

Prosternum as shown in Fig. 2–7. Femoral line of the first abdominal sternum incomplete, area surrounded by the femoral line very strongly and somewhat uniformly punctured.

Male genitalia: siphon very slender, basal half of siphon strongly curved or circular forming three-quarters of an imaginal circle; apical half of siphon straight except near the apex bending outward. Median piece of tegmen somewhat elongate-subquadrate with a pointed apex in ventral aspect; the opening of the groove for the reception of siphon comparatively narrow. Lateral lobe of tegmen slender, bent at nearly right angle at the base; basal piece of tegmen longer than two-thirds the length of the median piece of tegmen.

Body length: 1.7–2.3 mm.; width: 1.1–1.6 mm.

Distribution: Japan (Honshu, Kyushu, Shikoku).

Specimens examined: 1 ex., Kōfu City, Yamanashi Pref., 15. vii. 1956, H. Kamiya leg.; 4 exs., 24. xii. 1955, T. Saigusa leg.; 1 ex.,

Kami-itabashi, Tokyo, 2. iv. 1933, M. Taguchi leg.; 1 ex., Setagaya, Tokyo, 29. iv. 1957, T. Yôrô leg.; 1 ex., Kamakura, Kanagawa Pref., 5. v. 1953, T. Yôrô leg.; 2 exs., Mt. Kôrasan, Fukuoka Pref., 14. ix. 1958, Y. Miyatake leg.; Numerous examples, Fukuoka City, i, ii, iv-vii, H. Kamiya, etc. leg.; 1 ex., Tatara, Fukuoka Pref., 3. v. 1955, Y. Murakami leg.; 1 ex., Mt. Inunaki, Fukuoka Pref., 3. v. 1956, H. Kamiya leg.; 1 ex., Cape Sata, Kagoshima Pref.; 6. vi. 1959, J. Nagao leg.

***Scymnus (Nephus) ryuguus* H. Kamiya, sp. nov.**

(Pl. 38-G; Fig. 1-O, Fig. 2-C, Fig. 3-4)

? *Scymnus (Nephus) phosphorus* Nakane et Araki, 1959: Sci. Rep. Kyoto Pref. Univ. (Nat. Sci. Living Sci.) 3 (1): 48 (Tokara).

Body long oval; dorsal surface black, with a pair of round red spots posterior to the middle of the elytra, anterior border of the red spot beyond the middle of elytron. Underside of body black, antennae yellowish brown, abdomen pitchy black.

Head rather small, half of the widest portion of the body in width, finely punctured; clypeus long, slightly wider than the interval between eyes, anterior angle of clypeus round, anterior margin distinctly emarginated.

Pronotum transverse, anterior margin slightly swollen and without margination at middle; lateral margins strongly converging anteriorly; posterior margin, lateral margins and lateral parts of anterior margin margined. Punctuation of pronotum somewhat close and fine, stronger than that of the frons. Anterior angles of pronotum acute and posterior angles round.

Scutellum large, regularly triangular; latero-posterior margins of scutellum slightly arched.

Elytra long, punctuation of elytron slightly stronger and coarser than that of pronotum. Direction of elytral hairs arranged characteristically as figured in Pl. 38-G.

Prosternum nearly the same as the preceding species. Femoral line of the first abdominal sternum nearly the same as the preceding species but area surrounded by the femoral line rather weakly and closely punctured; punctures at the lateral portion stronger than the inner portion.

Male genitalia: siphon slender but more stout than that of *phosphorus*, basal half of siphon curved, semicircular; inner process of siphonal capsule long and outer one indistinct. Apical half of siphon nearly straight. Median piece of tegmen rather short, the opening of the groove of median piece for the reception of siphon being at right

side and wide in ventral aspect. Lateral lobe of tegmen slightly longer than the median piece and similarly structured as that of *phosphorus* though slightly stouter. Basal piece of tegmen as long as median piece.

Body length: 1.9 mm.; width: 1.3 mm.

Distribution: The Loochoos (The Amami Islands, Okinawa).

Holotype (♂): Oki-no-erabu Is., the Amami Islands, 29. iii. 1957, M. Umebayashi leg.

Allotype (♀): Chinen, Okinawa, 6. xi. 1960, K. Yasumatsu leg.

Paratypes: 2 exs., Chinen, Okinawa, 6. xi. 1960, K. Yasumatsu leg.

Scymnus (Nephus) patagiatus Lewis, 1896

(Pl. 38-E; Fig. 1-K, Fig. 2-D, Fig. 3-C)

Scymnus patagiatus Lewis, 1896: Ann. Mag. nat. Hist. Ser. 6, 17: 39 (Nagasaki).

Scymnus (Nephus) patagiatus Kurisaki, 1923: Ins. World, Gifu, 27 (14): 16.

Scymnus (Scymnus) patagiatus Mader, 1955: Ent. Arb. Mus. Frey 6 (3): 939.

The present species is the most elongate and the most flattened species among the Japanese Scymnini lady birds. Bielawski (1957) redescribed this species examining the cotype specimen. M. Miyatake (1959) gave the additional description with many figures based upon the materials from Amami-Ōshima and stated that the specimens of Amami-Ōshima are very dark in coloration.

General characters is shown in the figures and in the key given in this paper or Bielawski's and Miyatake's descriptions. Coloration of this species is very variable in the Japanese materials, but the specimens from the Amami Islands and Okinawa are almost exclusively dark: body surface generally black with a rather short longitudinal pale marking at the middle of elytron, and very narrow anterior margin of pronotum and apical margin of elytron, and very narrow anterior margin of pronotum and apical margin of elytra pale. All the specimens from Iriomote Is., the Yacyama Group are paler: elytra yellow with only elytral suture black, pronotum yellow with a basal dark marking or entirely yellow.

Body length: 1.5-2.1 mm.; width: 0.9-1.2 mm.

Distribution: Japan (Honshu, Shikoku, Kyushu), The Loochoos (The Amami Islands, Okinawa, Iriomote Is.), Formosa.

Specimens examined: Many examples from the following localities: Yamanashi Pref.: Kōfu City (xii, T. Saigusa).

Kōchi Pref.: Jinzenji, Kōchi City (iv, K. Morimoto); Sukumo (vii, K. Morimoto).

Fukuoka Pref.: Mt. Hikosan (viii, K. Yasumatsu); Mt. Wakasugi (iv, H. Kamiya); Hirao, Fukuoka City (v, K. Morimoto); Mt. Kōrasan (iv, M. Yasaka).

- Nagasaki Pref.: Mt. Iwayasan (viii, H. Kamiya); Is. Takashima (v, vii, H. Kamiya).
 Kagoshima Pref.: Kagoshima City (vii, S. Miyamoto & Y. Hirashima); Cape Sata (v, vi, S. Kimoto, etc.).
 Amami-Ōshima: Yuwan (iv, S. Miyamoto); Nase (vii, S. Miyamoto & Y. Hirashima); Shinmura (vii, S. Miyamoto & Y. Hirashima); Nishinakama (vii, S. Miyamoto & Y. Hirashima); Oogachi (vii, T. Hidaka); Koniya (viii, M. Shibuya).
 Okinawa: Izumi (viii, T. Hidaka); Chinen (xi, K. Yasumatsu); Yona (xi, K. Yasumatsu).
 Iriomote-jima: Ōhara (viii, T. Hidaka).
 Ishigaki-jima: Nagura (xi, K. Yasumatsu).

Subgenus *Scymnus* s. str.

Key to the species of the subgenus *Scymnus* from Japan and the Loochoos

- 1(2) Body entirely yellowish brown without any marking. Body oblong oval, widest posteriorly to the middle of elytra. Body length: 2.2-2.7 mm. *paganus*
 2(1) Body yellowish with black markings or ground colour black.
 3(10) Pronotum entirely yellowish; rarely with a basal black marking, if so, with a yellowish spot at the middle of elytron.
 4(5) Elytra black except the apical red markings, without any other markings. Prosternal process rather long. Body length: 2.3-2.7 mm. *sylvaticus*
 5(4) Elytra yellowish with black spots or black with a yellowish spot at the middle of elytron.
 6(7) Elytra yellowish with five black spots: i.e. a pair of humeral spots, a central spot at the middle of suture, and a pair of latero-posterior spots. Body length: 2.1 mm. *quinquepunctatus*
 7(6) Elytron black with yellowish markings, if ground colour yellowish, black marking not as above.
 8(9) Each elytron with a large spot at the central portion, these central spots not divided by a black suture but entirely connected to each other. Body length: 2.2 mm. *sebosii*
 9(8) Each elytron with one spot, usually each spot not connected, very rarely both spots being confluent to each other or with an apical pale marking, if so, elytron near the suture more or less black. Body length: 1.9-2.5 mm. *hareja*
 10(3) Pronotum generally black or yellow with a basal large black marking.

- 11(14) Elytra black, with or without apical pale marking, without any other marking.
- 12(13) Body size large, longer than 2.5 mm. Elytron with a distinct red apical marking. Direction of elytral hairs arranged very characteristically as figured in Pl. 38-S, in certain aspect making a stream of transverse white band of hairs. Siphon of male genitalia very long and slender; lateral lobe of tegmen longer than two-thirds the length of the median piece. Body length: 2.7-3.0 mm.*pilicrepus*

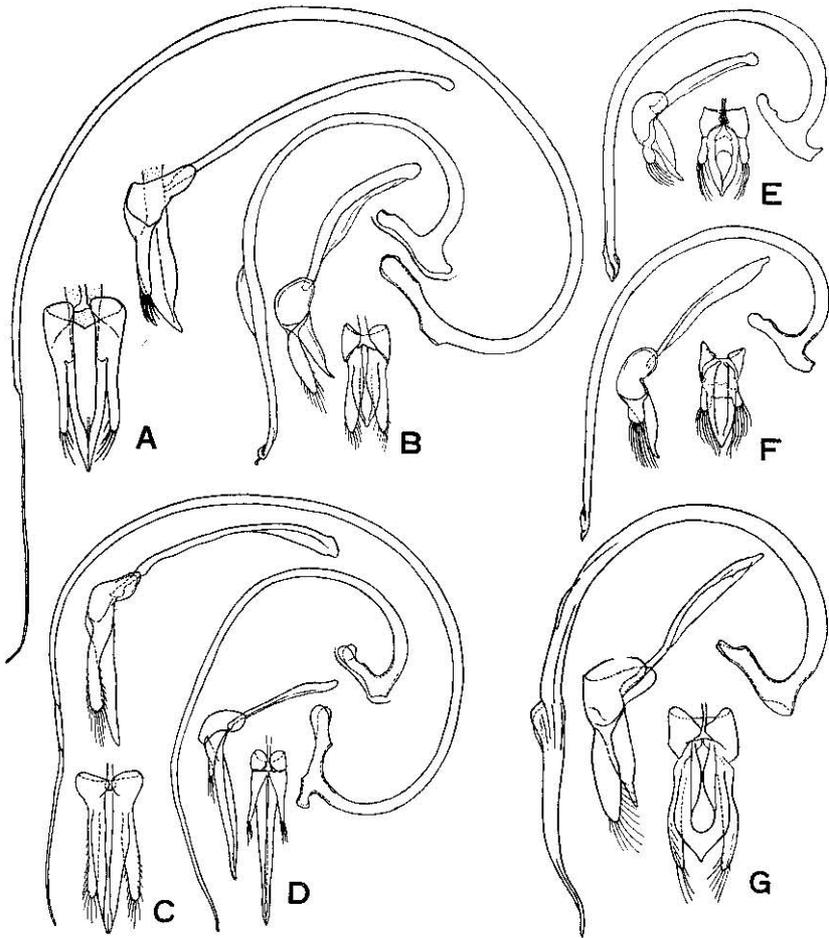


Fig. 4. Male genitalia. A. *Scymnus (Scymnus) pilicrepus* Lewis, B. *Sc. (Sc.) nigrosuturalis* H. Kamiya, sp. nov., C. *Sc. (Sc.) sylvaticus* Lewis, D. *Sc. (Sc.) kurohime* Miyatake, E. *Sc. (Sc.) hareja* Weise, F. *Sc. (Sc.) seboshii* Ohta, G. *Sc. (Sc.) paganus* Lewis.

- 13(12) Body size small, less than 2.5 mm. Elytra almost black without distinct pale markings. Direction of hairs on elytra rather simple. Lateral lobe of tegmen shorter than one-third the length of the median piece. Body length: 1.7--2.0 mm.....
..... *kurohime*
- 14(11) Elytra black with some pale marking at anterior portion from the middle of elytra or ground colour yellowish.
- 15(16) Elytra yellowish with black suture; pronotum yellowish with large black basal marking. Femoral line of the first abdominal sternum rather long, area surrounded by the femoral line very finely punctured. Body length: 2.2 mm.
..... *nigrosuturalis*
- 16(15) Elytra black with red markings; pronotum entirely black. Femoral line rather short.
- 17(18) Elytron with a longitudinal red marking. Area surrounded by the femoral line very strongly punctured. Prosternal carinae not straightly divergent posteriorly, but as shown in Fig. 2-R. Body length: 2.0 mm.....*miyamotoi*
- 18(17) Elytron with two spots as shown in Pl. 38-P. Area surrounded by the femoral line not strongly punctured. Prosternal carinae strongly divergent. Body length: 1.7 mm.*marinus*

***Scymnus (Scymnus) pilicrepus* Lewis, 1896**

(Pl. 38-S; Fig. 1-S, Fig. 2-J, Fig. 4-A)

Scymnus pilicrepus Lewis, 1896: Ann. Mag. nat. Hist. Ser. 6, 17: 36 (Yokohama, Kiga, Ichiuchi, and Kashiwagi).

Scymnus (Anisoscymnus) pilicrepus Sicard, 1907: Bull. Mus. Hist. nat. Paris, 1907 (4): 211.

Scymnus (Pullus) pilicrepus Kurisaki, 1923: Ins. World, Gifu 27(14): 15.

Scymnus (Scymnus) pilicrepus Mader, 1955: Ent. Arb. Mus. Frey 6 (3): 941.

This species is a large *Scymnus* in Japan. Bielawski (1957) gave an excellent redescription based upon the cotype specimens.

Body shape and direction of the elytral hairs characteristic, especially the latter as figured in Pl. 38-S and the key. Prosternal carinae distinctly converging basally, not reaching the base of basisternum. Femoral line of the first abdominal sternum incomplete, gently arched, extending to the apical one-eighth the length of sternum and ending near the lateral margin of sternum. Area surrounded by the femoral line sparsely and very weakly punctured.

Male genitalia: siphon very slender and extremely long, about nine times as long as the tegmen without a median strut when the siphon is straightened. Siphon strongly curved at the basal and weakly at

apical part. Siphonal capsule small with a moderately long inner process and almost without an outer process; apex of siphon very narrow. Median piece of tegmen slightly narrowing apically; lateral lobe of tegmen very slender and parallel-sided in dorsal and lateral aspect, about two-thirds the length of the median piece; median strut of tegmen very long, twice as long as the remaining part of tegmen.

Body length: 2.7–3.0 mm.; width: 2.1–2.3 mm.

Distribution: Japan (Honshu, Kyushu).

Specimens examined: 1 ex., Nakamura, Yamada, Toyama Pref., 10. x. 1959, I. Hiura leg.; 1 ex. Mt. Takao, near Tokyo, 8. vii. 1956, S. Kimoto leg.; 1 ex., Zushi, Kanagawa Pref., 28. vi. 1957, T. Yôrô leg.; 1 ex., Mt. Wakasugi, Fukuoka Pref., 10. vii. 1955, H. Kamiya leg.; 1 ex., Mt. Kanayama, Fukuoka Pref., 25. x. 1959, K. Morimoto leg.; 1 ex., Mt. Inunaki, Fukuoka Pref., 3. v. 1956, H. Kamiya leg.; 1 ex., same locality, 24. v. 1959, K. Morimoto leg.; 1 ex., Mt. Iwayasan, Nagasaki City, 31. vii. 1955, Y. Nonaka leg.; 1 ex., Mt. Kompira, Nagasaki City, 16. iv. 1953, K. Asakura leg.

Scymnus (Scymnus) sylvaticus Lewis, 1896

(Pl. 38-R; Fig. 1-R, Fig. 2-P, Fig. 4-C)

Scymnus sylvaticus Lewis, 1896: Ann. Mag. nat. Hist. Ser. 6, 17: 36 (Nagasaki and Yokohama).

Scymnus (Scymnus) sylvaticus Korschefsky, 1931: Junk's Col. Cat. 118: 140.

The present species is easily distinguishable from the other Japanese *Scymnus* by the combination of the following characters: pronotum entirely reddish; elytra black with distinct red apical markings; and femoral line of the first abdominal sternum incomplete.

Body shape, coloration of the dorsal surface, direction of the elytral hairs, the shape of prosternum, the first abdominal sternum and male genitalia are rather constant within the species and these characters are as shown in the illustrations.

Body length: 2.3–2.7 mm.; width: 1.7–1.9 mm.

Specimens examined: 1 ex., Okutama, Tokyo Pref., 3. v. 1957, T. Yôrô leg.; 1 ex., Zushi, Kanagawa Pref., 12. v. 1957, T. Yôrô leg.; 1 ex., Noborito, Kanagawa Pref., 19. vi. 1955, Y. Tominaga leg.; 1 ex., Kuroson, Kôchi Pref., 28. iv. 1956, K. Morimoto leg.; 1 ex., Mt. Hikosan, Fukuoka Pref., 7. vi. 1959, Y. Miyatake leg.; 4 exs., Mt. Fukuchi, Fukuoka Pref., 4. viii. 1954, S. Kimoto leg.; 1 ex., 29. iv. 1956, H. Kamiya leg.; 1 ex., Nukabaru, Yame, Fukuoka Pref., 11. vi. 1952, Y. Miyake leg.; 1 ex., Magarifuchi, near Fukuoka City, 3. viii. 1954, M. Yasaka leg.; 2 exs., Mt. Tachibana, near Fukuoka City, 29. x. 1954, K. Morimoto

leg.; 1 ex., 9. x. 1932, T. Shirôzu leg.; 3 exs., Mt. Wakasugi, Fukuoka Pref., 5. v. 1955, H. Kamiya leg.; 3 exs., Mt. Sefuri, Fukuoka Pref., 3. v. 1955, H. Kamiya leg.; 2 exs., Hirao, Fukuoka City, 1. v. 1955, H. Kamiya leg.; 4 exs., Mt. Kompira, Nagasaki City, 4. viii. 1957, H. Kamiya leg.; 1 ex., same locality, 11. v. 1955, Y. Obuchi leg.

Scymnus (Scymnus) hareja Weise, 1879

(Pl. 38-M; Fig. 1-E, Fig. 2-N, Fig. 4-E)

- Scymnus hareja* Weise, 1879: Deutsch. Ent. Zeit. 1879: 150 (Japan: Hagi).
Scymnus (Pullus) hareja Kurisaki, 1925: Ins. World 27 (14): 14.
Scymnus (Nephus) hareja Jacobson, 1905: Käf. Russ. West-Eur.: 976.
Scymnus (Scymnus) hareja Mader, 1955: Ent. Arb. Mus. Frey 6 (3): 940.
Scymnus hareja ab. *yezoensis* Ohta, 1929, Ins. Mats. 4(1/2): 11 (Hokkaido) (**syn. nov.**).

This species is the commonest species in Japan. In his revised study on the identity of the present and the next species *seboshii*, M. Miyatake (1958) writes that this species distributes in Honshu except the northern part, Shikoku and Kyushu and Nikkô in Honshu may be the northernmost limit of the distribution of the present species. But, the author was able to examine many specimen from the northern parts of Honshu and even from Hokkaido.

In the nominate typical and common type of this species, head and pronotum reddish yellow; elytron black with a yellowish large spot and with apical margin reddish yellow. In the palest specimen so far examined by the author, elytron is pale reddish yellow with basal, lateral and sutural margins narrowly black; in the darkest specimen, pronotum black with the anterior margin reddish, a pair of central yellow spots on elytra very small, indistinct, yellow apical margination very narrow. There are many intermediate colour forms within the species. The author has the opinion that ab. *yezoensis* Ohta is nothing but a dark form of the present species.

Body length: 1.9-2.5 mm.; width: 1.3-1.7 mm.

Distribution: Japan (Hokkaido, Honshu, Shikoku, Kyushu, Yakushima).

Specimens examined: Many examples from the following localities: Hokkaido: Yukomanbetsu, Mt. Daisetsu (vii, K. Morimoto); Nukabira (vii, M. Kamiya).

Aomori pref.: Hirosaki (vi, Y. Murakami).

Fukui Pref.: Mt. Asuwa, Fukui City (vii, Y. Murakami).

Tochigi Pref.: Nikkô (vii, S. Kimoto & M. Takahashi).

Yamanashi Pref.: Kôfu City (vii, H. Kamiya).

Tokyo Pref.: Okutama (iv, T. Yôrô).

- Kyoto Pref.: Hanase-tôge, Kyoto City (v, K. Morimoto).
 Tottori Pref.: Mt. Daisen (vi, S. Kimoto).
 Kôchi Pref.: Shimizu (iv, K. Morimoto); Cape Ashizuri (vii, K. Morimoto).
 Fukuoka Pref.: Mt. Hikosan (v-viii, H. Kamiya, etc.); Fukuoka City and its suburbs (iii-ix, H. Kamiya, etc.); Mt. Kôrasan (ix, Y. Miyatake).
 Nagasaki Pref.: Nagasaki City and its suburbs (vii-ix, H. Kamiya).
 Ôita Pref.: Mt. Sobosan (ix, K. Yasumatsu).
 Miyazaki Pref.: Takachiho-no-mine (vii, H. Hori).
 Kagoshima Pref.: Mt. Kirishima (vii, J. Nagao); Izashiki (vi, Y. Maeta); Myo-Io-Enno (vii, H. Hori & M. Fujino).

***Scymnus (Scymnus) seboshii* Ohta, 1929**

(Pl. 38-L; Fig. 1-D, Fig. 2-L, Fig. 4-F)

Scymnus hareja seboseii Ohta, 1929: Ins. Mats. 4 (1/2): 11 (Honshu: Togakushi in Shimizu).

Scymnus hareja ab. *seboshii* Korschefsky, 1931: Junk's Col. Cat. 118: 127.

Scymnus (Scymnus) hareja ab. *seboshii* Mader, 1955: Ent. Arb. Mus. Frey 6 (3): 940.

Scymnus (Scymnus) seboshii Miyatake, 1958: Jap. J. Appl. Ent. Zool. 2 (4): 253-256, figs.

Ohta (1929) originally described the present form as a subspecies of *Sc. hareja* Weise, and Korschefsky (1931) in his catalogue and Mader (1955) in his monograph treated *seboshii* as an aberrant form of *hareja*. Later, Miyatake (1957, 1958) revised the identity of *hareja* and the present form, and separated the present form from the nominate form, *hareja*, as a good species. The author agrees with Miyatake's opinion.

The present species seems to be very rare, collected only in the mountainous regions of Japan except Hokkaido, i. e. Togakushi in Central Honshu (Ohta, 1929: type locality), Nikkô in Central Honshu (Miyatake, 1958), Mt. Ishizuchi in Shikoku (Miyatake, 1957) and Mt. Hikosan in Northern Kyushu (H. Kamiya, 1959).

The colour pattern of the nominate typical form is characterized as: pronotum reddish yellow; elytra black, with a large reddish yellow spot at the middle and reddish yellow apical margin, central spot not separated by the black suture. According to Miyatake (1958), the central spot is sometimes entirely connected with the apical pale marginations.

The coloration without a black suture indicates one of the distinguishable characters from *hareja*.

Body length: 2.2 mm.; width: 1.5 mm.

Distribution: Japan (Honshu, Shikoku, Kyushu).

Specimens examined: 1 ♂, Nikko, Honshu, 12. vii. 1956, M. Takahashi leg.; 1 ♀, Mt. Hikosan, Fukuoka Pref., Kyushu, 4-9. viii. 1958, K. Morimoto leg.

***Scymnus (Scymnus) quinquepunctatus* (Weise, 1923)**

(Pl. 38-K; Fig. 1-H, Fig. 2-M)

Nephus quinquepunctatus Weise, 1923: Archiv. Naturgesch. 1923, A (2): 188 (Kankau, Formosa).

Scymnus (Nephus) quinquepunctatus Korschefsky, 1931: Junk's Col. Cat. 188: 144.

Scymnus (Scymnus) quinquepunctatus Miyatake, 1959: Mem. Ehime Univ. Sect. VI, 4 (2): 138-139, figs. (Ryukyu).

This beautiful species was originally described from Formosa and recorded from the Loochoos by M. Miyatake (1959).

Body length: 2.1 mm.; width: 1.5 mm.

Distribution: The Loochoos (Okinawa), Formosa.

Specimens examined: 3 ex., Izumi, Okinawa, 15. viii. 1958, T. Hidaka leg.; Ōsato, Okinawa, 8. xi. 1960, K. Yasumatsu leg.; Yona, Okinawa, 13. xi. 1960, K. Yasumatsu leg.; 2 exs., Gogayama, Okinawa, 15. xi. 1960, K. Yasumatsu leg.

***Scymnus (Scymnus) kurohime* M. Miyatake, 1959**

(Pl. 38-N; Fig. 1-I, Fig. 2-K, Fig. 4-D)

Scymnus (Scymnus) kurohime M. Miyatake, 1959: Mem. Ehime Univ. Sect. VI, 4 (2): 136-138, figs. (Okinawa).

The species was fully described and illustrated by M. Miyatake based upon more than one hundred specimens from Okinawa. The author examined many specimens from Okinawa and also Ishigaki-jima. Therefore, this seems to be very common in Okinawa.

As was described by Miyatake, this species is very characteristic, especially in the structures of antennae, and male and female genitalia. Judging from the short genital plate of the female the present species seems to belong to the genus *Clitostethus*, but the structure of antennae is quite different from that of the latter genus. The author has the opinion that this species may be heterogenous among the genus *Scymnus*, but he tentatively place it in the genus *Scymnus*.

Body length: 1.7-2.2 mm.; width: 1.3-1.6 mm.

Distribution: The Loochoos (Okinawa, Ishigaki-jima).

Specimens examined: 8 exs., Miwa-Chinen, Okinawa, 14. viii. 1950, T. Hidaka leg.; 28 exs., Chinen, Okinawa, 6. xi. 1960, K. Yasumatsu leg.; 1 ex., Izumi, Okinawa, 15. viii. 1958, T. Hidaka leg.; 1 ex., Miwa, Okinawa, 7. xi. 1960, K. Yasumatsu leg.; 28 exs., Shuri, Okinawa, 19-21. viii. 1958, T. Hidaka leg.; 69 exs., Ôsato, Okinawa, 8. xi. 1960, K. Yasumatsu leg.; 5 exs., Yona, Okinawa, 14. xi. 1960, K. Yasumatsu leg.; 1 ex., Gogayama, Okinawa, 15. xi. 1960, K. Yasumatsu leg.; 2 exs., Ishigaki-jima, 23. xi. 1960, K. Yasumatsu leg.; 2 exs., Nagura, Ishigaki-jima, 24. xi. 1960, K. Yasumatsu leg.

Scymnus (Scymnus) nigrosuturalis H. Kamiya, sp. nov.

(Pl. 38-O; Fig. 1-J, Fig. 2-Q, Fig. 4-B)

Body oval, moderate in size; general colour of the dorsal surface reddish brown, pronotum with a black distinct marking at the middle of the basal area, marking covering the sutural area of elytra convergent posteriorly, but extending to the apex. Underside pitchy black; lateral and apical margins of abdomen pale broadly.

Frons moderately finely punctured, rather stronger on the sides, inner orbits parallel-sided and straight; clypeus straight.

Pronotum subpentagonal, anterior margin of pronotum slightly swollen at the middle; posterior margin of pronotum expanded posteriorly at the middle; punctuation of pronotum fine and somewhat close, at the lateral parts very closer and strong.

Scutellum triangular. Elytra rather convex, with very strong and close punctures; Direction of elytral hairs arranged as figured in Pl. 38-O. Lateral margins of elytra distinctly arched.

Prosternal carinae curved and slightly broadening apically. Femoral line of the first abdominal sternum uniformly curved and rather short as shown in Fig. 1-J. Area surrounded by the femoral line very finely and sparsely punctured.

Male genitalia: siphon slender, basal two-thirds of siphon rounded, semicircular; siphon swollen at apical third; curved to outwards near apex. Siphonal capsule with a rather long inner process and an indistinct outer process. Tegmen rather stout; the shape of median piece of tegmen boat-like with a pointed apex in ventral aspect; lateral lobe of tegmen slightly longer than the median piece, somewhat slender. Median strut of tegmen longer than one and half times the length of the remaining part of tegmen, stout and arched.

Body length: 2.2 mm.; width: 1.4 mm.

Distribution: The Loochoos (Okino-erabu Is., Ishigaki-jima Is., Miyako-jima Is.).

Holotype (♂): Okino-erabu Is., the Amami Islands, 30. vii. 1957, M. Umabayashi leg.

Allotype (♀): Miyako-jima Is., the Yaeyama Group in the Loochoos, 26. xi. 1960, K. Yasumatsu leg.

Paratype: 1 ♂, Ishigaki-jima Is., the Yaeyama Group in the Loochoos, 23. xi. 1960, K. Yasumatsu leg.

***Scymnus (Scymnus) miyamotoi* Nakane et Araki, 1959**

(Pl. 38-Q; Fig. 1-C, Fig. 2-R)

Scymnus (Scymnus) miyamotoi Nakane et Araki, 1959: Sci. Rep. Kyoto Pref. Univ. (Nat. Sci. Living Sci.) 3 (1): 46-47, Fig. (Tokara: Nakanoshima).

The present species was originally described by Nakane and Araki (1959) based on two female materials from Nakanoshima in the Tokara Islands.

The author illustrates the colour pattern, the direction of the dorsal hairs, the prosternal process and the first abdominal sternum so as to make the original description as complete as possible.

This species is distinguishable from the other species from Japan and the Loochoos by the characters shown in the author's key in this paper.

Body length: 2.0 mm.; width: 1.3 mm.

Distribution: The Loochoos (the Tokara Islands).

Specimen examined: 1 ♀, Nakanoshima, Tokara Is., 25. v. 1953, S. Miyamoto leg. (Paratype preserved in the Nakane's collection).

***Scymnus (Scymnus) marinus* H. Kamiya, sp. nov.**

(Pl. 38-P; Fig. 1-F, Fig. 2-S)

Body small oval; black, two pairs of elytral spots red, one pair long oblique oval and being at basal one-third of elytron, and the another one small and being near the apex of elytron, these spots not clearly bordered or defined and intermediate area between both spots slightly paler; anterior margin of prothorax narrowly pale, head including mouth parts and antennae yellow, tibiae, tarsi, and the fifth and sixth abdominal sterna reddish brown and femora and the fourth abdominal sternum pitch black.

Head somewhat narrow than half the basal width of pronotum; distance between eyes rather wide, inner orbits slightly arcuated; clypeus short, punctures of frons coarse and those of median part much coarser.

Pronotum transverse, three-fifths times as long as wide; lateral margins distinctly convergent anteriorly; anterior angles somewhat acute, rounded; posterior margins narrowly marginated; punctuation of pronotum fine and rather dense.

Scutellum subpentagonal, lateral and latero-posterior margins of scutellum rounded, finely punctured.

Elytra convex, lateral margins arcuated; widest at the middle of body; coarsely and strongly punctured; direction of the elytral hairs arranged as figured in Pl. 38-P; hairs on elytra rather long.

Body length: 1.7 mm.; width: 1.2 mm.

Distribution: Japan (Okinoshima Is. off the coast of N. Kyushu).

Holotype (♀): Okinoshima Is., Fukuoka Pref., Kyushu, 25-28. vii. 1958, Y. Hirashima, Y. Murakami and Y. Miyatake leg.

Scymnus (Scymnus) paganus Lewis, 1896

(Pl. 38-T; Fig. 1-Q, Fig. 2-O, Fig. 4-G)

Scymnus paganus Lewis, 1896: Ann. Mag. nat. Hist. Ser. 6, 17: 38 (Nagasaki, Yuyama and Oyama in Sagami).

Pullus paganus Ohta, 1929: Ins. Mats. 4 (1/2): 3.

Scymnus (Pullus) paganus Mader, 1955: Ent. Arb. Mus. Frey 6 (3): 924.

Scymnus (Scymnus) paganus Bielawski, 1957: Trans. Shikoku ent. Soc. 5 (5): 69-70, figs.

The present species is very easily distinguishable from the other Japanese species of the subgenus *Scymnus* s. str. by the uniformly brown coloration and the body shape as shown in Pl. 38-T.

Bielawski (1957) examined one of the cotype specimens and re-described this species. The author's materials are agreeable to the Bielawski's redescription excepting the femoral line of the first abdominal sternum. The femoral line of the author's materials recurved basally at its end as shown in illustration.

Male genitalia: siphon moderately slender, comparatively short, strongly narrowing apically; siphonal capsule with a long inner process but without a distinct outer process. Tegmen stout, median piece of tegmen rather wide in ventral aspect; lateral lobes distinctly longer than the median piece.

Body length: 2.2-2.7 mm.; width: 1.4-1.7 mm.

Distribution: Japan (Honshu, Kyushu).

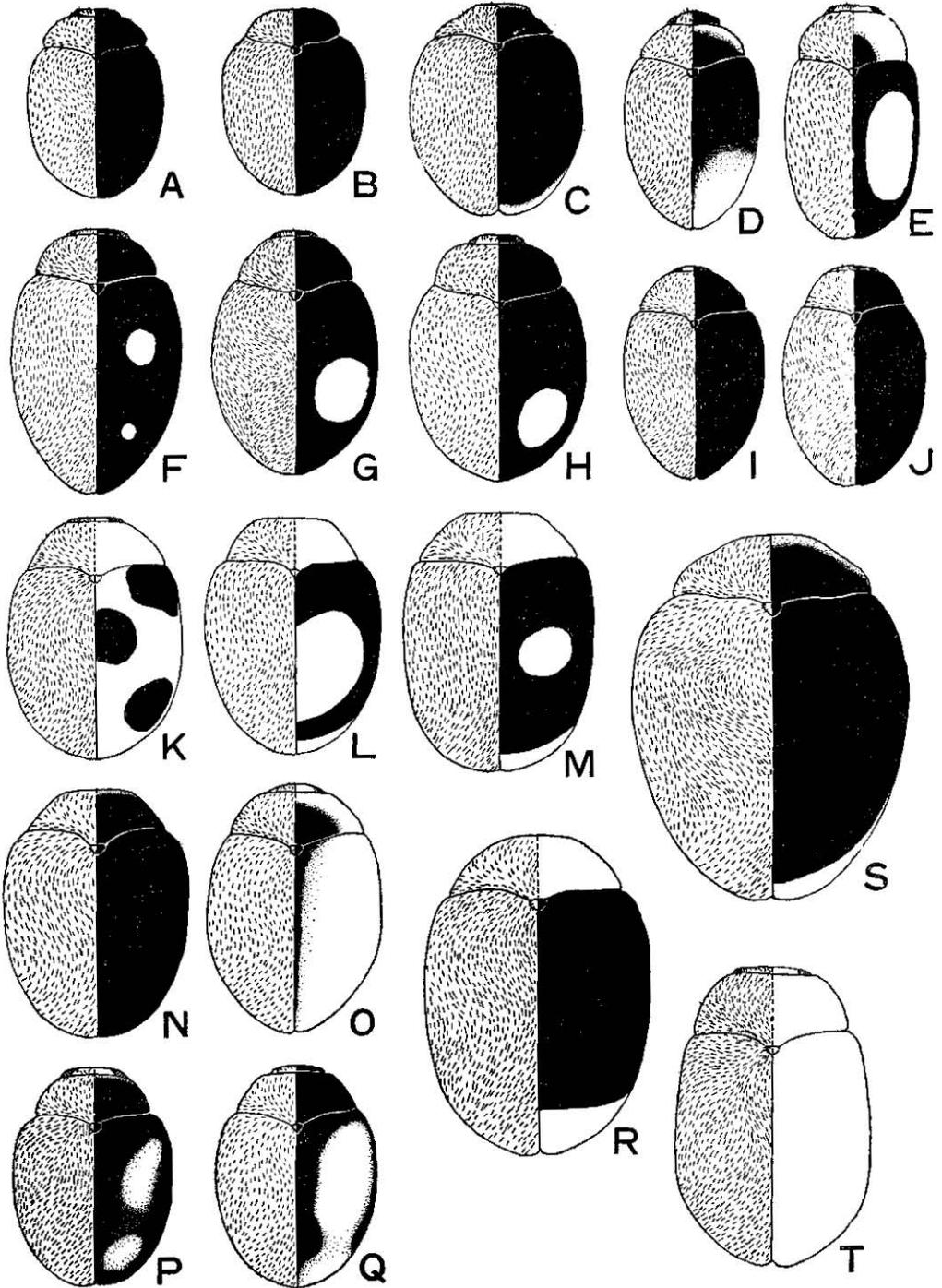
Specimens examined: 1 ex., Mt. Daisen, Tottori Pref., Honshu, 28. v. 1954, S. Kimoto leg.; 1 ex., Mt. Wakasugi, Fukuoka Pref., Kyushu, 10. vii. 1955, H. Kamiya leg.; 1 ex., Mt. Hikosan, Fukuoka Pref., 15. vii. 1955, H. Kamiya leg.; 1 ex., 24. vii. 1954, S. Kimoto leg.; 3 exs., 3. vi. 1956, K. Morimoto leg.; 1 ex., 14. vi. 1957, K. Morimoto leg.; 11

exs., 2-3. vi. 1958, K. Morimoto leg.; 3 exs., 14. vi. 1958, H. Kamiya.;
4 exs., 7. vi. 1959, Y. Miyatake leg.; 2 exs., Mt. Sobosan, Ōita Pref.,
8. ix. 1933, K. Yasumatsu leg.; 1 ex., 9. ix. 1933, K. Yasumatsu leg.;
1 ex., 24. vii. 1953, S. Kimoto leg.

Explanation of Plate 38

Dorsal surfaces of the genera *Clitostethus*, *Stethorus*, *Scymnus* except subgenus *Pullus*, left sides showing the direction of hairs, right sides showing the coloration. Each figure is drawn by the same magnifying scale.

- A. *Stethorus japonicus* H. Kamiya.
- B. *Clitostethus nagasakiensis* H. Kamiya, sp. nov.
- C. *C. lewisi* H. Kamiya, sp. nov.
- D. *Scymnus (Nipponopullus) pirikamenoko* H. Kamiya, sp. nov.
- E. *Sc. (Nephus) patagiatus* Lewis.
- F. *Sc. (N.) yotsumon* H. Kamiya, sp. nov.
- G. *Sc. (N.) ryuguus* H. Kamiya, sp. nov.
- H. *Sc. (N.) phosphorus* Lewis.
- I. *Sc. (N.) kaiensis* H. Kamiya, sp. nov.
- J. *Sc. (N.) kompirasanus* H. Kamiya, sp. nov.
- K. *Sc. (Scymnus) quinquepunctatus* Weise.
- L. *Sc. (Sc.) seboshii* Ohta.
- M. *Sc. (Sc.) hareja* Weise.
- N. *Sc. (Sc.) kurohime* Miyatake.
- O. *Sc. (Sc.) nigrosuturalis* H. Kamiya, sp. nov.
- P. *Sc. (Sc.) marinus* H. Kamiya, sp. nov.
- Q. *Sc. (Sc.) miyamotoi* Nakane et Araki.
- R. *Sc. (Sc.) sylvaticus* Lewis.
- S. *Sc. (Sc.) pilicrepus* Lewis.
- T. *Sc. (Sc.) paganus* Lewis.



Scymnini from Japan and the Loochoos