

A Systematic Study of the Japanese Pipunculidae (Diptera) : Part II. The Genus *Chalarus* Walker

Morakote, Rut

Entomological Laboratory, Faculty of Agriculture, Kyushu University

Hirashima, Yoshihiro

Entomological Laboratory, Faculty of Agriculture, Kyushu University

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A Systematic Study of the Japanese Pipunculidae (Diptera)
Part II. The Genus *Chalarus* Walker*

Rut Morakote and Yoshihiro Hirashima

Entomological Laboratory, Faculty of Agriculture,
Kyushu University, Fukuoka 812, Japan

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The genus *Chalarus* Walker is recorded from Japan for the first time. Ten including seven new species are presented with key, descriptions and illustrations of important diagnostic characters.

Genus **CHALARUS** Walker

Chalarus Walker, 1834, Ent. Mag., 2 : 269. Type species : *Cephalops spurius* Fallen, 1816, Syrphici Sveciae : 16, designated by Westwood, 1840.

Ateleneura Macquart, 1833, Recueil, Soc. Sci. Agric., Lille, 356 (*Ateleneura*, **1834**). Type species : *Pipunculus holosericeus* Meigen, 1824, by original designation.

The flies of this genus are believed to be the smallest in the family Pipunculidae having the wing length ranging 2.3-3 mm. General characteristics are mostly similar to the genus *Verrallia* Mik but different by having the incomplete wing venation. The wing vein M1 extends to the r-m or slightly beyond it and then disappears ; the marginal cross vein is absent and the anal vein is almost lacking as only a trace of line. The wings of males and females are different in size of the anal lobe from each other. The coloration of halteres is understood as expressing the sexual dimorphism, black in the male but yellow in the female.

To date, there has been no record of this genus in Japan. At present we found ten species of the genus, seven of which are new to science. The identification of the species of this genus is rather difficult because the external characters are remarkably similar to one another, especially in males, and also because of the sexual dimorphism which makes the matching of the male and female more difficult. The Japanese specimens of this genus are identified into species based on the male genital characters. When no associated characters and enough evidence for the combination of the sexes are available, we decided to identify them as different species.

Most of the members of this genus are reported to parasitize the homopterous insects of the Cicadellinae and Typhlocybinae, the subfamilies of Cicadellidae (Coe, 1966a, 1966b ; Waloff, 1975). Jervis (1980a, 1980b, 1980c) provided more knowledge about the biology of *Chalarus* which parasitizes the typhlocybine leafhoppers in England:

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Key to males of Japanese CHALARUS

1. Femoral pubescence all black.....2
- Femoral pubescence all pale 6
2. Scutellum with two pairs of marginal bristles 3
- Scutellum with four pairs of marginal bristles 5
3. Third costal section of wings about six times as long as fourth;
genitalia as shown in Fig. 23A-D *C. spurius* Fallen
- Third costal section of wings about three or four times as long as
fourth 4
4. Third costal section of wings about four times in long as fourth ;
genitalia as shown in Fig. 25G-J *C. flosculus* Morakote, sp. n.
- Third costal section of wings about three times as long as fourth ;
genitalia as shown in Fig. 25D-F *C. unilacertus* Morakote, sp. n.
5. Frons noticeably wide, third costal section of wings about six times as
long as fourth ; genitalia as shown in Fig. 24C-H
..... *C. magnalus* Morakote, sp. n.
- Frons noticeably narrow, third costal section about five times as long as
fourth ; genitalia as shown in Fig. 25A-C ... *C. angustifrons* Morakote, sp. n.
6. Third costal section of wings about four times as long as fourth;
genitalia as shown in Fig. 26D-E *C. latifrons* Hardy
- Third costal section of wings about five times as long as fourth;
genitalia as shown in Fig. 26D-F *C. fimbriatus* Morakote, sp. n.

Key to known females of Japanese CHALARUS

1. Femoral pubescence all black.....2
- Femoral pubescence all pale 5
2. Third costal section of wings about four times as long as fourth 3
- Third costal section of wings about six times as long as fourth ; frons
(Fig. 27B) with a row of about 10 short hairs along each lateral margin ;
mid femoral fringe composed of about 15-16 bristles ; ovipositor piercer
about twice as long as base, sharp and straight as shown in Fig. 28D
..... *C. konishii* Morakote, sp. n.
3. Mid femoral fringe composed of about 16-17 bristles ; frons (Fig. 27A)
with a row of 6 short hairs along each lateral margin ; front om-
matidial facets slightly enlarged with diameter about 1.1 as long as the
median ocellus ; ovipositor as shown in Fig. 28A and B ... *C. spurius* (Fallen)
- Mid femoral fringe composed of about 9-11 bristles 4
4. Frons (Fig. 27C) with parallel lateral margins, with a row of 9 tiny
hairs along each lateral margin ; front ommatidial facets moderately
enlarged with diameter about twice as long as median ocellus ; abdo-
men and ovipositor as shown in Fig. 28G *C. rectifrons* Morakote, sp. n.
- Frons (Fig. 27F) gradually narrowing from ocellar triangle to base of
antennae, with a row of 9 tiny hairs along each lateral margin ; front
ommatidial facets moderately enlarged, with diameter about twice as

- long as the median ocellus ; abdomen and ovipositer as shown in Fig. 28C *C. flosculus* Morakote, sp. n.
5. Fore and mid pulvilli considerably enlarged, about twice as long as last tarsal segment ; hind femora with two spurs beneath near base ; frons (Fig. 27D) almost parallel-sided, with a row of 7 short hairs along each lateral margin ; front ommatidial facets considerably enlarged about three times as long as the median ocellus ; third costal section of wings about four times as long as fourth ; ovipositor as shown in Fig. 28E *C. latifrons* Hardy
- All pulvilli small, about half as long as last tarsal segment ; frons (Fig. 27E) with a row of 9 tiny hairs along each lateral margin ; front ommatidial facets slightly enlarged about as long as the median ocellus ; third costal section of wings about three times as long as the fourth ; ovipositor rather large, with oval base and strongly upcurved piercer (Fig. 28F) *C. kamijoi* Morakote, sp. n.

Chalarus spurius (Fallen)

Cephalops spurius Fallen, 1816, Syrphici Sveciae : 16.

Pipunculus spurius: Meigen, 1824, System. Beschreib., 4 : 24.

Chalarus spurius : Walker, 1834, Ent. Mag., 2 : 269. — Verrall, 1901, Brit. Flies, 8 : 68. — Lundbeck, 1922, Dipt. Danica, 4 : 61. — Brunetti, 1923, The Fauna of British India, Dipt., 3 : 3. — Aczél, 1948, Acta 2001. Lilloana, 6 : 49. — Hardy, 1943, Univ. Kans. Sci. Bull., 29 : 36. — Coe, 1966, Proc. r. ent. Soc. Lond., 35 : 149.

Ateleneura spurius : Meijere, 1902, 2001. Jahrb., Abth. Syst., 14 : 123.

Pipunculus obscurus Zetterstedt, 1838, Insecta Lapp., Dipt. : 590.

Pipunculus exiguus Haliday, 1833, Ent. Mag., 1 : 162.

Chalarus exiguus : Walker, 1851, Insecta Britannica, Dipt., 1 : 233.

Pipunculus holosericeus Meigen, 1824, System. Beschreib., 4 : 24.

Chalarus holosericeus: Walker, 1834, Ent. Mag., 2 : 270.

Atelenevra holosericeus: Macquart, 1834, Recueil Soc. Sci. Agric. Lille., 1833 : 357.

Atelenevra velutinus Macquart, 1835, Suit. a Buffon, 2 : 12.

Ateleneura velutinus Meigen, 1838, System. Beschreib., 7 : 148.

Male (Fig. 19).

Deep black species, all body pubescence and bristles blackish.

Head : Frons bare, blackish except lower one-third silvery pubescence, gradually narrowing from ocellar triangle to narrowest point at the middle third then widening again to base of antennae ; frons at the level of median ocellus and base of antennae equal in width, widest about three times as wide as narrowest point ; antennae all black, third segment blackish, reniform and covered with microscopic pubescence, second segment slightly smaller than third, with three to four moderately long bristles above and beneath those beneath are longer ; arista blackish, thick at basal one-third or half, the remainder tapering and about twice as long as third segment.

Thorax deep black on dorsum, with noticeably densely long pubescence on

anterior half which make three bristles on notopleuron inconspicuous ; each postalar callus with two long bristles ; scutellum deep black on dorsum, with some fine pubescence on dorsum and two pairs of long marginal bristles ; pleurae black, almost bare except anepimeron with about 4-5 fine hairs near anterior margin.

Legs mainly deep black ; mid femoral fringe with about 17-19 long bristles, hind femora with a row of 6 proclinate bristles anterodorsally ; last tarsal segment oval, with 5 short bristly hairs near anteroapical margin.

Wings iridescent ; stigma brownish not extending back to tip of Sc ; third costal section about six times as long as fourth, vein M1 extending to r-m ; r-m situated before the level of tip of Sc and placed about basal one-sixth of R4+5 ; second section of vein M1 rather short ; halteres and calyptal fringes black.

Abdomen mainly deep black ; abdominal pubescence blackish, rather dense, short on dorsum and long at side.

Genitalia (Fig. 23A-D) moderately large ; surstyli with apical inner side margin extending to form a conspicuous hook-like process which is clearly seen from side ; aedeagal valve with a pair of small hook-like process ventrosabapically ; a pair of long tapering leaf-like process attached at base of aedeagal valva, fairly long about as long as aedeagal valve.

Wing length : 2.5-3 mm.

Female.

Differing from the male as follows : Frons mainly cinerous except lower third silvery pubescence, widest at ocellar triangle then gradually narrowing to the middle, and then parallel-sided to base of antennae and with a row of 6 short pale hairs running along each lateral margin from posterior margin to middle of frons ; front ommatidial facets of eyes slightly enlarged, with diameter about 1.1 times as long as that of median ocellus ; body pubescence finer and shorter than those of male ; third costal section of wings only about four times as long as fourth ; halteres and calypteres yellow. Ovipositor (Fig. 28A and B) with subglobular base ; piercer rather thick in lateral view, about 1.3 times as long as base, slightly upcurved.

Wing length : 2.7 mm.

Specimens examined. (Hokkaido) 39♂♂ 1♀, Soukkyo (600 m), Mt. Daisetsu, Kamikawa, 26. vi. 1986 ; 2♂♂ 1♀, same locality, 11. v. 1986 ; 1♂, Iwabetsu-kawa, Otoro, Abashiri, 6. vii. 1986 ; 1♂, Misumai, Sapporo, Ishikari, 24. vi. 1986 ; 1♂, Akankohan, Mt. O-akan, Kushiro, 4. vii. 1986. All were collected by R. Morakote.

Host : Unknown from Japan ; in America : *Empoasca* sp. ; in France ; *Edwardsiana lethierryi* (Edwards) and *Fagocyba douglasi* (Edwards) ; in England : *Edwardsiana lethierryi* (Edwards), *E. rosea* (Linnaeus), *Eupteryx millssae* (Curtis), *E. notata* Curtis, *E. urticae*, *Eurhadina concinna* (Germar), *E. pulchella* (Fall&r), *Fagocyba cruenta* (Herrich-Schaffer), *Ribautiuna tenerrima* (Herrich-Schaffer), *Typhlocyba quercus* (Fabricius) ; all above see Freytag (1985).

Distribution : Japan (Hokkaido), America, Europe, Oriental region.

Remarks : This species widely spreads over the world, and is very abundant also in Japan when compared with other species.

Chalarus latifrons Hardy

Chalarus latifrons Hardy, 1943, Univ. Kans. Sci. Bull., 29 : — Coe, 1966, Proc. Soc., Lond., (B), 35 : 151; —, 1966, Handbk. Ident Bri. Ins., 10(2C): 27.

Male.

Brownish black species.

Head mostly resembling that of *C. spurius*; frons (Fig. 27D) bare, blackish except lower third silvery pubescent, and gradually widening from ocellar triangle to narrowest point at the middle third then widening again to base of antennae; frons at base of antennae slightly narrower than at the level of median ocellus; antenna same as that of *C. spurius*.

Thorax and scutellum brownish black on dorsum, with short pale brown pubescence sparsely distributed on dorsum, around anterior half or two-thirds but rather dense on notopleuron; scutellum with two pairs of long pale marginal bristles; pleurae brownish; anepimeron with 3-4 fine pubescence near anterior margin.

Legs mainly brownish black except tarsi brownish; pubescence of legs pale; mid femoral fringe with about 15-16 long curved bristles; hind femora with a row of 6 long bristles dorsoanteriorly; hind tibiae with two moderately long bristles anteromedially.

Wings iridescent; stigma lightly brown not extending back to tip of Sc; third costal section about four times as long as fourth but about 1.3 times as long as second; r-m situated before level of tip of Sc, placed at about basal one-tenth of vein R4+5; vein M1 just extending to r-m; halteres brownish black; calyptal fringes brownish black.

Abdomen brownish black; tergal pubescence brownish black.

Genitalia (Fig. 26B and C) rather large; surstyli constricted at base and apical margin enlarged as seen from lateral; aedeagal valve, dolphin-like shape as seen from side, and with a pair of conspicuous hook-like process ventrally around middle; a pair of tapering leaf-like process attached at base of aedeagal valve and this leaf-like process slightly shorter than aedeagal valve.

Wing length : 3 mm.

Female.

Differing from the male as follows: Frons mainly cinereous except lower third silvery pubescence, widest at ocellar triangle then gradually narrowing to base of antennae, and with a row of 7 short pale hairs run along each lateral margin from posterior to middle of frons; front ommatidial facets of eyes considerably enlarged of which diameter about three times as long as that of median ocellus; third antennal segment larger and round in shape; mid femora fringe composed of about 14-15 bristles; body pubescence finer and sparser than in male; hind femora with a few indistinct spines beneath near base; fore and mid pulvilli enlarged, about twice as long as last tarsal segment but hind pulvilli small and about half as long as last tarsal segment; halteres and calypteres yellow. Ovipositor (Fig. 28E), piercer rather long, about twice as long as base, and moderately upcurved.

Wing length : 3 mm.

Specimens examined. (Hokkaido), 1♂2♀, Akankohan, Mt. O-akan, Kushiro 4.

vii. 1986 ; 1 ♀, Iwabetsu-kawa, Utoro, Abashiri, 6. vii. 1986 ; 1 ♂, Sounkyo, Mt. Daisetsu, Kamikawa, 11. vii. 1986 ; (Kyushu) 1 ♂, Mt. Hikosan, Fukuoka Pref., 23. x. 1986. All were collected by R. Morakote.

Host : Unknown from Japan ; in America *Agallia* sp. (Hemiptera : Cicadellidae) (Hardy, 1943) ; in England *Kybos butleri* (Edwards) and *K. smaragdula* (Fallen) (Jervis, 1980c).

Distribution : Japan (Hokkaido, Kyushu), North America, Europe.

Remarks : The male Japanese specimens are identified as *C. latifrons* according to the illustration by Coe (1966). However, some of other characters are different from the male of *latifrons* described by Hardy (1943) and Coe (1966a), by having no bristly hairs on the frons (present as described by Hardy and Coe) ; the tarsi are yellowish and the mid femoral fringe has only 16 bristles (24-28 as described by Coe).

Chalarus fimbriatus Coe

Chalarus fimbriatus **Coe, 1966**, Proc. r. Ent. Soc. Lond., (B) : 153 ; —, 1966, Handbk. Ident. Brit. Ins., 10 (2C) : **28**.

Male.

Head : Frons bare, blackish except lower one-third silvery pubescence, wider than that of *spurius* and *latifrons*, and slightly convex at lower one-third ; frons at base of antennae slightly narrower than at the level of **madian** ocellus ; antennae brownish black ; second segment with three short bristles above and two longer beneath ; third segment oval.

Thorax deep black on dorsum, sparsely covered with long brownish black pubescence on dorsum around anterior half ; notopleural bristles conspicuous ; scutellum deep black, almost bare on dorsum, and with two pairs of long black marginal bristles ; pleurae brownish black ; anepimeron with two fine pubescence near anterior margin.

Legs all brownish black except tarsi brownish yellow, mid femora with a postero-medial fringe of about 14-15 long pale bristles, hind femora with a row of about **4-6** strong proclinate brownish black bristles anterodorsally ; hind tibiae with **1-2** long black bristles anteriorly around middle.

Wings iridescent, stigma lightly brown, not extending back to tip of Sc ; third costal section about five times as long as fourth and about 0.7 times as long as second ; r-m situated before level of tip of Sc, placed about one-seventh of vein R4+5 ; vein M1 extending just to r-m ; halteres black ; calyptal fringe brownish black.

Abdomen and tergal pubescence brownish black, short on dorsum, long at side ; tergite 1 with a tuft of long black pubescence anterolaterally ; sternite **5** with a short tack-like spine on each side near posterior margin.

Genitalia (Fig. 26D-F) rather small when compared with other species ; **epandrium** very narrow ; surstyli with apical margin round when seen from side ; aedeagal valve much like that of *C. spurius* but a pair of ventral hook-like process near apex very small and inconspicuous ; base of aedeagal valve without a pair of tapering leaf-like process as present in *spurius*.

Wing length : 2.3 mm.

Specimens examined. (Hokkaido) 2 ♂♂, Akankohan, Mt. 0-akan, 4. vii. 1986 ; 16,

Kamishibetsu, Kushiro, 5 vii. 1986. All above were collected by R. Morakote.

Distribution : Japan (Hokkaido), Britain, Belgium.

Remarks: The Japanese specimens are identified as *C. fimbriatus* according to the illustration of genitalia by Coe (1966a). We found that the fifth sternite of this species bore a short tack-like spine on each side near posterior margin. This character has been never found before in any species of the genus, and Coe (1966a) did not mention it in the original description.

Chalarus flosculus Morakote, sp. n.

Male.

Resembling the male of *C. spurius* in most respects but differing as follows : Body coloration paler ; third costal section of wings only about four times as long as fourth ; genitalia (Fig. 25G-J) moderately large and clearly different from that of *spurius* ; hypandrium lobes rather broad when seen from side ; surstyli with innerside margin only slightly extended to form an inconspicuous hook-like shaped lobe and outer margin above level of cerci slightly convex ; aedeagus much like that of *fimbriatus* but the base of aedeagal valve with a pair of leaf-like process which is as long as aedeagal valve.

Wing length : 2.3-3.3 mm.

Female.

Differing from the female of *C. spurius* as follows: Frons gradually narrowing from ocellar triangle to base of antennae ; mid femora with posteroventral fringe of 9 bristles, tarsi and joints between femora and tibiae yellow ; ovipositor clearly different in shape and size from that of *C. spurius* as shown in Fig. 28C ; posterior margin of wings round and second section of vein M1 shorter than those of *C. spurius*.

Holotype: ♂ (Type No, 2723, Kyushu Univ.), Mt. Hikosan, Fukuoka Pref., Kyushu, 22. v. 1986 (R. Morakote).

Paratypes: Same location as holotype, 2 ♀♀, 8. v. 1986 ; 2 ♀♀, 22. v. 1986 ; R. Morakote ; 1 ♀, Sounkyo, Mt. Daisetsu, Kamikawa, Hokkaido, 26. vi. 1986 (R. Morakote).

Chalarus magnalus Morakote, sp. n.

Male.

Head : Frons bare, blackish except lower one-fifth silvery pubescence, noticeably wide when compared with other species, almost parallel-sided; frons at the base of antennae and at median ocellus equal in width, widest ; antennae all black ; third segment reniform and about 1.3 times as wide as second segment, the latter with three short bristles above and two longer beneath; arista about twice as long as third segment.

Thorax deep black on dorsum, noticeably enlarged and broader than other species, densely covered with long black pubescence on anterior half which make notopleural bristles inconspicuous ; scutellum deep black, with 4 pairs of long black marginal bristles ; pleurae blackish ; anepimeron with 4 fine pubescence near anterior margin.

Legs and legs pubescence deep black ; mid femora with a conspicuous postero-medial fringe (incomplete because of broken specimen).

Wings large and iridescent ; stigma dark brown, not extending back to tip of Sc ; third costal section about six times as long as third but about 0.8 times as long as second ; r-m situated slightly before level of tip of Sc, placed about basal one-sixth of vein R4+5 ; vein M1 extending much beyond r-m ; halteres black ; calyptal fringes brownish black.

Abdomen (Fig. 24A and B) typical as in the genus ; all pubescence black.

Genitalia (Fig. 24C-H) large when compared with other species ; hypandrial lobes strongly curved ; epandrium rather broad ; surstyli large, with a short splitting line near outer margin which makes each surstylus likely composed of two lobes (large inner lobe and small outer lobe) ; aedeagus decidedly differs in shape from other species, large and stout ; aedeagal valve swollen, with a pair of large hook-like process ventrosubapically and with a pair of arched sclerotize process near base.

Wing length : 3.3 mm.

Holotype : ♂ (Type No. 2724, Kyushu Univ.), Nukabira, Kamishihoro, Tokachi, 29. vi. 1986 (R. Morakote).

Distribution : Japan (Hokkaido).

Remarks : This species is distinguished from other species by having the large thoracic disc, the scutellum with 4 pairs of long black bristles, the large wings and the genitalia clearly different in shape.

Chalarus angustifrons Morakote, sp. n.

Male.

Head. Frons bare, blackish except lower two-fifths silvery pubescence, very narrow ; gradually narrowing from ocellar triangle to narrowest point at the middle third then widening again to base of antennae ; frons at base of antennae slightly wider than at level of median ocellus ; antenna similar to that of *spurius*.

Thorax blackish on dorsum, with rather densely long erect pubescence on anterior half ; notopleural bristles distinct ; scutellum blackish ; with four pairs of long black marginal bristles ; pleura brownish black ; anepimeron with 4 fine hairs near anterior margin.

Legs and legs pubescence brownish black ; first four tarsal segments inclined yellow ; mid femora with posteromedial fringe of about 16-18 long curved bristles ; hind femora with a row of 6 proclinate long bristles dorsoanteriorly.

Wings very large like that of *magnalus*, stigma lightly brown, not extending back to tip of Sc ; third costal section about five times as long as fourth, about 0.6 times as long as second ; r-m situated slightly before level of tip of Sc, placed about basal one-sixth of vein R4+5 ; vein M1 extending just to r-m ; halteres black, calyptal fringe brownish black.

Abdomen deep black ; abdominal pubescence all brownish black ; tergal pubescence short on dorsum long at side ; tergite 1 with a tuft of long bristles anterolaterally.

Genitalia (Fig. 25A-C), large, mostly resemble those of *C. flosculus* but differ by having the tapering leaf-like process at base of aedeagal valve very long, about twice

as long as aedeagal valve.

Wing length : 2.3 mm.

Holotype : ♂ (Type No. 2725, Kyushu Univ.), Hokkaido, Akan-kohan, Mt. O-akan, Kushiro, 3. vii. 1986 (R. Morakote).

Paratype : 1 ♂, same data as holotype.

Distribution : Japan (Hokkaido).

Remarks : This species is separated from other species in the genus by having the very narrow frons ; the first four yellow tarsal segment ; the aedeagus with the very long tapering leaf-like process at the base of the aedeagal valve.

Chalarus unilacertus Morakote, sp. n.

Male.

Mostly resembling the male of *C. spurius* but differing as follows : Third costal section of wings only about three times as long as fourth; genitalia (Fig. 25D-F) clearly differ from those of *spurius*; aedeagal valve similar in shape to that of *C. fimbriatus* but with only one tapering leaf-like process at base of aedeagal valve on the right side, this process is very long, about 1.5 times as long as aedeagal valve and bifurcate at apex.

Wing length : 2.7 mm.

Holotype : ♂ (Type No. 2726, Kyushu Univ.), Sounkyo. Mt. Daisetsu, Kamikawa, Hokkaido, '26. vi. 1986 (R. Morakote).

Paratypes : 1 ♂, same location and collector as holotype, 26. vii. 1986 ; 1 ♂, Akan-kohan, Mt. O-akan, 4. vii. 1986 (R. Morakote) ; 1 ex. (abdomen missing), Aizan-Kei, 15. vii. 1960 (K. Kamijo).

Distribution : Japan (Hokkaido).

Chalarus konishii Morakote, sp. n.

Female.

Very small species. Frons (Fig. 27B) dull greyish except lower two-fifths silvery pubescence, widest at ocellar triangle then gradually narrowing to narrowest point at middle then widening again to base of antennae ; frons at base of antennae slightly narrower than at level of median ocellus, a row of 10 short proclinate hairs run parallelly with each lateral margin from lower level of median ocellus to middle of frons ; front ommatidial facets of eyes moderately enlarged, with diameter about 1.5 times as long as diameter of medial ocellus ; antenna as that of *C. spurius*.

Thorax roughly quadratic, sparsely clothed with short pubescence on anterior half, black with lightly brown dusting on dorsum, otherwise as those of *C. spurius*.

Legs brownish black, greyish pruinose ; mid femora with posteroventral fringe of about 12-13 long pale bristles, hind femora with a row of 4-6 long proclinate bristles anterodorsally, hind trochanters with three small spines beneath ; femora with a row of about three to four small spines beneath.

Wings with third costal section about six times as long as the fourth, r-m situated about basal one-sixth of vein R4+5, otherwise as those of *C. spurius*.

Abdomen dull black, greyish pruinose, roughly oval when viewed from above (dry

specimen), tergites sparsely covered with pubescence, short on dorsum longer at side ; tergite 1 with a tuft of bristles on anterolaterally ; ovipositor (Fig. 28D) with globular base ; piercer tapering and long, about twice as long as base, almost straight.

Length : Body 2.1 mm ; wing 2.3 mm.

Holotype: ♀ (Type No. 2727, Kyushu Univ.), Sounkyo, Mt. Daisetsu, Kamikawa, 26. vii. 1986 (R. Morakote).

Paratypes: 5 ♀♀, same data as holotype.

Host: Unknown.

Distribution: Japan (Hokkaido).

Remarks: This species is easily distinguished from other species by having the abdomen rather small and short, the shape of the frons clearly different from other species, the trochanters and femora with some spines beneath and the ovipositor with a very long piercer.

Chalarus rectifrons Morakote, sp. n.

Female.

All body pubescence and bristles brownish black. Frons (Fig. 27C) dull greyish, parallel-sided from ocellar triangle to base of antennae, a row of 10 short proclinate hairs run parallelly with each lateral margin from lower margin of median ocellus to middle of frons ; front ommatidial facets very slightly enlarged, with diameter equal as diameter of median ocellus ; antenna as that of *C. spurius*.

Thorax and wings resembling as those of *C. spurius*.

Legs brownish black except tarsi yellowish; mid femora with posteroventral fringe of 11 bristles, hind femora with a row of 4 long bristles anterodorsally.

Abdomen dull brownish to greyish, rather long and slender, densely clothed with short pubescence ; a tuft of pubescence on tergite 1 moderately long ; ovipositor (Fig. 28G) with roughly globular base, with rather long piercer, about twice as long as base.

Wing length : 3 mm.

Holotype: ♀, Mt. Daisetsu, Kamikawa, Hokkaido, 13. vii. 1960 (K. Kamijo), in the collection of Hokkaido University.

Host: Unknown.

Distribution: Japan (Hokkaido).

Chalarus kamijoi Morakote, sp. n.

Female.

Most of body pubescence and bristles pale. Frons (Fig. 27E) dull greyish except lower one-third silvery pubescence, widest at level of ocellar triangle then gradually narrowing to narrowest point at base of antennae, a row of nine short proclinate hairs run parallelly with each lateral margin from lower level of median ocellus to middle of frons ; frons at base of antennae about half as wide as at level of median ocellus ; front ommatidial facets slightly enlarged, with diameter as long as diameter of median ocellus ; antenna like that of *C. latifrons*.

Thorax and wings mostly resembling those of *C. latifrons* but third costal section of wings only three times as long as fourth and r-m placed at about one-sixth of vein

R4+5.

Legs dark brown except tibiae and tarsi yellowish ; mid femora with postero-ventral fringe of 13 long bristles; hind femora with 4 long bristles anterodorsally ; pulvilli smaller than last tarsal segment.

Abdomen rather long, parallel-sided, dull brownish black, densely clothed with short pubescence which are short on dorsum and long at side ; tergite 1 with a tuft of very long bristles; ovipositor (Fig. 28F) with oval base ; piercer strongly upcurved, thickened at base, shining brownish black.

Wing length : 3 mm.

Holotype : ♀, Sapporo, Hokkaido, 12. vi. 1960 (K. Kamijo), in the collection of Hokkaido University.

Host : Unknown.

Distribution : Japan (Hokkaido).

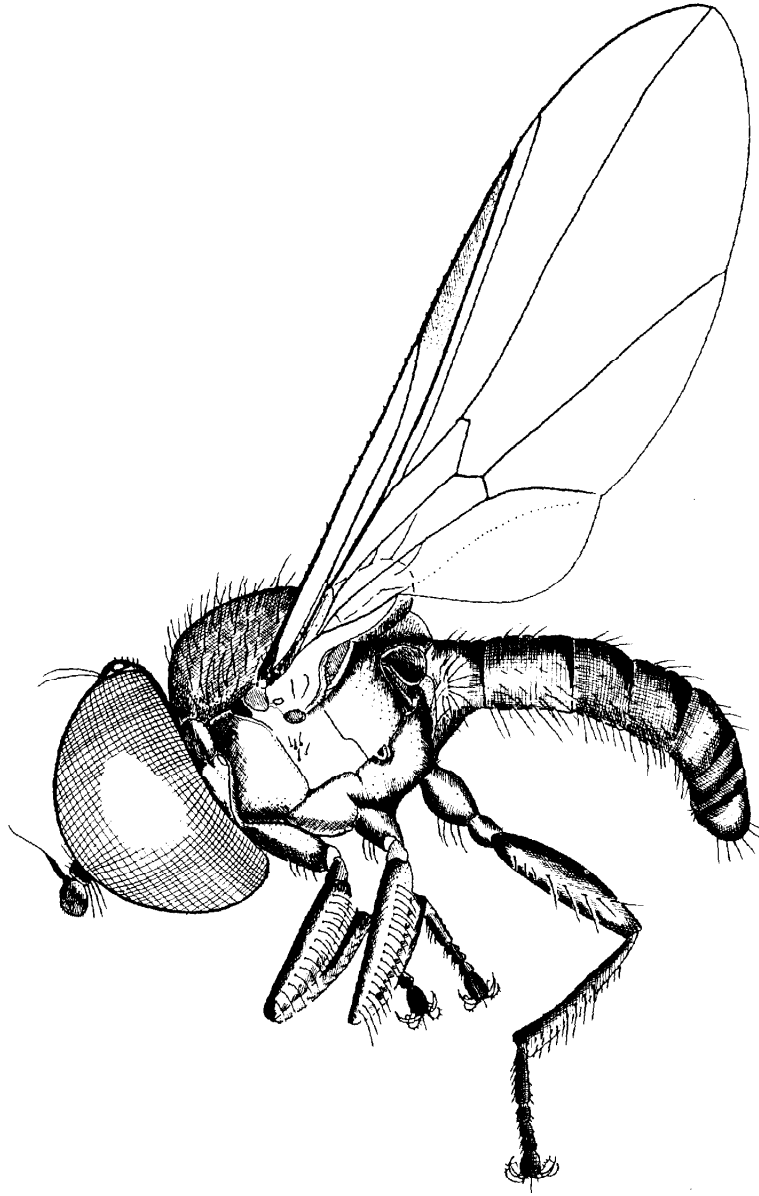


Fig. 19. *Chalarus spurius* (Fallén) (male).

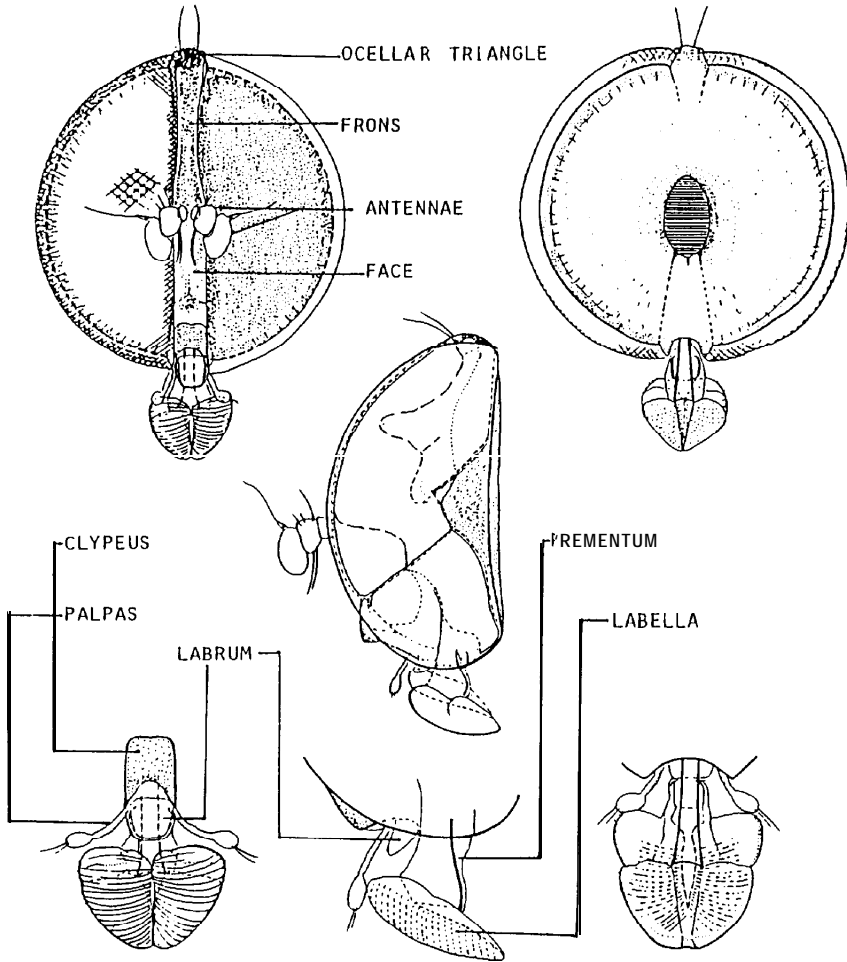


Fig. 20. Morphology of the head of *Chalarus spurius* (Fallén).

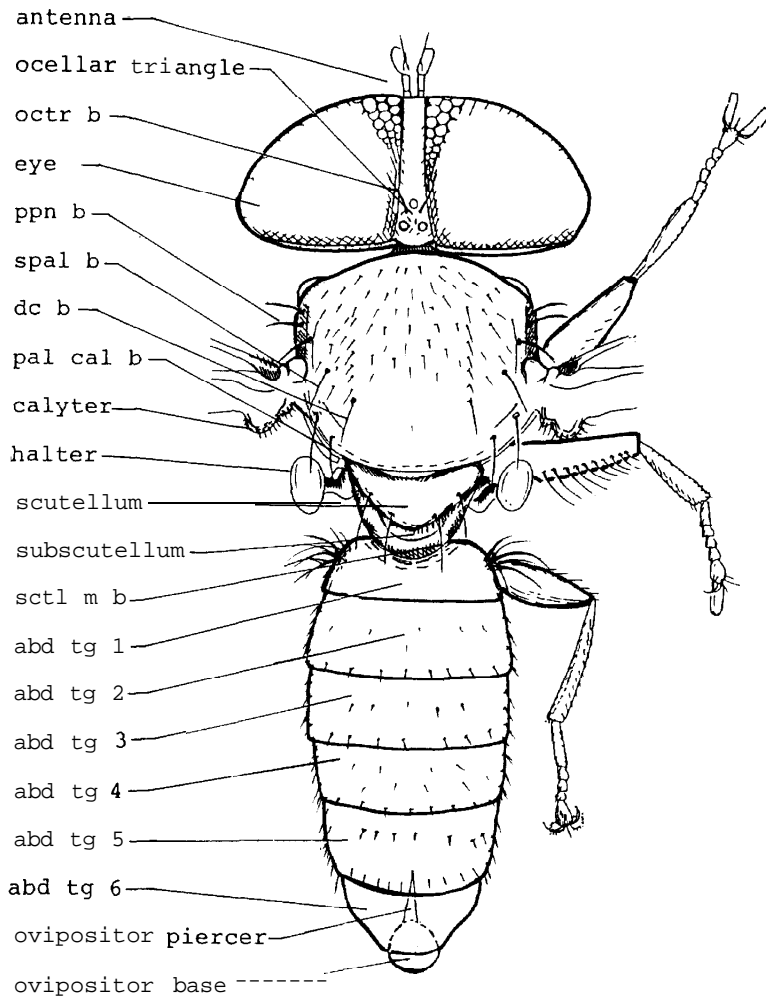


Fig. 21. External morphology of *Chalarus* sp. (female), dorsal view.

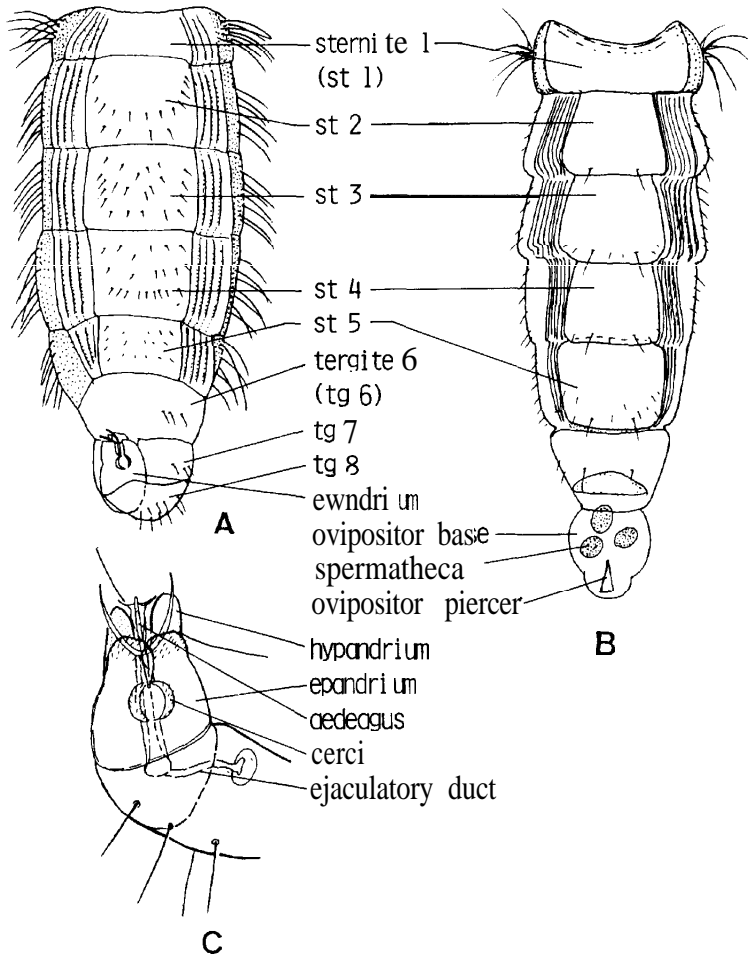


Fig. 22. Morphology of abdomen of *Chalarus* sp. A. Male abdomen, ventral ; B. female abdomen, ventral ; C. genitalia, ventral.

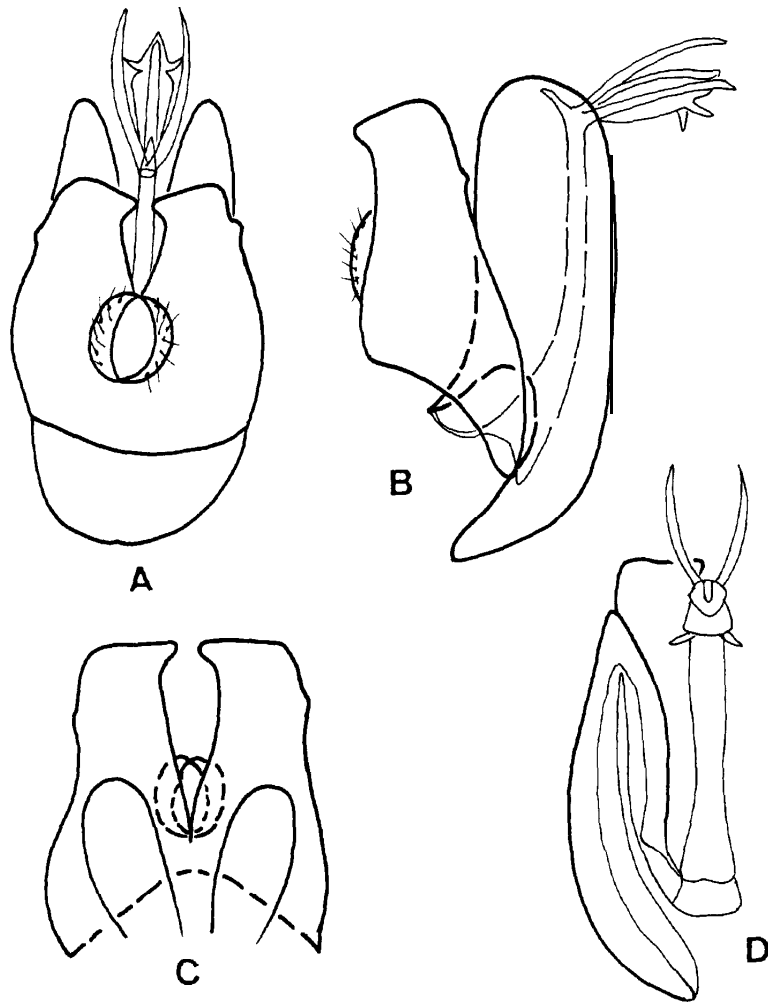


Fig. 23. *Chalarus spurius* (Fallén): A. Genitalia, ventral ; B. ditto, lateral ; C. epanandrium and surstyli, ventral ; D. genitalia, dorsal.

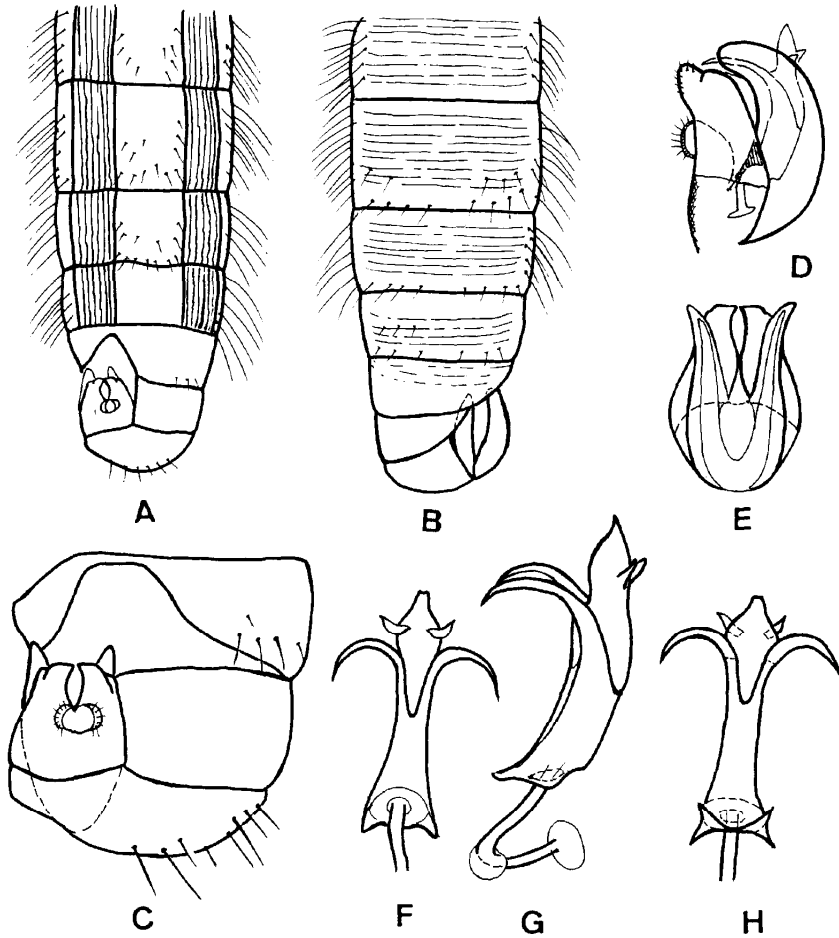


Fig. 24. *Chalarus magnalus* Morakote, sp. n. (male) : A. Abdomen, dorsal ; B. ditto, ventral ; C. abdominal terminalia, ventral ; D. genitalia, lateral ; E. ditto, dorsal ; F. aedeagus and parameres, ventral , G. ditto, dorsal ; H. ditto, ventral.

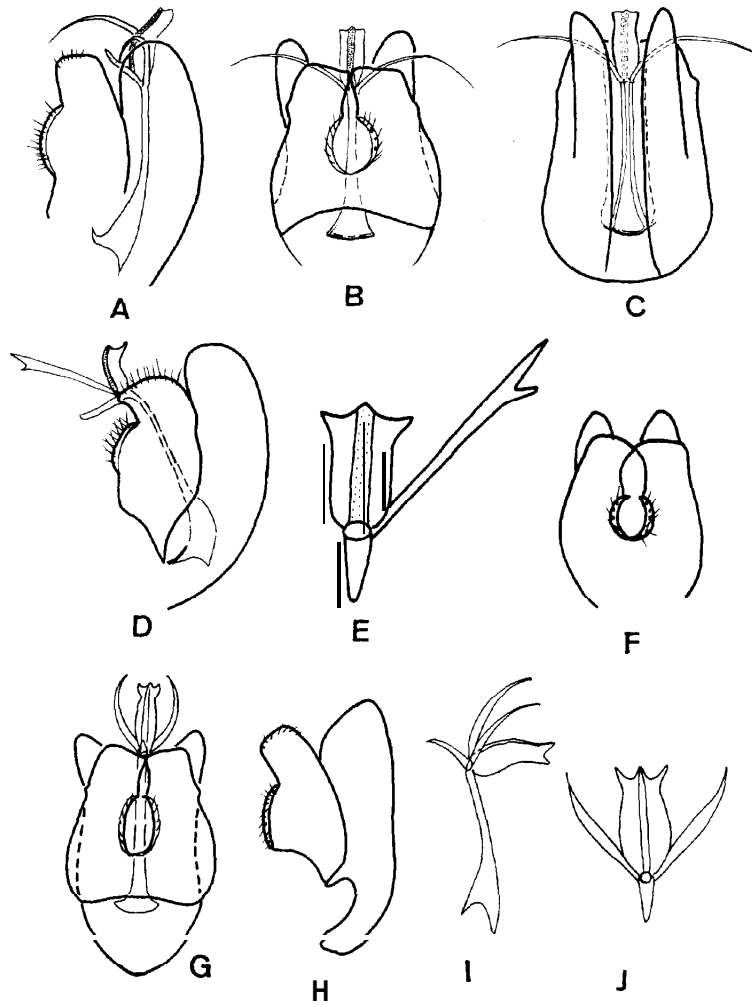


Fig. 25. Genitalia and genital parts of *Chalarus* spp. A-C. *angustifrons* Morakote, sp. n. ; D-F. *unilacertus* Morakote, sp. n. ; G-J. *flosculus* Morakote, sp. n. : A. Lateral ; B. ventral ; C. dorsal ; D. lateral ; E. aedeagus, Top view ; F. epandrium, ventral ; G. ventral ; H. lateral ; I. aedeagus, lateral ; J. aedeagus, top view.

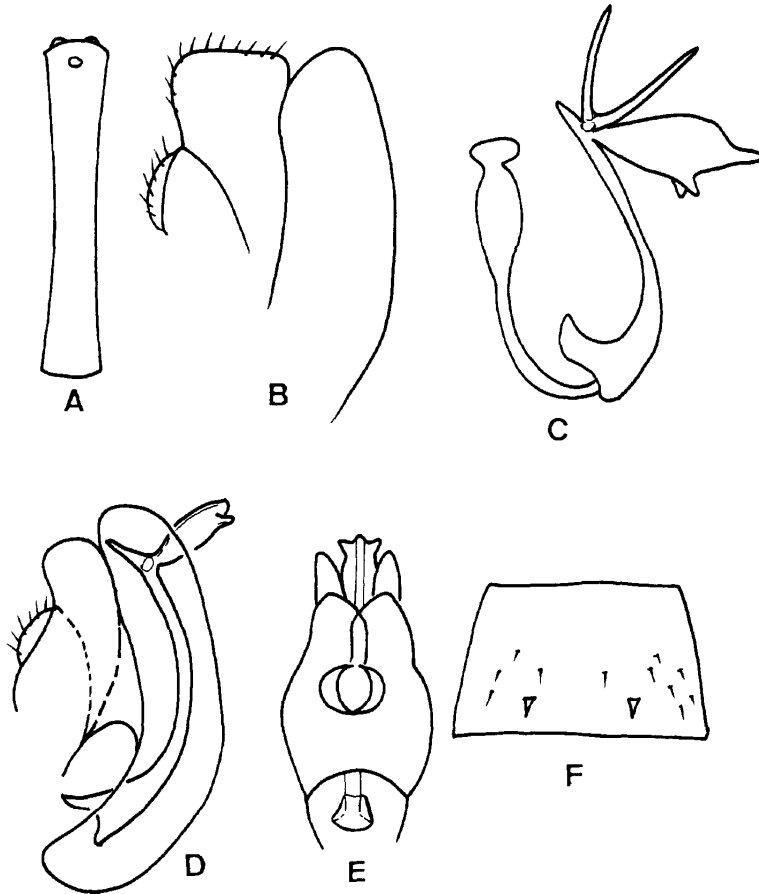


Fig. 26. 'A-C. *Chalarus latifrons* Hardy (male) : A. Frons, frontal ; B. surstylus and hypandrium, lateral ; C. aedeagus, lateral. D-F. *C. fimbriatus* Coe (male) : genitalia, lateral ; E. ditto, ventral ; F. stemite 5.

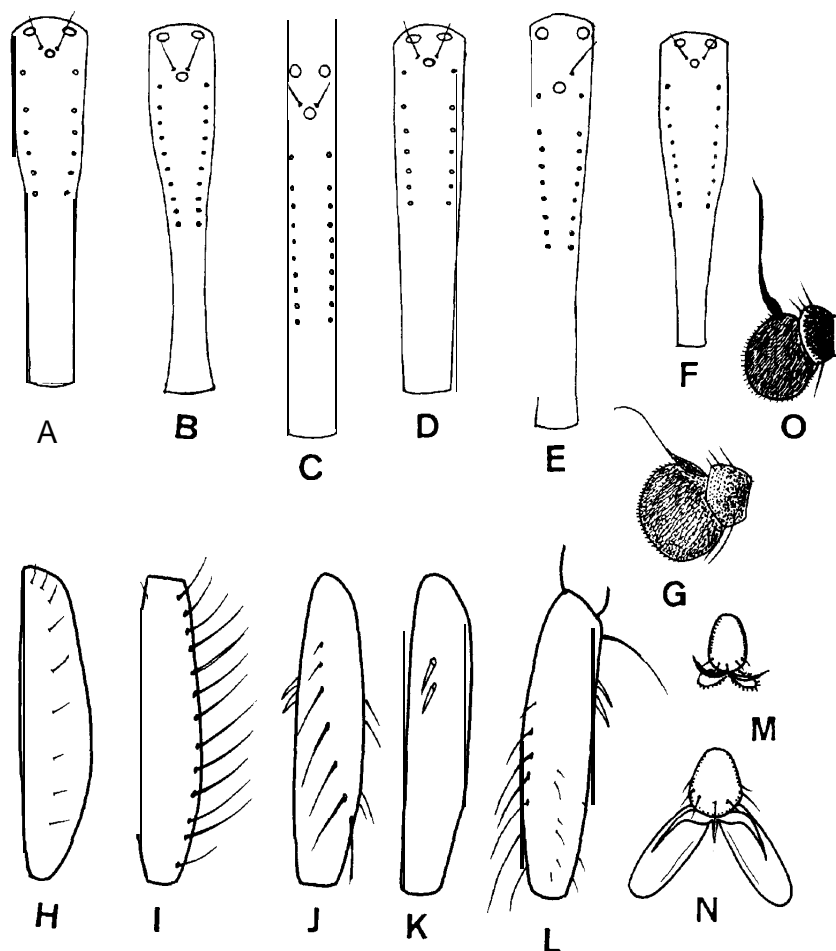


Fig. 27. A-F. Frons of *Chalarus* spp. (female), frontal view : A. *spurius* (Fallén) ; B. ***konishii*** Morakote, sp. n. C. *rectifrons* Morakote, sp. n. ; D. *latifrons* ; E. *kumijoi* Morakote, sp. n. ; F. *flosculus* Morakote, sp. n. ; G-M. *C. latifrons* Hardy (male) : G. antenna ; H. front femur, posterior ; I. mid femur, posterior ; J. hind femur, anterior ; K. ditto, beneath ; L. ditto, posterior ; M. last tarsal segment of hind leg, dorsal ; N. last tarsal segment of front and mid leg, dorsal ; O. antenna of *C. spurius* (Fallén).

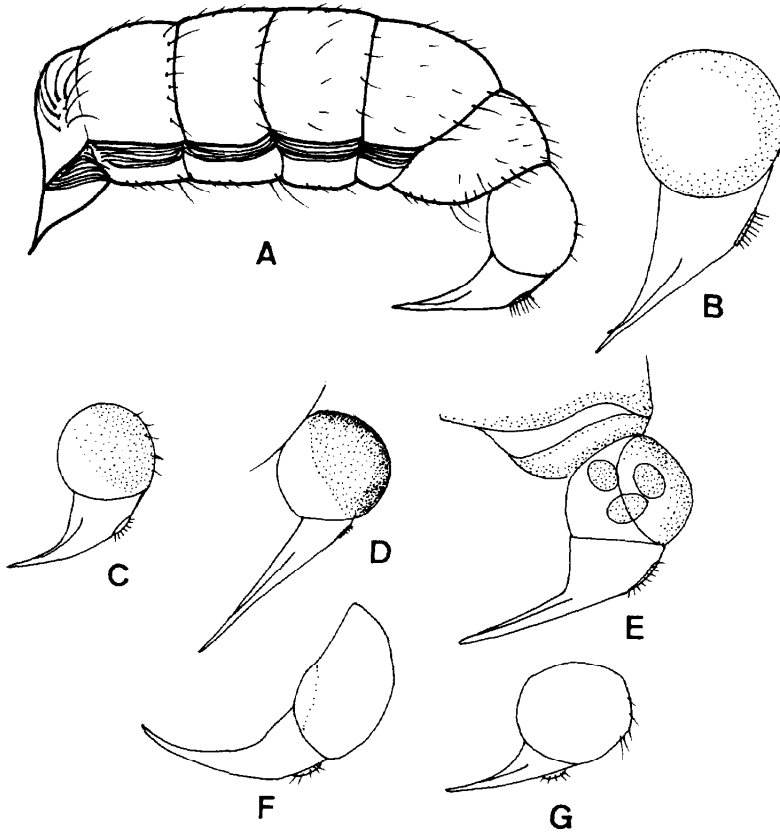


Fig. 28. Female ovipositor of *Chalarus* spp., lateral : A and B. *spurius* (Fall&n) ; C. *flosculus* Morakote, sp. n. ; D. *konishii* Morakote, sp. n. ; E. *latifrons* Hardy ; F. *kamijoi* Morakote, sp. n. ; G. *rectifrons* Morakote. sp. n.