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Morphological Studies on Muscoid Flies of

Medical Importance in Japan, III.*

Katsushige HORI **

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(With Seven Text-figures)

A. Some Common Species of Sarcophaginae

(Dipt., Sarcophagidae) from Japan.

I. INTRODUCTION

The subfamily Sarcophaginae contains about a thousand described species distributed throughout the zoological regions of the world. Most of them bear a very close superficial resemblance to one another ; consequently the taxonomic studies of this subfamily have been considered very difficult, especially in the case of females. These flies are very important, because many species of them have coprophagous or saprophagous habits and must, therefore, be regarded as potential disease-carriers. In spite of the supposed presence of a large number of species of this subfamily that may be found in this country, these flies have been neglected by Japanese writers till recently. It cannot be denied that our present knowledge concerning the fauna of the subfamily Sarcophaginae of Japan is very scanty (COQUILLET, 1898 ; HORI, '50 ; MATSUMURA, '07, '31 ; SENIOR-WHITE, '23 ; SHIRAKI, '32 ; ROHDENDORF, '37).

In the present paper the author describes the following five common species obtained from Japan, with illustrations of the male and female terminalia with brief descriptions of the parts.

Before proceeding further, the author wishes to express his sincere thanks to Professor DR. MUTSUO KATŌ of the Tōhoku University and DR. HARUJIRO KOBAYASHI of the Kyoto Prefectural Medical University for their cordial guidance and encouragement. He is also indebted to Professor MASAO KUMANO of the Zoological Institute, Kanazawa University, for his encouragement and kind help in publication of this paper. Finally, the writer expresses his gratitude to Professor KAZUYUKI MIYAMURA for his correction of the manuscript.

II. DESCRIPTION OF THE SPECIES

1. *Sarcophaga crassipalpis* MACQUART

Male—*Head* : Front at its narrowest part about a half an eye-width. Frontal stripe

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** Zoological Institute, Faculty of Science, Kanazawa University.

ill-defined, a little wider than the width of two joined parafrontals. Outer verticals hardly larger than the adjacent hairs. Parafrontals and parafacials yellowish silver. Hairs on parafrontals not in a single row, parafacials with one row of minute bristles. Antennae black, the third segment more than twice as long as the second. Back of head with long grayish white hairs not arranged in rows except the post-ocular bristles. Palpi black.

Thorax: Gray pollinose, generally with the usual three to five black stripes; acrostichals 0+1, dorso-centrals 3~4+2~3.

Abdomen: Abdomen with the usual changeable tessellation, with an indistinct middle stripe. Second and third segment with only lateral bristles, fourth with one median and about three lateral pairs; fifth with a continuous row of marginals decreasing in size ventrally. GS₁ mainly reddish brown, but along the hind margin somewhat darker in color and with a row of short, rather stout bristles; GS₂ shining dark red with numerous hairs.

Male genitalia: Sternum 5 dark red and shining with a brush of many stout bristles on inner sides of arms. The anal cercus dark red, in profile (Fig. 1, B) the cercus is a wide plate terminating in a short narrow free end. The distal segment of coxite rather large, oval in shape. The phallosome with two peculiar long slender lateral processes and rather large stylets. The two parts of the paramere are illustrated in Fig. 1, A.

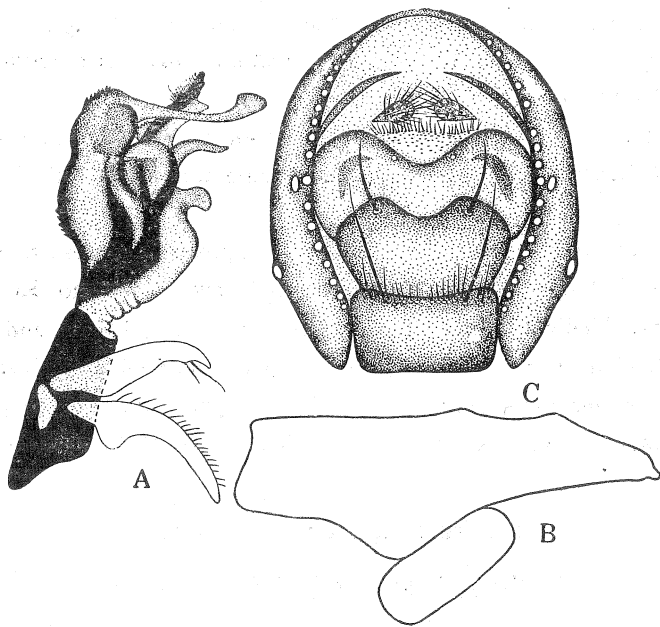


Fig. 1. Male and female genitalia of *S. crassipalpis*. A.—Phallosome and one paramere in side view (×50); B.—Lateral view of anal cercus and distal segment of ninth coxite (×25); C.—Ventral view of female genitalia (×25).

Wings : Costal spine wanting. Section III of costa a little longer than fifth and sixth together. Vein r_{4+5} with rather few bristles for a short distance at the base.

Legs : Mid femora with a comb, mid tibiae not villous. Hind tibiae typically fringed both anteriorly and posteriorly.

Female : Front very wide, about equal width of an eye. Frontal stripe a little wider than each parafrontal, with well-defined edges. Lateral verticals present. Legs combless and fringeless. Abdomen oval. Genital segments reddish, visible from above. Tergum 6 made of a single plate, tergum 7 consists of two widely separated long narrow plates. The space antero-vental to the anal cerci is occupied by a large plate, which is supposed to be sternum 9. Signum is developed.

Length : 10—14mm.

Distribution : N. & S. America, Europe, Iran, Siberia, Tibet, China, Manchuria, Japan, S. Africa, Australia.

Localities : Osaka, Tokyo, Morioka, Kanazawa.

2. *Sarcophaga peregrina* R.—D.

Male—Head : Front at its narrowest part about one-third of an eye-width. Frontal stripe sharply defined, rather wider than two joined parafrontals. Outer verticals hardly larger than the adjacent hairs. Parafrontals and parafacials yellowish silver. Hairs on parafrontals and parafacials minute, mainly arranged in one row, the lowest ones not necessarily stronger. Antennae black, the third segment two and one-half times as long as the second. Back of head with three rows of bristles, the innermost row being somewhat indistinct. Palpi black.

Thorax : Gray pollinose, with the usual three to five black stripes ; acrostichals 0+1, dorso-centrals 4~6+3~5.

Abdomen : Ground color as in thorax, with the usual tessellation. Second and third segments with only lateral bristles ; fourth with one median and about three lateral pairs ; fifth with a continuous row of bristles. GS_1 mainly dark brown, pollinose, marginals wanting. GS_2 shining dark brown, occasionally reddish brown and rarely blackish.

Male genitalia : Sternum 5 dark brown, arms with many stiff bristles along the inner borders, and stem rather long and wide. The anal cercus in profile (Fig. 2, B) is illustrated. The distal part of the phallosome (Fig. 2, A) has a massive structure with some bilateral symmetrical gadgets. Anterior paramere (Fig. 2, A) is a long curved rod, posterior paramere a rather short rod.

Wings : Costal spine indistinct. Section III of costa in length is equal to fifth and sixth together. Vein r_{4+5} bristly for more than half the distance from basal node to the cross-vein.

Legs : Mid and hind femora with fringes, hind tibiae bare.

Female : Front about two-thirds width of an eye. Frontal stripe a little wider than

each parafrontal, with distinct edges. Lateral verticals developed. Legs combless and fringeless. Abdomen oval. Genital segments dark gray, not visible from above. Tergum 6 consists of a long single plate; and the space postero-dorsal to the anal cerci is occupied by a tongue-shaped plate, which may be tergum 7. Signum wanting.

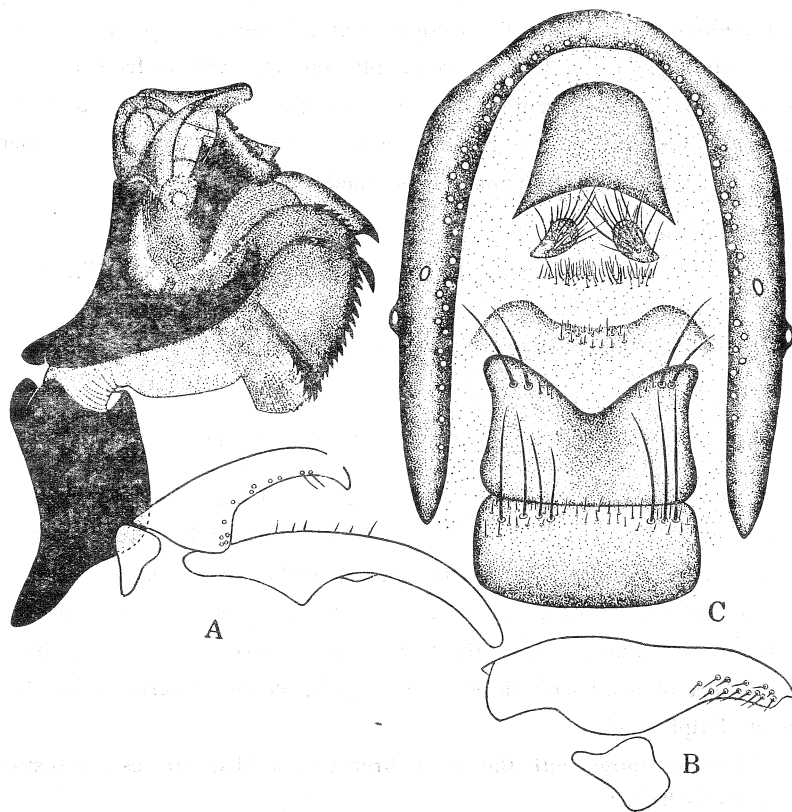


Fig. 2. Male and female genitalia of *S. peregrina*. A. —Phallosome and one paramere in side view ($\times 60$); B. —Lateral view of anal cercus and distal segment of ninth coxite ($\times 25$); C. —Ventral view of female genitalia ($\times 35$).

Length : 9—14mm.

Distribution : Africa, Malay Peninsula, India, Hawaii, Samoa, New Guinea, Australia, Java, Philippine Is., Formosa, China, Japan.

Localities : Oita, Osaka, Yamanaka, Ueda, Tokyo, Sendai, Morioka, Kanazawa.

3. *Sarcophaga melanura* MEIGEN

Male—Head : Front rather wide, about four-fifths of an eye-width. Frontal stripe black, sharply defined, about as wide as two parafrontals taken together or a little wider. Outer verticals well developed. Parafrontals and parafacials yellowish silver, the former

dark brown towards vertex. Hairs on parafrontals not in a single row, parafacials with one row of minute bristles. Antennae black, the third segment not long, being about half as long again as the second. Back of head with three rows of bristles, the inner most row being somewhat indistinct. Palpi black.

Thorax : Gray pollinose, with the usual three to five black stripes ; acrostichals 0+1, dorsocentrals 2~3+2~3.

Abdomen : Ground color as in thorax, with the usual tessellated marking. Second and third segments with only lateral bristles ; fourth with one median and about three lateral pairs, fifth with continuous marginal bristles. GS₁ mainly shining black, with some stout marginal bristles. GS₂ shining black.

Male genitalia : Sternum 5 with much stouter, stiffer bristles on inner sides of arms. The anal cercus as seen in profile (Fig. 3, B) is simple, forming somewhat wide and curved plate. The phallosome (Fig. 3, A) is long and rather simple. The two parts of the paramere are illustrated (Fig. 3, A).

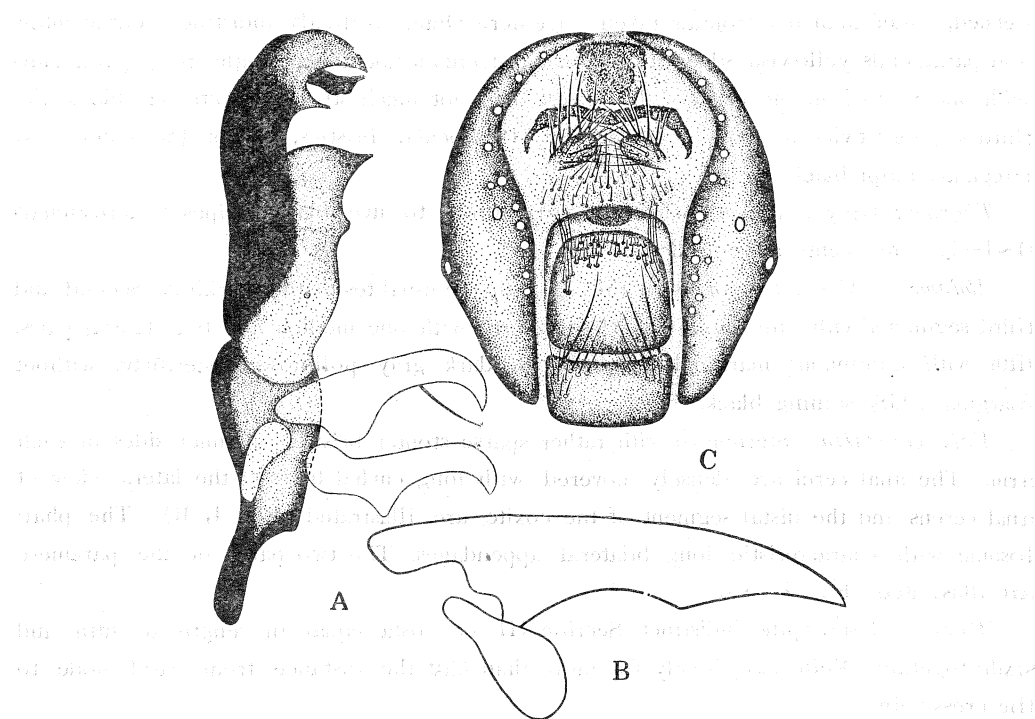


Fig. 3. Male and female genitalia of *S. melanura*. A.—Phallosome and one paramere in side view ($\times 60$) ; B. —Lateral view of anal cercus and distal segment of ninth coxite ($\times 40$) ; C. —Ventral view of female genitalia ($\times 25$).

Wings : Costal spine small. Section III of costa equal in length to fifth and sixth together. Vein r_{4+5} with short hairs on basal two-thirds of the section from basal node

to the cross-vein.

Legs : Mid femora with a comb and fringes, mid tibiae bare. Hind femora with a fringe, hind tibiae fringed typically.

Female : Front very wide, approaching even an eye-width. Frontal stripe wider than each parafrontal, with well-defined edges. Lateral verticals present. Legs combless and fringeless. Abdomen oval. Genital segments dark gray. Tergum 6 consists of two plates. Sternum 7 has a small, somewhat oval plate at its distal end, which may be sternum 9. Signum is developed.

Length : 9—14mm.

Distribution : Europe, Iraq, Formosa, China, Manchuria, Japan.

Localities : Oita, Osaka, Tokyo, Yamanaka, Sendai, Morioka, Kanazawa.

4. *Sarcophaga albiceps* MEIGEN

Male—*Head* : Front equal to two-thirds of an eye-width. Frontal stripe sharply defined, wider than parafrontals taken together. Outer verticals indistinct. Parafrontals and parafacials yellowish silver. Hairs on parafrontals not in a single row, parafacials with one row of minute bristles, the lowest ones not much stronger. Antennae black, the third segment twice as long as the second. Post-ocular bristles, except the outer row, irregular. Palpi black.

Thorax : Gray pollinose, with the usual three to five black stripes ; acrostichals 0~1+1, dorso-centrals 4~5+3~5.

Abdomen : Ground color as in thorax, with the usual tessellated marking. Second and third segments with only lateral bristles ; fourth with one median and four lateral pairs, fifth with continuous marginal bristles. GS₁ dark gray pollinose posteriorly, without marginals. GS₂ shining black.

Male genitalia : Sternum 5 with rather sparse stouter bristles on inner sides of each arm. The anal cerci are densely covered with long curled hairs ; the lateral view of anal cercus and the distal segment of the coxite are illustrated (Fig. 4, B). The phallosome with characteristic long bilateral appendages. The two parts of the paramere are illustrated (Fig. 4, A).

Wings : Costal spine indistinct. Section III of costa equal in length to fifth and sixth together. Vein r_{4+5} bristly for more than half the distance from basal node to the cross-vein.

Legs : Mid femora with a comb and fringes. Mid tibiae bare. Hind femora and tibiae typically fringed.

Female : Front a little narrower than an eye-width. Frontal stripe half as long again as each parafrontal, with distinct edges. Lateral verticals present. Legs combless and fringeless. Abdomen oval. Genital segment dark gray, not visible from above. Tergum 6 consists of a single plate, but the dorsal portion of this plate rather weakly chitinized ; tergum 7 consists of a long narrow plate. Sternum 6 is a wider plate ; at the distal end

of the sternum 7 there is a lightly chitinized plate, possibly sternum 9. Sternum 10 (?) is present. Signum wanting.

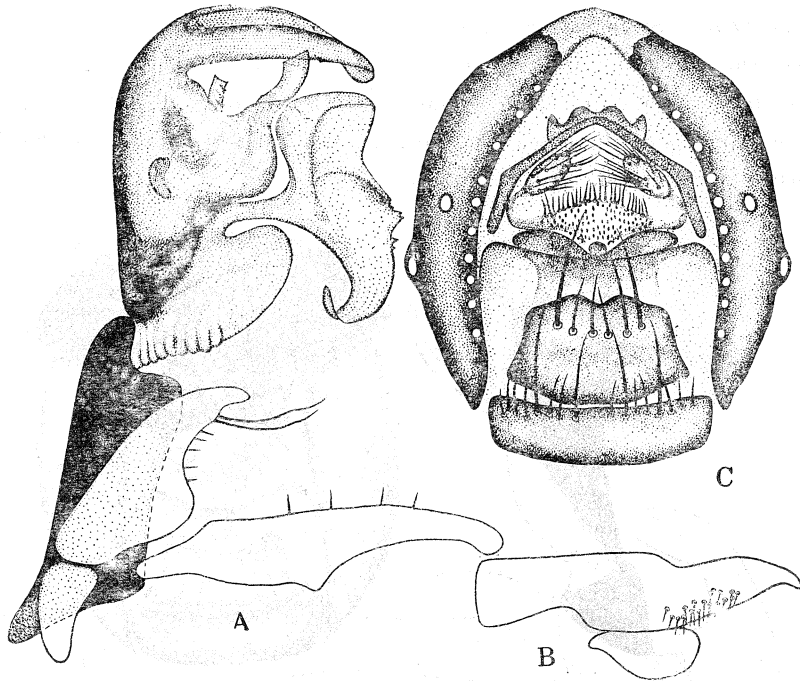


Fig. 4. Male and female genitalia of *S. albiceps*. A. —Phallosome and one paramere in side view ($\times 60$) ; B. —Lateral view of anal cercus and distal segment of ninth coxite ($\times 25$) ; C. — Ventral view of female genitalia ($\times 35$).

Length : 12—15mm.

Distribution : Europe, Egypt, Siberia, China, Japan, India, Burma, Formosa, Philippine Is., Java, Hawaii, Africa.

Localities : Tokyo, Yamanaka, Sendai, Morioka, Kanazawa.

5. *Sarcophaga similis* MEADE

Male—Head : Front at its narrowest part a half an eye-width. Frontal stripe sharply defined, about equal width to the parafrontals taken together. Outer verticals indistinct. Parafrontals and parafacials yellowish silver. Hairs on parafrontals not in a single row, parafacials with one row of minute bristles. Antennae black, the third segment twice as long as the second. Back of head with three rows of bristles, the innermost row being somewhat irregular.

Thorax : Gray pollinose, with the usual three to five black strips ; acrostichals 0~1+1, dorso-centrals 4~6+4~5.

Abdomen : Abdomen with the usual changeable tessellation. Second and third segments

with only lateral bristles ; fourth with one median and about three pairs, fifth with a continuous row of marginals. GS_1 brownish black, gray pollinose, without marginals. GS_2 shining black.

Male genitalia : Sternum 5 is markedly Y-shaped, with rather short, stout bristles on the inner sides of arms. Anal cercus as seen in profile (Fig. 5, B) is a simple, rather stout plate with a bluntly rounded end. Phallosome (Fig. 5, A) has a very characteristic appearance in side view, and has a long tail-like process at the distal end. The two parts of the paramere are illustrated (Fig. 5, A).

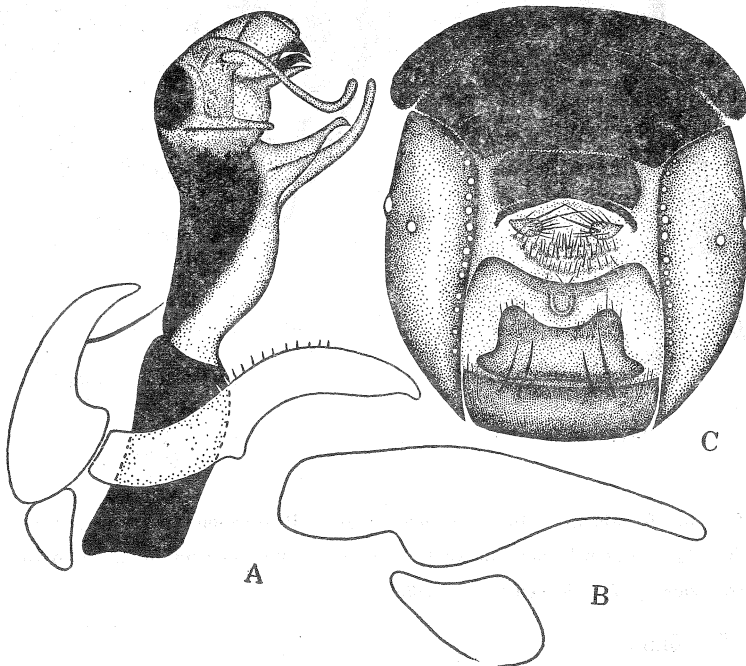


Fig. 5. Male and female genitalia of *S. similis*. A. —Phallosome and one paramere in side view ($\times 60$) ; B. —Lateral view of anal cercus and distal segment of ninth coxite ($\times 35$) ; C. — Ventral view of female genitalia ($\times 25$).

Wings : Costal spine indistinct. Section III of costa a little shorter than fifth and sixth together. Vein r_{4+5} bristly for more than half the distance from basal node to the cross-vein.

Legs : Mid femora with a comb and fringes, mid tibiae not villous. Hind femora and tibiae fringed typically.

Female : Front a little narrower than an eye-width. Frontal stripe about one and a half-width of each parafrontal, with distinct edges. Lateral verticals present. Legs combless and fringeless. Abdomen oval. Genital segments dark gray, not visible from above. Tergum 6 consists of two wider plates, and the space postero-dorsal to the anal cerci is occupied by a ridge plate. Signum is developed.

Length : 10—14mm.

Distribution : Europe, Siberia, China, Japan.

Localities : Oita, Osaka, Tokyo, Sendai, Morioka, Kanazawa.

B. On a Species of the Green-bottle Fly,

***Hemipyrellia ligurriens* (WIED.).**

The green-bottle fly here described was collected by the author in and about Tokyo. This species has not hitherto been recorded from Japan, in spite of its common occurrence there, except for a fragmentary record (SENIOR-WHITE, et al., '40 P. 43.). The author's intention is to give a full report and description with necessary illustrations.

Hemipyrellia ligurriens (WIEDEMANN)

Male and female-Head : Front in male narrow, about one-tenth of the total head-width. In female, eyes separated by a little more than two-sevenths of the total width of head ; frontal stripe in male at the narrowest point equal to the width of one parafrontal, parafrontals covered with fine hairs outside the frontal bristles ; parafrontals in female with minute hairs, frontal stripe about a half width of one parafrontal ; parafacials bare in both sexes, glistening silver tomentum. Antennae dull brown, lighter in color at the base of the third segment, the third segment about four times as long as the second. Palpi orange.

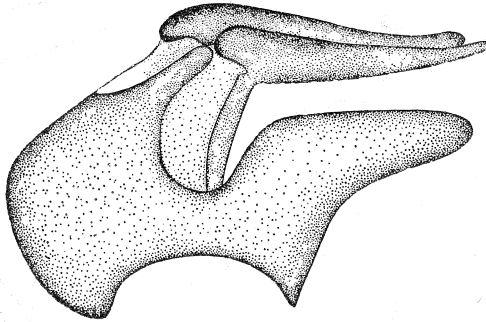


Fig. 6. Second genital segment, coxite and anal cercus of *Hemipyrellia ligurriens* in side view ($\times 30$).

Thorax : Shining green ; two postsutural acrostichal bristles, which lie about at the level of the two corresponding pairs of postsutural dorso-central bristles.

Abdomen : Ground color as in thorax ; first visible segment greenish black ; the posterior margins of the second and third visible segments generally bluish darkened and each segment with long marginal bristles.

Male genitalia rather prominent ; GS₂ with well-developed lateral lobes as illustrated in Fig. 6. Internal anatomical details as illustrated in Fig. 7.

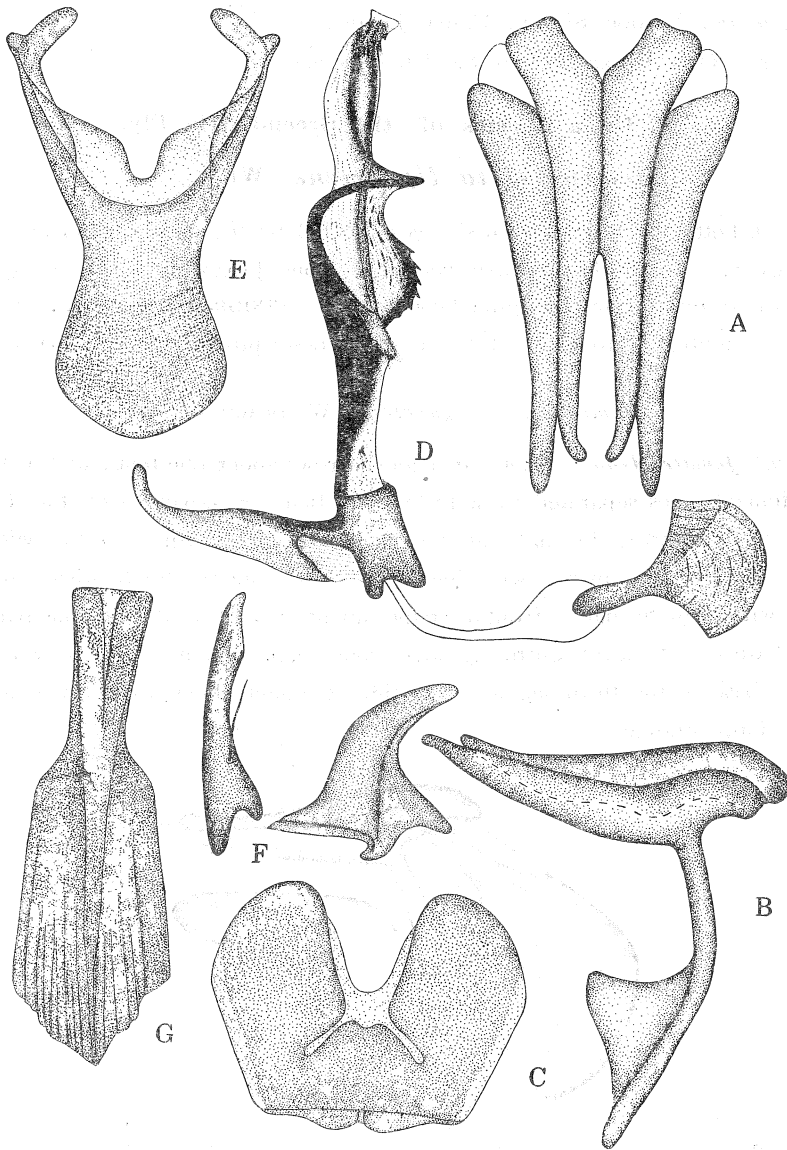


Fig. 7. Structural details of male genitalia of *Hemipyrellia ligurriens* A. —Ventral view of anal cerci and distal segments of ninth coxite ($\times 60$); B. —Lateral view of anal cercus and ninth coxite ($\times 60$); C. —Fifth sternum ($\times 30$); D. —Phallosome in side view ($\times 60$); E. —Ninth tergo-sternum ($\times 30$); F. —Lateral view of right paramere ($\times 60$); G. —Apodeme of phallosome ($\times 60$).

Wings: Hyaline, sometimes very slightly infuscated at the base; costal spine absent; basicostal scale black; subcostal sclerite with some short dark brown hairs; squama white.

Legs : Black ; middle tibia with one antero-dorsal bristle.

Length : 6—9mm.

Locality : Tokyo.

Remarks : The main characteristics of this species are the presence of long lateral lobes on GS₂ and its peculiar shape of phallosome. This species was also collected by Mr. KANO from Hatijozima (Ogasawara Is.). *Japanese name* : Tokyo-Kinbaë.

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