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# A CONTRIBUTION TO THE KNOWLEDGE OF THE MARINE SHORE DOLICHOPODIDAE OF JAPAN

(DIPTERA)

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In recent years have been accumulated at hand a considerable amount of marine shore dolichopodid flies which were collected in Japan and the Ryukyu Islands. They may be classified into more than 30 species belonging to several genera. On this occasion I will describe 20 new species from Japan and propose to establish 2 new genera for reception of these species. These genera are particularly characterized by a pair of well-developed fronto-orbital bristles instead of verticals as in *Cymatopus* Kertész. In this respect these new genera together with *Cymatopus*, in which 10 species have been mentioned from the regions of the Pacific and Indian Oceans, may form a distinct group of the family Dolichopodidae. Although this group resembles 2 other groups, namely Hydrophorinae and Aphrosylinae of Becker's subfamilies, in appearance, and yet further comparative studies on these groups, especially on the male genitalia, are necessary in order to have a definite conclusion concerning the taxonomic position of this group.

These insects not only of the adult stage but also of all the developing stages live exclusively on rugged and rocky marine shores of the tidal zone. It is, therefore, not so difficult to find them in abundance on shores by the open sea under standing menace of strong winds and waves. It should be noted that these species, except a few ones, seem to be confined within narrow limits mainly of the Pacific coast of Japan, but it is too early to discuss their distribution in the present state of our knowledge.

Before going further, I will express my sincere gratitude to Prof. C. Watanabe for his constant guidance and for his kindness in reading this manuscript. Thanks are also due to Mr. T. Saigusa, Kyusyu University, and Mr. I. Miyagi, Hokkaido University, for their kindness in offering the material. The holotypes of the new species are all deposited in the collection of the Entomological Institute of the Hokkaido University.

## *Conchopus*, gen. n.

Type-species. *Conchopus rectus*, sp. n.

General characters. Small, moderate or large in size. Head a little or scarcely wider than high above middle in frontal view. Vertex not hollowed, never obliterated by approximation of eyes. Ocellar tubercle slightly salient, with 2 divergent interocellar bristles; a pair of tiny postocellar setae. Frons wide, narrowing towards antennae; vertical setae

absent in normal position, but a pair of strong orbitals present on frons above antennae. Face with a transverse suture interrupted medially. Palpi large, elongate, reposing on proboscis, which is much produced below eyes. Occiput convex; postvertical setae not always distinct, close to mesalmost pair of orbitals; cilia of upper orbit uniserial, that of lower orbit forming a beard of long hairs. Antennae inserted above middle of head; 1st segment bare, 2nd short, transverse, with a uniserial ciliation of tiny setae, and 3rd somewhat conical in outline in lateral view, short-pubescent, scattered with small, rigid setae; arista apical, bare, a little thickened basally for a short distance with a quite short basal segment. Eyes shallowly incised opposite antennae, short-pubescent.

Thorax somewhat quadrate when viewed from above, convex dorsally, with a distinct prescutellar depression. Acrostichal setae tiny, biserial on front, normally not extending onto prescutellar depression; 6 dorsocentrals, a humeral, a posthumeral, a presutural, a sutural, 2 notopleurals, 2 supraalars and a postalar, all being strong bristles except for posterior notopleural which is in most species quite reduced in size; supplementary setae few, scattered exclusively on front. Scutellum glabrous, with 2 strong marginal setae each accompanied with a smaller lateral one. Pleura with long prothoracic setae and very short mesopleurals. Wings normally developed in size; mediastinal vein ending in 1st longitudinal vein, the latter scarcely reaching middle of wing; 4th longitudinal vein ending about apex of wing; anal vein disappearing, a furrow in anal region giving witness to its position. Fore coxae setose on anterior surface, ciliated along anterior apical margin; middle and hind coxae with a strong outer bristle. Fore femora thickened towards base, hind and, in a less degree, middle femora curved backwards, all having an antero- and a posteroventral preapical seta. Fifth tarsal segment of all legs compressed dorsoventrally; pulvilli and empodium normal, the latter being finely pectinate. Tergites of abdomen usually devoid of "button-holes" ("impressions en forme de fausses boutonnières" of Parent) along lateral margins; 1st tergite with distinct marginal setae.

It should be remarked that this genus shows a strong tendency towards the prolongation of the proboscis, forming a graded series passing from the type-species and its closely related ones, in which the proboscis is normal, to the extreme species (*C. abdominalis*), of which the proboscis is nearly twice as long as the eye-height. This prolongation of the proboscis is exclusively owing to that of the clypeopharyngeal region, whereas the distal parts of the mouth, together with a robust apodeme, do not take part in it. In response to the prolongation of the proboscis the palpi are also prolonged, extending as far as the labrum.

Male characters. The males of this genus may be readily distinguishable from those of any other known genera of the family by having a unique black marking on the mesonotum which is covered with dense white pollen. This marking forms an inverted Y with a pair of small presutural prongs, the median band being seen between the dorso-central rows of bristles from the anterior margin of the mesonotum to the border of the prescutellar depression and the lateral bands extending along the prescutellar depression into the posterior corners of the mesonotum.

The legs are subjected to specific deformation and ornamentation. The fore femora

are thickened; the hind femora and the fore and hind tibiae are also often thickened. The fore basitarsi are quite uniquely deformed, being produced basally into a prominent lobe, which is called "basal lobe" in this paper, on the anterior side, and the hind tibiae, in most species, produced into an "apical spur". The wings are often deformed in venation, and sometimes maculated in various ways.

The sternal and terminal structures of the abdomen of the male are of great value not only in distinguishing species but also in grouping them. The abdomen is slender in this sex, with 6 whole segments visible and with a sessile hypopygium. The 6th sternite is produced apically into a "pedunculate process", which terminates in a vesicular or compressed enlargement and is bendable at the base on the sternite (I will describe and illustrate this process in an unbent state). The 5th sternite has in many species an "auriform process", which is sessile and depressed. The sternal setae are specific in size, shape or arrangement. The genitalia are of comparatively simple structure, the hypopygium being furnished with only 3 pairs of processes below. The outer lamellae, or the posteriormost pair of the genital appendages, are well developed, of solid build, various in shape, but at least not jagged, and setose. Anteriorly to the outer lamellae a pair of processes are not articulated with the hypopygium and seem merely to be its ventral extensions. They are much less chitinized than the outer lamellae, comparatively small and simple in shape, with setae about apex. They should be identical with "lobi ventrales" of Buchmann (1961), because he describes them as follows: "Die Lobi (ventrales) sind stets mit der Genitalkapsel fest verwachsen, meist aber durch ihre Form oder Chitinisierung deutlich von ihr abgesetzt." They are called "ventral lobes" in this paper. Anterior to the ventral lobes are a pair of appendages which are articulated with the hypopygium at its base by means of basal apodemes, more or less robust, but less chitinized than the outer lamellae, rather complicated in structure and connected basally with each other. The term inner lamellae should be applied to this pair. The intromittent organ is curved in the hypopygium and emerges out of the latter from between the bases of the inner lamellae. It is little specific in shape in most species. In describing the genital processes these are imagined as extended backwards, although, in situ, the outer lamellae are, in most species, extended forwards and reposed on the ventral side of the hypopygium and the inner lamellae and ventral lobes extended below, so the directions dorsal, ventral, mesal and lateral are obtained.

Female characters. In some species the females are sombre, the mesonotum being brownish with a pair of dark median stripes, which do not extend onto the prescutellar depression, and the pollen of the pleura and legs being more or less brownish. In the other species, however, the mesonotum is marked with black as in the male.

The female is scanty of remarkable deformation or ornamentation on the legs and wings. The fore femora are less thickened than in the male and more or less slender; the other parts of the legs are all slender and simple. The genitalia offer also little specific characters. The abdomen is rather short, being not much longer than the thorax, and more or less robust, having 5 visible segments with the succeeding telescoped in the 5th. The 9th tergite is divided medially into 2 plates and bears dactyloid setae, which Buchmann (1961) calls "Dornen." These setae are somewhat variable in number even on the plates

of the same individual, but it seems that the females of the present genus bear normally 4 dactyloid setae on each plate of the 9th tergite.

Remarks. This genus may be distinguished from *Cymatopus* Kertész (1901) by having acrostichal setae and 6 dorsocentral bristles, by the peculiar black marking of the mesonotum in the males (and also in the females of certain species), by the fore basitarsi deformed to bear a prominent basal lobe in the males, etc. However, since the genitalia of *Cymatopus* have been not examined in detail, it is not possible at present to make an essential comparison between the two. Furthermore, *Cymatopus acrosticalis* Parent (1938) from the Hawaiian Islands should be transferred to the present new genus.

The species included in this genus are so infinitely various that it might be doubted whether they could be properly placed in the same genus. They represent, however, a graded series in regard to the prolongation of the proboscis and their varying characters are mostly unisexual. In fact, the females are uniform in most characters.

The members of the genus may be divided into the following 7 species groups.

#### I. *Rectus*-group

This species group represents in some respects the basic form of the genus: the proboscis is "normal" in length; the wing-venation of the male not or comparatively slightly deformed; the 5th sternite of the abdomen of the male devoid of any particular process, etc. In this connection it may be of interest that this group has setae on the pleura below the wing-roots as in *Acymatopus* (gen. n.), the generalized relative of *Conchopus*. The outer lamellae of the male genitalia are also somewhat similar to those of *Acymatopus*.

##### 1. *Conchopus rectus*, sp. n.

This species may be distinguishable from any other species of this group by the wings which are practically the same in venation in both sexes, with the apical section of the 5th longitudinal vein  $\times 1.5-2$  as long as the posterior cross-vein.

♂ (fig. 1). Length, about 5 mm.; of wing, 5-5.5 mm.

Head (figs. 7 & 13). Frons over vertex to occiput and antennae velvety dark brown, practically black; frons covered with brownish-gray pollen, with a pair of poorly defined spots of white pollen between fronto-orbital bristles (sometimes these spots are fused together or obliterated). Occiput thinly covered with brownish-gray pollen above and white pollen below, tinged with green. Upper orbital cilia of occiput descending  $1/3$  eye-height; beard rather thick. Face and palpi with dense, coarse, silvery white pollen; face as wide as ocellar tubercle across narrowest part; clypeus somewhat produced below eyes in a triangle. Palpi twice as long as wide, sparsely setose, covering labrum and epipharyngeal armature. Proboscis at most  $2/3$  as long as eye-height, theca, or proximal region of labium, occupying base of proboscis behind. Antennae half as long as head; 1st segment about as long as deep at apex, and 3rd about  $\times 1.5$  as long as deep; arista about twice as long as antennal segments united.

Thorax. Mesonotum (fig. 17): lateral bands melting into dark brownish-gray posterior corners of mesonotum, emarginate anteriorly just laterally to presutural prongs, which are

narrow; presutural sides densely covered with white pollen, but when viewed from above dark brownish-gray on front, and from side dark silvery gray and tinged with green; prescutellar depression covered with white pollen, with a large, triangular, silvery spot medially; humeral calli dark brown in a small spot posterolaterally. Acrostichal setae biserial on front in a short distance, then extending in a uniserial row of varying length, and postsutural ones if present few and pointing forwards; posterior notopleural much smaller than anterior. Scutellum dark brown, covered with brownish-gray pollen, tinged with green; lateral marginal setae much smaller than mesals. Pleura silvery gray owing to white pollen, tinged with green; prothoracic setae rather hairy, 6-13 in number; mesopleurals about 10, in a thick, short, descending, single or partly double row; 1-5 small setae present below wing-root in front of posterior spiracle.

Wings (fig. 21) tinged with gray. Second and 3rd longitudinal veins practically parallel beyond middle of wing; apical section of 4th a little bent forwards at basal 1/3, then parallel with 3rd, that of 5th  $\times$  1.5-2 as long as posterior cross-vein, which is almost straight or gently convex outwards. Calypters dirty brown, cilia black or appearing brown in some lights; halteres yellow, darker basally.

Fore legs (fig. 84) less pollinose, showing dark brown ground colour, towards apical parts. Coxae concolorous with pleura, with sparse small setae on anterior surface and some long ones anterolaterally towards base. Femora produced below into a small tubercle at apical 1/4, with hairs below increasing in length towards base, where several ones are as long as the depth of the segment. Tibiae somewhat longer than femora (62:50), slightly bent upwards near apex, widened and depressed apically on anterior surface, the depressed surface being clothed with a thick mass of setae; 2 posterodorsal bristles rather small, yet normally distinct; anteroventral setae elongate and erect, forming an outstanding row for most of intermediate region; a posteroventral preapical bristle short and quite strong. Tarsi dark brown; first segment (figs. 61 & 62) sinuate in dorsal view, slightly bent downwards about middle; basal lobe shining yellowish-brown, margined with black, on anterior surface, fringed with a comb-like row of setae on posterior side; a seta below about middle pointed posteroventrally; a strong posteroventral preapical. Second segment of tarsi twice as long as 1st (17:8), with an erect, long, apically proclinate anterodorsal bristle at basal 1/5, this bristle being somewhat less than half as long as the segment and often accompanied with another shorter anterodorsal a little beyond; 3rd segment as long as 1st.

Middle legs as in fore legs in colour. Coxae with a row of setae descending from outer bristle around anterior apical margin. Femora bent a little backwards and slightly or scarcely downwards, a little compressed dorsoventrally towards apex, with prominent anterior bristles beyond middle, and with a row of bristles below on about basal half immediately succeeded by rather hairy setae, which are mostly a little longer than the bristles and gradually ascend towards the apex on the posterior side; just in front of this row several or some bristles below at irregular intervals on about basal half. Tibiae somewhat longer than femora (98:84), compressed dorsoventrally; many remarkably long ventral and anteroventral hairs except towards base; anterior, and sometimes also posteroventral, setae becoming more or less long hairs towards the apex; some antero- and posterodorsal bristles

strong; some posterior setae elongate and somewhat thickened; preapicals strong. First segment of tarsi as long as 2nd and 3rd united (24 : 14 : 8; 24 : 16 : 9), with some remarkably long anterior hairs and, often, with one or more posterior bristles.

Hind legs (fig. 89) as in fore legs in colour. Coxae with 1-4 small setae below outer bristle in a descending row and with a long hair at anteromesal apical angle. Femora gently curved backwards, with distinct anterodorsal bristles beyond middle, rather hairy anteroventral setae on whole length and similar posteroventrals towards apex. Tibiae shorter than femora (86 : 92), with more or less prominent antero- and posterodorsal bristles; a rather outstanding row of ventral setae ending in a strong preapical bristle; posteroventral setae lying on the segment except towards base; apical spur on posteroventral side, small, inconspicuous, brownish in colour. Basal 3 segments of tarsi as 21 : 21 : 10 in length.

Abdomen grayish, tinged with green, covered with white pollen, with coppery reflections in some lights. Fourth sternite (fig. 94) with a pair of long setae medially towards base; 5th sternite lacking auriform process, with many quite strong, spine-like setae in a pair of thick clusters medially about base and with a pair of long, flattened, blunt setae at posterolateral angles. Pedunculate process of 6th sternite (fig. 94) terminating in a vesicular organ, which is membranous, compressed laterally, also depressed dorsally in a narrow extent, somewhat swollen ventrally into a lobe, and, under high magnifications, thickly spinulose on the depressed dorsal surface and imbricate on the ventral lobe; peduncle chitinized, foldable longitudinally into lateral halves on dorsal side. Hypopygium black, with white pollen. Outer lamellae of genitalia (fig. 127) compressed dorsoventrally, black, white-pollinose dorsally, elongate, widely concave mesally at middle, the apical 1/3 forming a somewhat triangular lobe. Ventral lobes (fig. 147) compressed laterally, elongate, pediform apically, with some small setae towards apex on mesal side and with a ciliation of flattened setae around apex. Inner lamellae (fig. 170) deeply bifid dorsoventrally. Intromittent organ (fig. 118).

♀ (fig. 2). Length, about 5-5.5 mm.; of wing, 5.2-5.7 mm.

Head. Frons and upper occiput with slight brownish-gray pollen. Face covered with brownish-gray pollen, faintly tinged with green in some lights, its narrowest part  $\times 1.5$  as wide as ocellar tubercle. Palpi with coarse brownish-gray pollen.

Thorax. Mesonotum dark brown, covered with brownish-gray pollen, tinged with green, with a pair of dark stripes laterally to acrostichals, ending just before border of prescutellar depression, which is whitish.

Wings (fig. 22) practically as in male.

Fore legs. Coxae with abundant setae on anterior surface, which are not so small as in the male but bristly. Femora less thickened than in male. Tibiae as long as femora (55 : 53), with antero- and posterodorsal and posteroventral bristles few. Basal 3 segments of tarsi as 14 : 12 : 6 in length.

Middle legs. Femora a little bent backwards, with anterior bristles beyond middle. Tibiae as long as femora (80 : 80), little compressed dorsoventrally, with antero- and posterodorsal, somewhat smaller antero- and posteroventral and well-developed preapical bristles. First segment of tarsi longer than 2nd and 3rd united (24 : 13 : 7).

Hind legs. Femora gently curved backwards, with more or less distinct but not outstanding anterodorsal bristles beyond middle. Tibiae a little shorter than femora (78 : 85), their bristles practically as in middle tibiae. Basal 3 segments of tarsi as 20 : 18 : 9 in length.

Holotype, ♂, Uwazima, Sikoku, 10 V '63.

Paratypes, 100 ♂♂ and 100 ♀♀, collected at the following localities of Sikoku: Yasima, 17 V '63; Imabari, 12 V '63; Matuyama, 15 V '63; and Uwazima, 10 V '63.

## 2. *Conchopus borealis*, sp. n.

This species is related to *C. rectus*, differing from the latter mainly as follows.

♂. Length, 4.2-5.5 mm.; of wing, the same.

Face a little wider than ocellar tubercle at narrowest part. Mesopleural setae larger than in *C. rectus*, arranged in a double row.

Wings (fig. 23). Fourth longitudinal vein rather strongly bent forwards at basal 1/3 of apical section, then parallel with 3rd, thickened for most length basally to the bent; 5th with apical section quite long; posterior cross-vein at middle of wing, oblique, short and sinuate.

Fore legs. Coxae with more or less elongate, fine setae on anterior surface and several long, thickened ones anterolaterally towards base. Tibiae little bent upwards near apex. First segment of tarsi (fig. 63) with setae fringing basal lobe on posterior side smaller than in *C. rectus*. Second segment longer than twice length of 1st (30 : 13), with an erect, long, apically proclinate anterodorsal bristle at about basal 1/4; 3rd segment as long as or a little longer than 1st (15 : 13; 16 : 12).

Middle legs. Femora with bristles and, in succession, rather hairy setae below in a rather sparse row ascending on posterior side towards apex and 3 or 4 bristles just in front of the row basally to middle. Tibiae with remarkably long anterior, anteroventral and ventral hairs beyond middle; posteroventral setae not elongate into such hairs. First segment of tarsi with posterior bristles.

Sternites of abdomen (fig. 95); genital processes (figs. 128, 148 and 171).

♀. Length, 4-5.5 mm.; of wing, 4.6-5.8 mm.

Distinguishable from *C. rectus* only by wing-venation (fig. 24): apical section of 4th longitudinal vein gently bent, that of 5th  $\times$  2-2.7 as long as posterior cross-vein, which is straight or a little convex outwards. Mesopleural setae not so large as in male, arranged in a single or irregularly double row.

Holotype, ♂, Otaru, Hokkaido, 19 VII '62.

Paratypes, 200 ♂♂ and 200 ♀♀, collected at the following localities of Hokkaido and northern half of Honsyu:—Hokkaido: Tokoro, 26 VII '62; Abasiri, 25 VII '62; Erimomisaki, 12 IX '62 (K. Kamimura); and Otaru, 19 VII '62, 24 VI '63, 9 VIII '63. Honsyu: Miyako, Iwate-ken, 3 VIII '63 (T. Saigusa); Kinkazan, Miyagi-ken, 14 VII '63 (I. Miyagi); Inubō-misaki, 27 VIII '62 (I. Miyagi), 6 VIII '63 (T. Saigusa and A. Kato), 29 VIII '63; and Omae-zaki, 22 VII '63 (I. Miyagi).

## 3. *Conchopus sikokianus*, sp. n.

This species is close to *C. borealis* in the venation of the wings, but distinguished

from the latter by the antennae, the legs and genitalia of the male, etc., as follows.

♂. Length, 4–4.5 mm.; of wing, 4.3–4.8 mm.

Head. Face as wide as ocellar tubercle at narrowest part. Palpi with setae mainly along margin. Third segment of antennae nearly twice as long as deep.

Thorax. Lateral bands of mesonotum not emarginate anteriorly. Acrostichal setae biserial on front, then extending in a single row of varying length before suture. Prothoracics 6–8 in number; mesopleurals 7–13, flattened, in a thick, single, descending row; 1 or 2 small setae below wing-roots.

Wings (fig. 25) approximately as in *C. borealis*, but 4th longitudinal vein divergent with 3rd towards apex.

Fore legs. Coxae with rather sparse setae on anterior surface short except for some basal ones. Femora with hairs below mostly about half as long as depth of the segment. Tibiae gently bent upwards near apex, with erect, elongate anteroventral setae only beyond middle, without a posteroventral preapical. First segment of tarsi (figs. 64 & 65) with a prominent spot of setae basally to middle on anterior side; basal lobe less prominent than in *C. borealis*. Second segment of tarsi as long as or a little longer than twice length of 1st (26 : 13; 28 : 12), with an erect, long, apically proclinate anterodorsal bristle at about basal 1/5; 3rd as long as 1st.

Middle legs. Femora only a little bent backwards, somewhat depressed dorsoventrally towards apex, with prominent anterior bristles on about apical half, and with 2 rows of hairy setae below towards base, diverging into antero- and posteroventral rows of stiff bristles beyond. Tibiae lacking any long hairs, with 2 antero- and 2 posterodorsal bristles widely spaced; a posterior bristle sometimes also present towards apex. First segment of tarsi as long as 2nd and 3rd united (35 : 23 : 13; 32 : 23 : 12), lacking long hairs, with more or less bristly posterior setae.

Hind legs. Coxae with 2 or 3 setae below outer bristle. Femora with anterodorsal bristles beyond middle, otherwise without outstanding bristles and hairs.

Abdomen. Fourth sternite (fig. 96) with a pair of strong setae medially towards base; 5th with a pair of shorter, but stronger setae medially on base and with a pair of flattened setae at posterior lateral angles. Vesicular terminal enlargement of pedunculate process of 6th sternite strongly lobed out ventrally (fig. 96). Outer lamellae of genitalia (figs. 123 & 129) with apical lobe subquadrate. Ventral lobes (fig. 149) slender. Inner lamellae (fig. 172).

♀. Length, about 4.5 mm.; of wing, 5 mm.

Antennae as in male. Wings (fig. 26) with venation approximately as in *C. borealis*; apical section of 5th longitudinal vein  $\times 2.2$  as long as posterior cross-vein. Mesopleural setae small, normal in shape.

Holotype, ♂, and paratypes, 5 ♂♂ and 3 ♀♀, Tosa-Simizu, Sikoku, 8 V '63.

#### 4. *Conchopus pudicus*, sp. n.

This species is close to *C. borealis* and *C. sikokianus* in the venation of the wings, but much smaller.

♂. Length, 3.2–3.5 mm.; of wing, 3.2–3.8 mm.

Head. Frons with brownish-gray pollen; occiput well tinged with green, upper orbital cilia descending  $1/2.5$  eye-height. Face a little narrower than ocellar tubercle at narrowest part; palpi quite sparsely setose; proboscis only about half as long as eye-height. Antennae with 3rd segment twice as long as deep; arista about  $\times 1.5$  as long as antennal segments united.

Thorax. Median band divided into a pair of stripes by a quite narrow line; lateral bands not emarginate anteriorly just laterally to presutural prongs, which are rather robust; prescutellar depression with a narrow silvery spot medially. Acrostichal setae few on front in a vestigial biserial row; prothoracics 4–6 in number; mesopleurals 5–8, in an oblique, partly double row; 1 or 2 small setae below wing-root.

Wings (fig. 27) as in *C. borealis*.

Fore legs. Coxae scattered with setae on anterior surface, which are small except for some in a descending anterolateral row. Femora produced below into a small, black tubercle at apical  $1/5$ , with short hairs below towards base. Tibiae much longer than femora (51:35), little bent upwards near apex, not widened, but clothed with a thick mass of setae, apically on anterior surface, with 2 antero- and 2 posterodorsal bristles not strong but distinct; anteroventral setae somewhat elongate beyond middle. First segment of tarsi (fig. 66): basal lobe rounded, concolorous with the segment, fringed with comparatively prominent setae on posterior side. Second segment of tarsi twice as long as 1st (20:9), with an erect anterodorsal bristle towards base, this bristle being a little shorter than  $1/3$  length of the segment and slightly or little proclinate apically; 3rd segment as long as 1st.

Middle legs. Femora little bent backwards, practically straight, having 3–5 anterior bristles beyond middle, otherwise lacking outstanding bristles and hairs. Tibiae as long as femora (54:55), with 2 antero- and 2 posterodorsal bristles, without long hairs. Tarsi with 1st segment as long as 2nd and 3rd united (26:15:10) and lacking long hairs.

Hind legs. Coxae with 1 or 2 setae below outer bristle. Femora rather gently bent backwards, with anterodorsal bristles, and somewhat elongate posteroventral setae, beyond middle. Tibiae somewhat shorter than femora (50:60), with antero- and posterodorsal bristles few but more or less prominent. Basal 3 segments of tarsi as 21:21:11 in length.

Abdomen. Fourth sternite (fig. 97) with a pair of a little thickened setae medially towards base; 5th with strong setae in a pair of clusters medially about base and a pair of remarkable flattened setae at posterior lateral angles. Vesicular terminal enlargement of pedunculate process of 6th sternite only weakly lobed out ventrally (fig. 97). Outer lamellae of genitalia (fig. 130) well expanded apically. Ventral lobes (fig. 150) widening towards apex, which is truncated and margined with some setae. Inner lamellae (fig. 173).

♀. Length, 3.2–3.7 mm.; of wing, 3.7–4 mm.

Face a little wider than ocellar tubercle at narrowest part, proboscis about  $2/3$  as long as eye-height. Antennae as in male. Mesonotum with a pair of black stripes; prescutellar depression more or less grayish owing to white pollen, tinged with green, marked with a poorly defined dark silvery part medially. Mesopleural setae in a horizontal, partly irregularly double row. Wings (fig. 28): apical section of 4th longitudinal vein gently bent, that

of 5th as long as or a little longer than twice length of posterior cross-vein, which is practically straight. Middle femora little bent backwards, practically straight, with anterior bristles beyond middle. Hind femora gently bent backwards, with anterodorsal bristles beyond middle, nearly as strong as anterior bristles of middle femora.

Holotype, ♂, and paratypes, 40 ♂♂ and 10 ♀♀, Taziri near Ôdomari, Sata-misaki, Kyusyu, 26 IV '63.

## II. *Sinuatus*-group

This group exhibits an intermediate form between the *rectus*-group and the succeeding groups concerning the prolongation of the proboscis, the clypeopharyngeal region forming a short rostrum. The posterior cross-vein of the wings of the male is strongly sinuate; the outer lamellae of the male genitalia are quite characteristic of this group in shape.

### 5. *Conchopus sinuatus*, sp. n.

A species with the proboscis shorter than the height of the eyes, and with the posterior cross-vein of the wings strongly sinuate in the male and practically straight in the female.

♂. Length, 5-5.7 mm.; of wing, 5-5.3 mm.

Head (figs. 8 & 12). Frons, occiput and antennae dark brown, practically black; frons covered with brownish-gray pollen, with a pair of poorly defined spots of white pollen between fronto-orbital bristles (sometimes these spots are fused together or obliterated). Occiput thinly covered with brownish-gray pollen above and with white pollen below, tinged with green. Upper orbital cilia of occiput descending half eye-height; beard rather thick. Face and palpi covered with coarse silvery white pollen; face about  $\frac{2}{3}$  as wide as ocellar tubercle at narrowest part; clypeus well produced below eyes. Proboscis prolonged below but not very much, more or less shorter than eye-height, with a short, blackish pharyngeal region at base behind. Palpi nearly thrice as long as wide, with setae scattered practically evenly over them. Antennae somewhat longer than half length of head; 1st segment somewhat longer than deep at apex, 3rd  $\times$  2.3-2.9 as long as deep; arista about  $\times$  1.5 as long as antennal segments united.

Thorax. Mesonotum (fig. 18): median band narrowly cleft apart medially behind suture; lateral bands ending at posteriormost dorsocentrals; presutural prongs robust. Presutural sides of mesonotum covered with dense white pollen, but when viewed from above dark brownish-gray on front and from side dark silvery gray and tinged with green; prescutellar depression with a narrow, silvery median spot; humeral calli dark brown in a small spot posterolaterally. Acrostichal setae biserial on front, extending posteriorly in a single row for a short distance; posterior notopleural smaller than anterior. Scutellum dark brown, covered with brownish-gray pollen, tinged with green; lateral marginal setae much smaller than mesals. Pleura silvery gray owing to white pollen, tinged with green; prothoracic setae rather hairy, 6-13 in number; mesopleurals small, 4-7 in a loose, single, horizontal row.

Wings (fig. 29) tinged with brownish gray. Second and 3rd longitudinal veins parallel beyond middle of wing; apical section of 4th bent forwards midway, that of 5th quite short,

at angle to basal section; posterior cross-vein strongly sinuate. Calypters dirty brown, cilia black or appearing brown in some lights; halteres yellow, darker basally.

Fore legs (fig. 85) less pollinose, showing dark brown ground colour, towards apical parts. Coxae concolorous with pleura, with more or less long setae in a descending band anterolaterally towards base, small ones scattered on anterior surface below the band, and a stiff bristle at mesal angle of apex. Femora tinged with green, with some dorsal bristles beyond middle and some more or less elongate and upstanding setae on posterior side towards base. Tibiae a little shorter than femora (43 : 48), somewhat thickened, gently bent forwards near apex, with 2 remarkable posterodorsal bristles, widely spaced and twice as long as depth of the segment, and with a somewhat smaller anterodorsal at basal 1/3. Tarsi dark brown; first segment (figs. 67 & 68) sinuate in dorsal view, abruptly bent downwards slightly basally to middle, with 3 or 4 long setae on posterior side below towards apex; basal lobe low-subtriangular, shining black on anterior surface and margined with some stiff flattened setae and, in succession, many crooked flattened ones. Basal 3 segments of tarsi as 15 : 20 : 11 in length.

Middle legs approximately as in fore legs in colour. Coxae with a row of setae descending on outer side around anterior apical margin, ending in a bundle of bristles at anteromesal apical angle. Femora showing dark brown ground colour towards apex, gently bent backwards, a little compressed dorsoventrally towards apex, with anterior bristles on about apical half and some posteroventrals in a rather sparse double row towards base. Tibiae as long as femora (66 : 65), with 2 widely spaced posterodorsal bristles, a subbasal anterodorsal and a prominent anterior preapical. Basal 3 segments of tarsi as 35 : 21 : 13 in length.

Hind legs (fig. 90) practically as in fore legs in colour. Coxae with 1 or 2 setae apically on outer side. Trochanters produced into a yellowish-brown, blunt spine on ventral side, with a small, yet stiff ventral seta beyond the spine. Femora well tinged with green, thickened, gently bent backwards, with anterodorsal bristles on whole length, 2 short, but stiff, tightly appressed ventrals about base and some rather hairy setae in a double row below. Tibiae much shorter than femora (50 : 82), thickened, with 2 strong, widely spaced posterodorsal bristles, a similar ventral (or rather posteroventral) and 1-3 anterior (or rather anteroventral) bristles towards apex, and a smaller subbasal anterodorsal; apical spur on ventral side, suberect, shovel-shaped, being compressed and truncated, and blackish in colour. First segment of tarsi somewhat thickened, with prominent, long hairs on anterior side of basal half. Basal 3 segments of tarsi as 33 : 30 : 18 in length.

Abdomen greenish with coppery reflections, but dulled with brownish-gray pollen, sides covered with white pollen. Auriform process (figs. 98 & 99) triangular and covered with many setae. Pedunculate process of 6th sternite (figs. 98 & 99) compressed dorsoventrally, its terminal enlargement rotundate, minutely spinulose on dorsal side, with many hairy thick spines on lateral margins, and with many long, filamentous, curved spines in a pair of bundles towards base on ventral side. Hypopygium black, with white pollen. Outer lamellae of genitalia (figs. 124 & 131) truncated apically, produced into a sharp spine mesoapically, the basal 2/3 being black and white-pollinose dorsally and the apical 1/3 yellow

and semitranslucent, with some small, yellow, dorsal setae, the truncated apex with many soft yellow setae. Ventral lobes (fig. 151) compressed dorsoventrally, elongate, with setae apically. Inner lamellae (fig. 174) robust, with 2 lateral prongs. Intromittent organ (fig. 119).

♀. Length, 4.7 mm.; of wing, 5.3-5.5 mm.

Head. Frons without white pollen, covered with brownish-gray pollen. Face covered with brownish-gray pollen, tinged with green on sides, nearly as wide as ocellar tubercle at narrowest part. Palpi covered with coarse brownish-gray pollen, tinged with green in some lights.

Thorax. Mesonotum dark brown, covered with brownish-gray pollen, tinged with green in some lights, with a pair of dark median stripes fading away posteriorly.

Wings (fig. 30) infusate along veins. Apical section of 4th longitudinal vein straight, that of 5th short; posterior cross-vein a little concave outwards or practically straight.

Fore legs. Coxae scattered with many bristly setae on anterior surface, and with a stiff bristle at mesal angle of apex. Femora with dorsal bristles towards apex; setae on posterior side above towards base more or less elongate and upstanding but not outstanding. Tibiae somewhat shorter than femora (46 : 52), with 2 antero- and 2 posterodorsal bristles distinct and posteroventrals few and more or less smaller. Basal 3 segments of tarsi as 20 : 16 : 10 in length.

Middle legs. Coxae as in male. Femora a little bent backwards, with anterior bristles on about apical half. Tibiae a little shorter than femora (67 : 72), with 2 antero- and 2 posterodorsal bristles, several antero- and posteroventrals and a ring of preapicals, all distinct. Basal 3 segments of tarsi as 36 : 22 : 14 in length.

Hind legs. Coxae with 1 or 2 setae just above outer bristle and 1-3 setae apically on outer side. Trochanters not produced into a ventral spine, with a small, more or less ciliate seta. Femora gently curved backwards, with dorsal (or rather anterodorsal) bristles on whole length, more or less upstanding anteriors beyond middle and 2 small, usually apically ciliate setae, set close or appressed together, about base. Tibiae much shorter than femora (61 : 81), the bristles being approximately as in middle tibiae. Basal 3 segments of tarsi as 30 : 28 : 17 in length.

Holotype, ♂, and paratypes, 90 ♂♂ and 90 ♀♀, Sirahama, Kii Peninsula, Honsyu, 21 V '63.

#### 6. *Conchopus corvus*, sp. n.

This species is closely related to *C. sinuatus*, but distinguished from the latter mainly by the legs of the male and the wings of the female.

♂. Length, 4.2-5 mm.; of wing, 4.5-5 mm.

Wings (fig. 31) with veins approximately as in *C. sinuatus*, but posterior cross-vein more or less longer.

Fore legs. Coxae with long setae on basal half of anterior surface arranged in a well-defined, partly single, partly irregularly double or triple, descending row. Femora with upstanding posterior bristles only about base and bristly posteroventral setae practically on whole length. Tibiae with a prominent posterodorsal bristle somewhat basally to middle,

a little longer than depth of the segment, another towards apex, so small as to be not always distinguishable from neighbouring setae, a distinct anterodorsal towards base, and posterior setae gradually longer towards apex, ending in a strong bristle at the subapical bent. Basal lobe of 1st segment of tarsi (fig. 69) shining dark brown on anterior surface.

Middle legs. Femora with a double row of quite prominent bristles below on about basal half. Basal 3 segments of tarsi as 31 : 21 : 13 in length.

Hind legs. Femora with setae nearly as in *C. sinuatus*, but generally more developed; setae below in a double row less hairy.

Sternites of abdomen (fig. 100); genital processes (figs. 132, 152, 175 and 176).

♀. Length, about 4.5 mm.; of wing, 4.7-5.3 mm.

Posterior cross-vein of wings sinuate (fig. 32). Basal 3 segments of middle tarsi as 31 : 20 : 12 in length.

Holotype, ♂, Kagosima, Kyusyu, 30 IV '63.

Paratypes, 40 ♂♂ and 40 ♀♀, Kagosima, 30 IV '63; Taziri near Ôdomari, Sata-misaki, Kyusyu, 26 IV '63.

### III. *Sigmiger*-group

In the wing-venation and other external characters this species group is quite close to the *sinuatus*-group, but uniquely characterized by having bristles just below the humeral calli. The proboscis is well prolonged; the male genitalia, especially the outer lamellae, are similar to those of the succeeding group.

#### 7. *Conchopus sigmiger*, sp. n.

A species with the proboscis longer than the height of the eyes, and with the posterior cross-vein of the wings strongly sinuate in the male and practically straight in the female.

♂. Length, 4.3-5.3 mm.; of wing, 4.6-5.4 mm.

Head (fig. 9 & 15). Frons, occiput and antennae dark brown, practically black; frons with brownish-gray pollen. Occiput quite thinly covered with brownish-gray pollen above and with white pollen below, well tinged with green; upper orbital cilia of occiput descending half eye-height; beard thin. Face and palpi covered with dense, coarse, silvery white pollen; face narrow, only half as wide as ocellar tubercle, protruded anteriorly and compressed laterally, forming a distinct median ridge on epistoma; clypeus prolonged below, forming front of long rostrum. Proboscis  $\times 1.3$  as long as eye-height, compressed laterally; pharyngeal region of rostrum velvety blackish, transversely corrugated about base; labium grayish, theca, or proximal region of labium, scattered with pale, quite fine setae; labrum and epipharyngeal armature exposed, shining black. Palpi about  $\times 4$  as long as wide, attaining base of labrum, scattered evenly with abundant setae. Antennae somewhat longer than half length of head; 1st segment somewhat longer than deep at apex; 3rd  $\times 2-2.7$  as long as deep; arista nearly twice as long as basal segments united.

Thorax. Median band narrowly cleft apart medially behind suture; lateral bands ending at posteriormost dorsocentrals, presutural prongs robust. Presutural sides of mesonotum covered with dense white pollen, but when viewed from above dark brownish-gray on front,

from side silvery gray and tinged with green; prescutellar depression with a large silvery spot medially; humeral calli dark brown in a small spot posterolaterally. Acrostichal setae various in number but not extending beyond 2nd dorsocentrals, often quite few, arranged in a partly double row; posterior notopleural smaller than anterior. Scutellum dark brown, covered with brownish-gray pollen, tinged with green; lateral marginal setae strong, about half as long as mesals. Pleura gray owing to white pollen, faintly tinged with green; prothorax having 6-9 bristles in a loose cluster in usual place and 1-3 similar ones just below humeral calli; mesopleural setae small, 2-6 in number, not always in a distinct row.

Wings (fig. 33) tinged with brownish gray, infuscate along veins. Second and 3rd longitudinal veins slightly divergent towards apex; apical section of 4th bent forwards about middle, that of 5th quite short; posterior cross-vein long, strongly sinuate. Calypters dirty brown, cilia black; halteres pale yellowish.

Fore legs. Coxae concolorous with pleura, with 1 or 2 basal bristles on anterior side, and with many somewhat elongate setae in a descending band below the bristles on about basal half, giving way to quite small, scattered setae below. Femora less pollinose, well tinged with green or blue, with coppery reflections in some lights, with anterodorsal bristles on about apical half and hairy, but not long setae below. Tibiae so thinly pollinose as to show dark brown ground colour, tinged with green or blue in some lights, as long as femora (42 : 43), somewhat thickened, only slightly bent forwards towards apex, with a posterodorsal bristle at about basal  $\frac{1}{3}$ , as long as depth of the segment, another posterodorsal a little beyond middle, about twice as long as the former, and a more or less distinct anterodorsal subbasally. Tarsi dark grayish-brown, 1st segment (fig. 70) sinuate in dorsal view, abruptly bent downwards at middle; basal lobe of a low trapezoid, shining black on anterior side, margined with some stiff, flattened setae and, in succession, many crooked, flattened ones. Basal 3 segments of tarsi as 15 : 16 : 11 in length.

Middle legs practically as in fore legs in colour. Coxae with 1 or 2 setae above, and 3 below, outer bristle, all being more or less bristly and, together with outer bristle, forming a single descending row; a tuft of bristles at anterior apical angle. Femora lacking coppery reflections, showing dark brown ground colour towards apex, gently bent backwards, compressed dorsoventrally towards apex; anterior bristles beyond middle; prominent bristles below in a double row towards base, immediately succeeded by similar anteroventrals; prominent posteroventrals on about basal half, immediately succeeded by smaller setae. Tibiae as long as femora (60 : 58), somewhat compressed dorsoventrally; a subbasal posterodorsal bristle not strong but distinct, another similar posterodorsal about middle; a subbasal anterodorsal sometimes reduced so as to be not distinguishable; a row of short but stiff bristles below on apical half, ending in a strong preapical; an anterior preapical also prominent. Basal 3 segments of tarsi as 32 : 18 : 11 in length.

Hind legs practically as in fore legs in colour. Coxae with a bristly seta apically on outer side. Trochanters produced into a blackish, blunt spine on ventral side. Femora lacking coppery reflections, somewhat thickened, gently bent backwards, slightly sinuate in lateral view; 3 tightly appressed, stiff ventral bristles about base; anterodorsals nearly on whole length; posterodorsal (or dorsal) setae somewhat elongate towards apex; some re-

markable long setae in a sparse row below on about apical  $2/3$ , with somewhat shorter ones posteriorly opposite them. Tibiae much shorter than femora (46 : 70), much thickened, with 2 widely spaced posterodorsal bristles, a subbasal anterodorsal, a strong ventral (or rather a posteroventral) near apex, longer than depth of the segment, and some long anteroventrals towards apex; apical spur on ventral side, suberect, shovel-shaped, being compressed and truncated, blackish in colour. First segment of tarsi somewhat thickened, gently sinuate in lateral view, with quite long, remarkable hairs in a band nearly on whole length, this band being anterior in position about base, gradually descending below towards apex and becoming ventral near apex. Basal 3 segments of tarsi as 30 : 27 : 15 in length.

Abdomen greenish with coppery reflections, but dulled with thin brownish-gray pollen, sides covered with white pollen. Fourth sternite (fig. 101) with many strong setae thickly clustered in posterior corners. Auriform process (figs. 101 & 102) cuspidate. Pedunculate process of 6th sternite (figs. 101 & 102) compressed dorsoventrally, its terminal enlargement rounded, minutely spinulose on dorsal surface, with many thick spines laterally and, on ventral side, long, filamentous, curved spines in a pair of tufts basally and a pair of saciform processes towards apex. Hypopygium black, with white pollen. Outer lamellae of genitalia (figs. 125 & 133) wholly black with white pollen basally, narrowing into a long process bent upwards with a tuft of setae apically. Ventral lobes (fig. 153) compressed dorsoventrally, elongate, rounded apically, ciliated along mesal margin. Inner lamellae (figs. 177 & 178) robust, narrowing apically, with a mesal lobe.

♀. Length, 4.3-4.5 mm.; of wing, 5-5.5 mm.

Head. Frons covered with brownish-gray pollen. Face a little narrower than ocellar tubercle at narrowest part, covered with dense coarse pollen, brown medially but light grayish on sides. Palpi with silvery pollen, slightly brownish in some lights. Proboscis a little longer than in male, nearly  $\times 1.7$  as long as eye-height.

Thorax. Mesonotum dark brown, covered with brownish-gray pollen, tinged with green, with a pair of dark median stripes fading away posteriorly; prescutellar depression with a rather narrow silvery spot medially.

Wings (fig. 34). Second and 3rd longitudinal veins a little divergent towards apex; apical section of 4th practically straight, that of 5th more or less shorter than posterior cross-vein, which is slightly convex outwards or practically straight.

Fore legs. Coxae with a basal bristle and abundant small setae on anterior surface. Femora with more or less distinct, but not prominent posterodorsal bristles. Tibiae a little shorter than femora (42 : 46), with 2 antero- and 2 posterodorsal bristles normally well developed and with a posteroventral towards apex. Basal 3 segments of tarsi as 20 : 13 : 9 in length.

Middle legs. Coxae as in male. Femora a little bent backwards, with anterior bristles on about apical half. Tibiae a little shorter than femora (60 : 65), with 2 antero- and 2 posterodorsal bristles well developed, antero- and posteroventrals few and smaller and a prominent ring of preapicals. Basal 3 segments of tarsi as 34 : 19 : 12 in length.

Hind legs. Coxae as in male. Trochanters not produced into a ventral spine. Femora gently curved backwards, slightly sinuate in lateral view, with 3-5 small, often apically bent,

ventral setae in a cluster about base and more or less distinct, but not prominent anterodorsal bristles beyond middle. Tibiae much shorter than femora (59 : 73), their bristles approximately as in middle tibiae. Basal 3 segments of tarsi as 29 : 25 : 15 in length.

Holotype, ♂, and paratypes, 30 ♂♂ and 25 ♀♀, Kagosima, Kyusyu, 30 IV '63.

8. *Conchopus saigusai*, sp. n.

This species is quite close to *C. signiger*, from which it may be distinguishable mainly by the following features.

♂. Length, 4.7–5 mm.; of wing, the same.

Acrostichals rather numerous, biserial on front, then extending in a single row posteriorly, but not beyond 2nd dorsocentrals. Fore coxae with 1–3, usually 2, basal bristles. Fore and hind tibiae lacking a prominent anterodorsal bristle. Basal lobe of fore basitarsi (fig. 71) broadly concave below, shining dark brown on anterior side. Outer lamellae of genitalia (fig. 134) with a tuft of yellow flattened setae apically; other genital processes (figs. 154 and 179). Wings (fig. 35); sternites of abdomen (fig. 103).

♀. Length, about 4.5 mm.; of wing, 5.3 mm.

Acrostichal setae as in male. Fore coxae normally with 2 basal bristles. Posterior cross-vein of wings curved outwards (fig. 36).

Holotype, ♂, and paratypes, 50 ♂♂ and 20 ♀♀, Hukuoka, Kyusyu, 5 V '63 (T. Saigusa).

9. *Conchopus wasima*, sp. n.

This species is closely related to the preceding two, especially to *C. saigusai* in some respects, but may be recognized by the combination of the following features.

♂. Length, about 5 mm.; of wing, 4.7–5 mm.

Acrostichal setae rather numerous, biserial on front, then extending in a single row at most a little beyond 2nd dorsocentrals. Fore coxae with a basal bristle. Fore tibiae with a mass of short but rather strong setae apically on anterior side above; an antero- and 2 posterodorsal bristles present, but sometimes so reduced as to be not distinguishable from neighbouring setae. Basal lobe of fore basitarsi (fig. 72) concave below but less than in *C. saigusai*, shining blackish on anterior surface. Middle femora with strong bristles arranged nearly as in the preceding 2 species, but the double row below longer, occupying about basal half of the segment. Hind trochanters with a quite small, pointed protuberance in the place of the ventral spine in the preceding 2 species. Hind femora with bristles approximately as in the preceding two, but more or less reduced in size. Apical spur of hind tibiae shallowly concave on truncated apex. Outer lamellae of genitalia (fig. 135) with a tuft of dark brown flattened setae apically; other genital processes (figs. 155 and 180); wing (fig. 37); sternites of abdomen (fig. 104).

♀. Length, about 4.3 mm.; of wing, 5–5.3 mm.

Acrostichals as in male. Fore coxae with a basal bristle. Posterior cross-vein of wings sinuate (fig. 38). First segment of hind tarsi as long as 2nd (26 : 25).

Holotype, ♂, and paratypes, 8 ♂♂ and 6 ♀♀, Uwazima, Sikoku, 10 V '63.

IV. *Convergens*-group

The wings of the male are maculated with dark brown and opaque white. The outer lamellae of the male genitalia terminate in a setose "flap", and the inner lamellae in a verrucous "fin." This species group contains 3 species, of which one (*C. signatus*) is somewhat differentiated from the other two in the structure of the sternal processes of the male.

10. *Conchopus convergens*, sp. n.

The wings of the male are dark clouded in a small extent about the meeting of the 4th longitudinal vein with the posterior cross-vein and narrowly opaque white posteriorly to the 5th longitudinal vein.

♂. Length, 5-5.5 mm.; of wing, 5.3-5.6 mm.

Head. Frons, occiput and antennae dark brown, practically black; frons covered with brownish-gray pollen, with traces of white pollen between fronto-orbital bristles. Occiput covered with thin brownish-gray pollen above and with thin white pollen on greater lower part, tinged with green. Upper orbital cilia of occiput descending nearly half eye-height; beard thin. Face and palpi covered with dense, coarse, silvery white pollen; face narrow, 1/3 as wide as ocellar tubercle at narrowest part, protruded anteriorly and much compressed laterally, forming a distinct median ridge on epistoma; clypeus prolonged below, forming front of long rostrum. Proboscis  $\times$  1.3-1.5 as long as eye-height, much compressed laterally; pharyngeal region of rostrum velvety blackish, transversely corrugated about base; labium grayish, theca, or proximal region of labium, scattered with fine setae; labrum and epipharyngeal armature exposed, shining black. Palpi about  $\times$  5 as long as wide, attaining base of labrum, scattered with abundant setae. Antennae a little shorter than head; 1st segment about twice as long as deep, 3rd thrice as long as deep; arista more than twice as long as basal segments united, shining black except for base.

Thorax. Median band cleft apart medially behind suture; lateral bands ending at posteriormost dorsocentrals; presutural prongs rather robust. Presutural sides of mesonotum covered with dense white pollen, but in lateral view appearing silvery gray and tinged with green; prescutellar depression with a rather narrow silvery spot medially; humeral calli dark brown in a small spot posterolaterally. Acrostichal setae in a double row on front, then extending in a single row in front of suture, and postsutural ones if present few and pointing forwards; posterior notopleural more or less shorter than anterior, but well developed. Scutellum dark brown, covered with brownish-gray pollen, tinged with green, the lateral marginal setae being much smaller than mesals. Pleura silvery grayish owing to white pollen, tinged with green; prothoracic setae more or less bristly, 5-11 in number; mesopleurals 4-7, in a horizontal row.

Wings (fig. 39) tinged with brownish gray, dark clouded about meeting of 4th longitudinal vein with posterior cross-vein, and narrowly opaque white posteriorly to 5th longitudinal vein. Apical section of 4th longitudinal vein gently bent forwards near base, then practically parallel with 3rd; 5th gently convex backwards in basal section beyond middle of wing, its apical section at angle to basal section, as long as or a little shorter than.

posterior cross-vein, which is oblique and gently convex outwards. Calypters dirty brown, cilia black or brown; halteres yellow.

Fore legs (fig. 86). Coxae concolorous with pleura, with 1 or 2 bristles in anterolateral basal corner, and with a tuft of some elongate, rather stiff setae below the bristles. Femora showing dark brown ground colour apically, with coppery reflections, short-hairy below about base, setae on posterior side above towards apex tending to be elongate. Tibiae so thinly pollinose as to show dark brown ground colour, as long as femora (47 : 48), somewhat thickened, gently bent forwards near apex, with a prominent posterodorsal bristle at basal  $1/3$ , nearly as long as its distance from base of the segment, and with a much smaller anterodorsal a little more basally. Tarsi dark grayish-brown, first segment (fig. 73) sinuate in dorsal view, rather gently bent downwards at middle; basal lobe rounded, broadly shining brown along margin on anterior surface, with quite tiny marginal setae on posterior side; apex deformed to be lobed below on both anterior and posterior sides, with 2 strong bristles on posterior side below. Basal 3 segments of tarsi as 16 : 20 : 11.

Middle legs approximately as in fore legs in colour. Coxae yellowish-brown apically, with a few small setae on outer side and a ciliation around anterior apical margin, ending in a tuft of bristly setae at anteromesal angle. Femora showing ground colour towards apex, practically straight, compressed dorsoventrally towards apex, with prominent anterior bristles beyond middle; many thickly clustered bristles below about base, accompanied with some longer hairy setae posteriorly; some long anteroventral setae about middle; and much shorter but distinct posteroventrals. Tibiae as long as femora (72 : 73), somewhat compressed dorsoventrally beyond basal  $1/3$ , with a strong posterodorsal bristle towards base and a smaller anterodorsal a little more basally; another antero- and another posterodorsal at times present beyond middle; a row of short, erect bristles below towards apex. Basal 3 segments of tarsi as 35 : 22 : 12 in length.

Hind legs (fig. 93) approximately as in fore legs in colour. Coxae with 2 or 3 small setae apically on outer side. Trochanters with several strong bristles mingled with setae on ventral side. Femora lacking coppery reflections, well tinged with green, yellowish-brown at extreme base, somewhat thickened, gently bent backwards, slightly sinuate in lateral view, with more or less prominent anterodorsal bristles on about apical half and prominent hairs below about middle. Tibiae much shorter than femora (53 : 84), thickened, with 2 prominent posterodorsal bristles; 1 or 2 smaller anterodorsals, and a strong bristle below near apex; apical spur on posterior side, a little bent downwards at base, slender, a little clavate, blackish. First segment of tarsi a little thickened, with some remarkable anteroventral hairs towards base. Basal 3 segments of tarsi as 37 : 31 : 16 in length.

Abdomen greenish with coppery reflections, but dulled with thin grayish-brown pollen dorsally, sides covered with white pollen. Auriform process (figs. 105 & 106) rounded, with 4 pairs of quite robust, conical, spine-like setae. Pedunculate process of 6th sternite (figs. 105 & 106) compressed dorsoventrally, its terminal enlargement short, broadened in a triangle on each side, thickly spinose. Hypopygium black, with white pollen, slightly tinged with blue. Outer lamellae (fig. 136) black and white-pollinose basally, narrowing into a long, dark brown process curved upwards, with some pale yellow setae apically. Ventral lobes

(fig. 156) slender, compressed dorsoventrally, with setae apically. Inner lamellae (figs. 181 & 182) narrowing into a slender process terminating in a verrucous, membranous fin.

♀. Length, about 4.5 mm.; of wing, 5.5–5.7 mm.

Head. Frons covered with brownish-gray pollen, lacking white pollen. Face probably narrower than ocellar tubercle at narrowest part, brownish-gray, but clypeus narrowly light gray on sides. Palpi  $\times 6$  as long as wide, silvery pollinose, but slightly brownish in some lights.

Thorax with a blackish marking similar to that of male on mesonotum which is covered with white or brownish-gray pollen and tinged with green.

Wings (fig. 40) tinged with brownish gray. Second and 3rd longitudinal veins parallel for most length beyond middle of wing; apical section of 4th nearly straight, practically parallel with 3rd; 5th slightly convex backwards in basal section beyond middle of wing, its apical section as long as or a little shorter than posterior cross-vein, which is only slightly convex outwards.

Fore legs. Coxae scattered with many bristly setae on anterior surface. Femora lacking particularly outstanding setae. Tibiae as long as femora (48 : 50), with 1–3 anterodorsal, 1 or 2 posterodorsal and 1–3 posteroventral bristles. Basal 3 segments of tarsi as 23 : 14 : 9 in length.

Middle legs. Coxae usually with bristly setae scattered above outer bristle and with a ciliation around anterior apical margin, ending in some strong setae. Femora slightly bent backwards, anterior bristles quite prominent on about apical half. Tibiae somewhat shorter than femora (72 : 80), with antero- and posterodorsal and antero- and posteroventral bristles, all mostly 2 or 3 in number; a ring of prominent preapicals. Basal 3 segments of tarsi as 35 : 20 : 10 in length.

Hind legs. Coxae as in male. Trochanters with a few bristly setae mingled with smaller ones on ventral side. Femora rather strongly curved backwards, slightly sinuate in lateral view, with distinct anterodorsal bristles on about apical half. Tibiae much shorter than femora (70 : 90), their bristles as in middle tibiae. Basal 3 segments of tarsi as 31 : 26 : 14 in length.

Holotype, ♂, and paratypes, 7 ♂♂ and 7 ♀♀, Tosa-Simizu, Sikoku, 8 V '63.

#### 11. *Conchopus poseidonius*, sp. n.

This species is close to *C. convergens*, but distinguished from the latter mainly as follows.

♂ (fig. 3). Length, 5–5.5 mm; of wing, 5–5.5 mm.

Head. Face about half as wide as ocellar tubercle. Antennae as long as head; 3rd segment about  $\times 4$  as long as deep; arista about  $\times 1.5$  as long as basal segments united, shining black on apical half. Mesonotum (fig. 19).

Wings (fig. 41) more or less bent downwards towards apex in dried specimens (fig. 3), tinged with brownish gray, clouded with dark brown, or black in part, and opaque white about centre. Apical section of 4th longitudinal vein bent forwards towards base, then practically parallel with 3rd; 5th convex backwards beyond middle of wing, its apical section

short, at angle to basal section; posterior cross-vein oblique, rather strongly convex outwards.

Fore legs. Femora with long upstanding setae on posterior side above. Tibiae with a prominent posterodorsal bristle beyond basal  $1/3$ , as long as or even longer, than  $1/3$  length of the segment, another towards apex much smaller, and a well-developed anterodorsal towards base. First segment of tarsi (fig. 74) gently bent backwards basally but little downwards about middle; basal lobe much less robust than in *C. convergens*. Basal 3 segments of tarsi as 12 : 25 : 12 in length.

Middle legs. Coxae practically wholly concolorous, lacking small setae around outer bristle. Femora slightly bent backwards; bristles below about base shorter; prominent anterior bristles only towards apex; long anteroventral setae rather towards base. First segment of tarsi with posterior bristles on whole length.

Hind legs. Femora with prominent anterodorsal bristles towards apex, and with many remarkable long hairs on about basal half in a band which is anteroventral in position about the base, descending onto the ventral side towards the middle. Femora and tibiae as 95 : 50 in length. First segment of tarsi with anteroventral hairs longer basally.

Outer lamellae of genitalia (fig. 137) prolonged into a reddish-brown process; other genital processes (figs. 157, 183 & 184); sternites of abdomen (fig. 107).

♀. Length, 4.2–5 mm.; of wing, 5.5 mm.

Third antennal segment  $\times 3.5$ –4 as long as wide; arista shining black except for base. Posterior cross-vein apparently convex outwards; basal section of 5th longitudinal vein also well convex backwards beyond middle of wing (fig. 42). Middle femora with anterior bristles towards apex. Hind femora with anterodorsal bristles towards apex. Basal 3 segments of tarsi as follows in length: 20 : 16 : 8 in fore legs; 34 : 23 : 11 in middle legs; 30 : 29 : 15 in hind legs.

Holotype, ♂, Taziri near Ôdomari, Sata-misaki, Kyusyu, 26 IV '63.

Paratypes, 6 ♂♂ and 10 ♀♀, Kagosima, Kyusyu, 30 IV '63; Taziri near Ôdomari, 26 IV '63.

## 12. *Conchopus signatus*, sp. n.

This species is related to *C. convergens* and *C. poseidonius*, but may be readily recognized by having a small blackish mark at the apices of 2nd and 3rd longitudinal veins of the wings in both sexes.

♂. Length, about 5 mm.; of wing, 5–5.3 mm.

Antennae a little shorter than head; 1st segment gradually deeper apically, 3rd about  $\times 3.5$  as long as deep; arista nearly twice as long as basal segments united, shining black except for base. Acrostichals extending at most to 2nd dorsocentrals; lateral marginal setae of scutellum well developed.

Wings (fig. 43) undulate along posterior margin, tinged with brownish gray, marked with blackish brown subapically just inside of costal vein in a small spot, and clouded with blackish brown and opaque white about centre. Second and 3rd longitudinal veins sinuate, converging towards apex, terminating in the subapical mark; apical section of 4th bent forwards near base, then parallel with 3rd, but again bent downwards near apex.

Fore legs. Coxae approximately as in the preceding 2 species, but tuft of setae near base on anterior side quite prominent, about twice as long as basal bristle, and apical ciliation less thick. Femora approximately as in *C. poseidonius*. Tibiae with a prominent posterodorsal bristle a little basally to middle, as long as or longer than 1/3 length of the segment, and with a much shorter, yet well-developed anterodorsal somewhat more basally. First segment of tarsi (fig. 75) approximately as in *C. poseidonius*, gently bent downwards near base, with many setae about middle below on posterior side; basal lobe yellowish-brown. Basal 3 segments of tarsi as 15 : 21 : 13 in length.

Middle legs. Coxae yellowish towards apex, otherwise as in *C. poseidonius*. Femora also nearly as in that species, but anteroventral setae not especially elongate about middle. Tibiae nearly as in the preceding 2 species, but with somewhat longer setae in a row below towards apex. First segment of tarsi with posterior bristles on whole length. Basal 3 segments of tarsi as 34 : 25 : 15 in length.

Hind legs. Coxae normally with a small seta apically on outer side. Trochanters lacking strong bristles, but having a decumbent hair, on ventral side. Femora nearly as in *C. poseidonius*, with prominent anterodorsal bristles on about apical half. Tibiae with a strong posterodorsal bristle towards base, another towards apex, more or less smaller, and a strong bristle below quite near apex, otherwise without outstanding bristles; apical spur much longer than in the preceding 2 species, only slightly or little bent downwards at base. First segment of tarsi hairy around anterior to ventral side nearly on whole length, hairs on anterior side being prominent, and others soft and much shorter. Basal 3 segments of tarsi as 37 : 37 : 20 in length.

Abdomen. Third sternite (fig. 108) long-hairy, 4th with strong setae arranged along posterior margin. Auriform process of 5th sternite (figs. 108 & 109) less rounded. Pedunculate process of 6th sternite (figs. 108 & 109) with terminal enlargement ovate and thickly spinose laterally. Outer lamellae of genitalia (fig. 138) prolonged into a yellow process; inner lamellae (fig. 185).

♀. Length, 4.5-5 mm.; of wing, 5.7 mm.

Wings (fig. 44) marked with blackish brown subapically just inside of costal vein in a small spot. Second and 3rd longitudinal veins converging towards apex, terminating in the subapical mark; 4th bent downwards near apex; 5th gently convex backwards in basal section beyond middle of wing; posterior cross-vein sinuate. Middle and hind coxae with several setae above outer bristle. Middle femora with several prominent anterior bristles only towards apex. Basal 3 segments of tarsi as follows in length: 25 : 15 : 10 in fore legs; 38 : 24 : 14 in middle legs; and 31 : 32 : 20 in hind legs.

Holotype, ♂, Sirahama, Kii Peninsula, Honsyu, 21 V '63.

Paratypes, 3 ♂♂ and 2 ♀♀, Sirahama, 21 V '63; Uwazima, Sikoku, 10 V '63.

#### V. *Nodulatus*-group

This group is close to the *convergens*-group, but the wings of the male and the outer lamellae of the male genitalia are so unique as to make it distinct.

13. *Conchopus nodulatus*, sp. n.

The wings of the male are produced posteriorly in a wide, low triangle beyond middle.

♂. Length, 5-5.5 mm.; of wing, 5-5.5 mm.

Head. Frons, occiput and antennae dark brown, practically black; frons covered with brownish-gray pollen, with traces of white pollen between fronto-orbital bristles, tinged with green just above fronto-orbitals. Occiput thinly covered with brownish-gray pollen above and with white pollen on greater lower part, tinged with green. Upper orbital cilia descending nearly half eye-height; beard thin. Face and palpi covered with dense, coarse, silvery white pollen; face half as wide as ocellar tubercle at narrowest part, protruded anteriorly, forming a distinct median ridge on epistoma; clypeus produced below, forming front of long rostrum. Proboscis somewhat less than twice as long as eye-height, much compressed laterally; pharyngeal region of rostrum velvety blackish, transversely corrugated about base; labium grayish, theca, or proximal region of labium, scattered with quite fine light brown setae; labrum and epipharyngeal armature exposed, shining black. Palpi about  $\times 5-6$  as long as wide, attaining base of labrum, with many setae scattered practically evenly over. Antennae slightly shorter than head; 1st segment about twice as long as deep at apex, 3rd about thrice as long as deep; arista nearly twice as long as basal segments united, black except for base.

Thorax. Median band cleft apart medially behind suture; lateral bands attaining posteriormost dorsocentrals; presutural prongs rather robust. Presutural sides of mesonotum covered with dense white pollen, but in lateral view appearing silvery gray with green tinge; prescutellar depression covered with dense white pollen, with a rather narrow silvery spot medially; humeral calli dark brown in a small spot posterolaterally. Acrostichal setae only on front, at most slightly beyond anteriormost dorsocentrals, biserial, converging into a short single row posteriorly; posterior notopleural well developed, practically as large as anterior. Scutellum dark brown, dulled with brownish-gray pollen; lateral marginal setae much smaller than mesals. Pleura silvery gray owing to white pollen, tinged with green; prothoracic setae more or less strong, bristly, 4-7 in number; mesopleurals small, 5-7 in number, scattered.

Wings (fig. 45) abruptly produced posteriorly in a wide, low triangle beyond middle, tinged with brownish gray, and clouded with dark brown and opaque white about centre. Apical section of 4th longitudinal vein bent forwards near base, then practically parallel with 3rd; 5th convex backwards in basal section beyond middle of wing, its apical section short, at angle to basal section, terminating in a deltoid blackish nodus at apex of the triangular marginal process; posterior cross-vein oblique, convex outwards. Calypters dirty brown, cilia black or dark brown; halteres yellow.

Fore legs. Coxae concolorous with pleura, with a basal bristle anterolaterally and, just below, some bristly setae in a cluster. Trochanters infuscated yellowish-brown. Femora less pollinose towards apex, tinged with green; many hairs about base, and several about middle, below; more or less elongate and upstanding setae on posterior side above beyond middle. Tibiae so much less pollinose as to show dark brown ground colour, a little shorter

than femora (40 : 44), somewhat thickened, a little bent forwards near apex, with a prominent posterodorsal bristle a little basally to middle, about as long as its distance from base of the segment, a shorter, yet well-developed anterodorsal a little more basally and some hairy posteroventral setae about middle. Tarsi dark grayish-brown, first segment (fig. 76) thickened; basal lobe rounded along apical margin, shining dark brown on anterior surface and margined with quite minute setae on posterior side. Second segment of tarsi with several somewhat elongate anterodorsal bristles about base. Basal 3 segments of tarsi as 14 : 21 : 13 in length.

Middle legs approximately as in fore legs in colour. Coxae yellowish towards apex, normally lacking setae around outer bristle. Femora compressed dorsoventrally towards apex, gently bent backwards, with many strong bristles below about base, accompanied with several hairs just posteriorly; prominent anterior bristles only towards apex; some long anteroventral hairs about middle; rather stiff posteroventral setae in a row on whole length. Tibiae as long as femora (63 : 66), compressed dorsoventrally, a little dilated on posterior and ventral sides towards base, with a distinct posterodorsal bristle about the dilation, and with a smaller anterodorsal a little more basally; a small posterodorsal at times also present a little beyond middle; short, yet stiff setae in a row below towards apex; rather hairy posterior setae nearly on whole length, longest about basal 1/3, gradually decreasing in length basally and apically. First segment of tarsi with hairs on posterior side, decreasing in length towards apex. Basal 3 segment of tarsi as 35 : 23 : 13 in length.

Hind legs as in fore legs in colour. Coxae with 1 or 2 small setae apically on outer side. Femora gently curved backwards, a little dilated below basally of middle; many prominent, thickened hairs basally to middle in a band which is anteroventral in position near the base, gradually descending to the ventral side towards the middle; several similar anteroventral hairs beyond middle; anterodorsal bristles prominent on about apical half. Tibiae much shorter than femora (39 : 71), thickened, with an anterodorsal bristle towards base, 2 posterodorsals, and a subapical below, all strong; 1 or 2 anteroventrals also more or less strong subapically; apical spur on posterior side, somewhat bent downwards at base, elongate and blackish in colour. First segment of tarsi a little longer than tibiae, thickened on about basal half and rather abruptly narrowed about middle, the thickened basal half fringed with many prominent hairs on anterior side and thickly covered with soft, delicate hairs below around. Basal 3 segments of tarsi as 43 : 34 : 18 in length.

Abdomen greenish with coppery reflections, but dulled with thin grayish-brown pollen, sides covered with white pollen. Auriform process (figs. 110 & 111) quadrate, with many small conical setae. Pedunculate process of 6th sternite (figs. 110 & 111) compressed dorsoventrally, its terminal enlargement expanded laterally with many spines, emarginate apically. Hypopygium black, with white pollen. Outer lamellae of genitalia (fig. 139) robust, black, white-pollinose, pointed at apex which is yellowish- or reddish-brown in colour, produced laterally into a long, curved, yellowish- or reddish-brown prong. Ventral lobes (fig. 158) elongate, compressed dorsoventrally, with some setae apically. Inner lamellae (figs. 186 & 187) quite robust, abruptly narrowed into an apical process which terminates in a verrucous, membranous fin.

♀. Length, 4–4.8 mm.; of wing, 4.6–5.4 mm.

Head. Frons lacking white pollen. Face somewhat narrower than ocellar tubercle at narrowest part, covered with dense, coarse pollen, brownish-gray medially but more or less light grayish on sides. Proboscis about twice as long as eye-height. Palpi nearly  $\times 6$  as long as wide, with silvery pollen.

Thorax. Mesonotum with a blackish marking which is similar to that of the male but poorly defined. Pollen of mesonotum brownish-gray, but more or less whitish on suture.

Wings (fig. 46) infuscate along veins. Apical section of 4th longitudinal vein straight, practically parallel with 3rd; 5th only slightly convex backwards in basal section beyond middle of wing, its apical section short, at angle to basal section; posterior cross-vein a little convex outwards.

Fore legs. Coxae scattered with short, more or less bristly setae on anterior side except towards apex, apical ciliation as in male. Femora without outstanding setae. Tibiae as long as femora (44 : 46), with 2 anterodorsal, 1 or 2 posterodorsal and 1 or 2 posteroventral bristles. Basal 3 segments of tarsi as 23 : 15 : 9 in length.

Middle legs. Coxae as in male, but often with small setae above outer bristle. Femora a little bent backwards, with anterior bristles towards apex. Tibiae a little shorter than femora (64 : 70), with 2 antero- and 2 posterodorsal bristles; antero- and posteroventral bristles also present, but normally smaller and quite few; a ring of preapicals prominent. Basal 3 segments of tarsi as 35 : 21 : 12.

Hind legs. Femora rather strongly curved backwards, with anterodorsal bristles beyond middle. Tibiae much shorter than femora (56 : 72); antero- and posterodorsal bristles rather prominent, 2 or more in number; antero- and posteroventrals few. Basal 3 segments of tarsi as 32 : 28 : 17 in length.

Holotype, ♂, Inubō-misaki, Honsyu, 29 VIII '63.

Paratypes, 100 ♂♂ and 100 ♀♀, Inubō-misaki, 27 VIII '62 (I. Miyagi), 6 VIII '63 (T Saigusa & A. Kato), 29 VIII '63; Simoda, Idu Peninsula, Honsyu, 21 VII '63 (I. Miyagi).

#### 14. *Conchopus mammuthus*, sp. n.

This species is closely related to *C. nodulatus*, but differs from the latter mainly as follows.

♂. Length, nearly 6 mm.; of wing, 5.5–5.7 mm.

First and 2nd antennal segments reddish-brown in some lights; 1st a little fusiform, twice as long as deep at middle; 3rd blackish, but often reddish-brown basally in a quite narrow extent,  $\times 4$ –4.3 as long as deep; arista nearly  $\times 1.5$  as long as basal segments united, shining except for base.

Mesonotum with lateral bands scarcely attaining posteriormost dorsocentrals; presutural prongs narrower than in *C. nodulatus*. Scutellum with lateral marginal setae somewhat shorter than mesals but well developed. Wings (fig. 47).

Fore legs. Femora lacking long anteroventral hairs and elongate upstanding setae on anterior side above beyond middle. Tibiae little bent forwards near apex, with a posterodorsal bristle about middle, somewhat shorter than its distance from base. Basal 3 segments

of tarsi as 14 : 26 : 17 in length; 1st segment (fig. 77).

Middle legs. Femora lacking hairy setae, but having long bristles, about middle antero-ventrally. Tibiae little dilated towards base, lacking a posterodorsal bristle beyond middle and hairy setae on posterior side; stiff setae absent, but tiny weak setae present, below towards apex. Basal 3 segments of tarsi as 40 : 29 : 17 in length.

Hind legs. Femora with hairs in a band basally to middle less developed than in *C. nodulatus*. Tibiae half as long as femora (40 : 80). First segment of tarsi thickened but evenly throughout, densely clothed with remarkable long hairs around except on apex and anterodorsal side. Basal 3 segments as 52 : 37 : 22 in length. Sternites of abdomen (fig. 112); genital processes (figs. 140, 159 & 188).

♀. Length, nearly 6 mm.; of wing, 5.2-6 mm.

Face a little narrower than ocellar tubercle at narrowest part, covered with silvery pollen, epistoma brownish-gray medially. Antennae wholly blackish.

Thorax with a well-defined black marking similar to that of male on white-pollinose mesonotum. Basal 3 segments of tarsi as follows in length: 26 : 20 : 13 in fore legs; 40 : 24 : 16 in middle legs; and 37 : 32 : 20 in hind legs. Wings (fig. 48).

Holotype, ♂, Hatizyô-sima, Idu Islands, 16 VII '63 (I. Miyagi).

Paratypes, 10 ♂♂ and 20 ♀♀, Hatizyô-sima, 16 VII '63 (I. Miyagi); Kinkazan, Miyagi-ken, Honsyu, 14, VII '63 (I. Miyagi).

#### VI. *Anomalopus*-group

This group is represented by a single species, which is so peculiar that it can not be placed close to any other species.

##### 15. *Conchopus anomalopus*, sp. n.

This species is readily distinguishable from any other species of the genus by the fore tibiae of the male much thickened and enormously deformed towards the apex. The wings of both sexes are infuscate across the posterior cross-vein in a poorly defined spot.

♂. Length, 4-4.7 mm.; of wing, 4-4.5 mm.

Head. Frons over vertex to occiput dark brown, practically black; frons dulled with thin brownish-gray pollen above antennae, with a pair of spots of white pollen between fronto-orbital bristles (sometimes these spots are fused together). Occiput quite thinly covered with brownish-gray pollen above and with white pollen below, a little tinged with green. Upper orbital cilia of occiput descending nearly half eye-height; beard thin. Face covered with dense, coarse, silvery white pollen, about half as wide as ocellar tubercle at narrowest part, protruded anteriorly and compressed laterally, forming a distinct median ridge on epistoma; clypeus much prolonged below, forming front of long rostrum. Proboscis somewhat less than twice as long as eye-height, strongly compressed laterally; pharyngeal region of rostrum velvety blackish; labium grayish, theca, or proximal region of labium, ciliated by small setae along apical margin; labrum and epipharyngeal armature exposed, shining black. Palpi about  $\times 5$  as long as wide, attaining base of labrum, silvery pollinose, densely covered with setae. Antennae  $2/3$  as long as head, blackish; 1st segment about twice as

long as deep at apex, 3rd about twice as long as deep; arista twice as long as basal segments united, shining black except for base.

Thorax. Median band cleft apart medially behind suture; lateral bands melting into posterior corners of mesonotum which are dark gray; presutural prongs robust. Presutural sides of mesonotum covered with dense white pollen, but in lateral view appearing dark silvery gray; prescutellar depression with a narrow silvery spot medially; humeral calli dark brown in a small spot posterolaterally. Acrostichal setae only on front, forming a more or less biserial row; posterior notopleural smaller than anterior, but strong. Scutellum dark brown, dulled with brownish-gray pollen, tinged with green, lateral marginal setae small. Pleura gray owing to white pollen, slightly tinged with green; prothoracic setae hairy, 7-12 in number, short except for some mesal ones; mesopleurals quite small, 3-5, scattered.

Wings (fig. 49) tinged with brownish-gray, infusate across posterior cross-vein in a poorly defined spot. Second and 3rd longitudinal veins diverging towards apex, then 2nd bent backwards near apex; apical section of 4th convex backwards, that of 5th at angle to basal section, as long as posterior cross-vein, which is straight and at right angles to the 4th vein. Calypters dirty brown, cilia appearing black or brown; halteres yellow.

Fore legs (fig. 87). Coxae concolorous with pleura, rather abruptly narrowing towards apex when viewed from in front, setose on anterior side; a descending anterolateral row of setae more or less distinct. Femora showing dark brown ground colour at apex, slightly tinged with green; outstanding bristles absent, but dorsal (or rather posterodorsal) bristles more or less elongate. Tibiae much less pollinose so as to show dark brown ground colour, a little longer than femora (39 : 36), much thickened, abnormally distorted about apex; 3 or 4 short, strong, spine-like setae below about middle; a subbasal antero- and 2 widely spaced posterodorsal bristles distinct; several or some elongate setae near apex on posterior side below. Tarsi dark grayish-brown, first segment (fig. 78) a little curved downwards, with 2 small, black, hooked processes on anterior side, and a delicate, hairy seta on posterior side, below apically; basal lobe quite prominent, constricted, shining dark brown on anterior surface, with small setae apically on posterior side. Basal 3 segments of tarsi all practically equal in length (10 : 11 : 12; 10 : 11 : 11).

Middle legs nearly as in fore legs in colour. Coxae with a descending band of small setae towards apex, terminating in a tuft of setae at anteromesal angle; a few setae sometimes present above outer bristle. Femora less pollinose towards apex, a little bent backwards and downwards, dilated below into a rounded protuberance just basally of middle, compressed dorsoventrally beyond the protuberance, thickly clothed with many bristles below about base and also with many short, bristly setae on the protuberance; anterior bristles beyond middle; posterior setae more or less elongate towards apex. Tibiae a little shorter than femora (53 : 56), a little compressed dorsoventrally, with a short, strong, spine-like, erect bristle below at basal 1/3, succeeded by a row of some small setae a little beyond; a posterodorsal bristle quite near base, another at times present beyond middle, more or less smaller; 2 or 3 somewhat elongate, bristly setae below apically; a strong anteroventral preapical. Basal 3 segments of tarsi as 31 : 21 : 16 in length.

Hind legs (fig. 91) as in middle legs in colour. Coxae with a prominent tuft of some

tightly appressed bristles at anteromesal angle, which are approximately as long as the outer bristle. Trochanters with a strong bristle below, which is bent at right angle. Femora not especially thickened, apparently bent backwards, slightly sinuate in lateral view, with anterodorsal bristles beyond middle; setae more or less elongate below. Tibiae somewhat shorter than femora (52 : 64), slender, with 1 or 2 strong rigid bristles below just basally to apical spur, as long as the spur, and with 2 widely spaced posteroventrals; apical spur on ventral side, short, erect. Basal 3 segments of tarsi as 28 : 25 : 17 in length.

Abdomen dark brownish-gray with coppery reflections, tinged with green or blue, sides covered with white pollen. Fourth sternite (fig. 113) with a pair of strong bristles on posterior margin. Auriform process wide (figs. 113 & 114). Pedunculate process of 6th sternite (figs. 113 & 114) compressed dorsoventrally, its terminal enlargement robust, spinose. Hypopygium black, with white pollen. Outer lamellae of genitalia (fig. 141) black, pollinose, abruptly narrowed in a long process terminating in a small beak-like projection. Ventral lobes (fig. 160) slender, compressed dorsoventrally, with setae apically. Inner lamellae (fig. 189) narrowing into a slender process terminating in a spinose lobe.

♀. Length, 3.5-4.5 mm.; of wing, 4-4.5 mm.

Head. Frons lacking white pollen. Face somewhat narrower than ocellar tubercle at narrowest part, covered with dense, coarse pollen, brownish-gray, but sides silvery gray. Palpi with silvery pollen, slightly brownish in some lights. Proboscis twice as long as eye-height.

Thorax. Mesonotum dark brown, covered with brownish-gray pollen, tinged with green in some lights, with a pair of dark median stripes extending to border of prescutellar depression.

Wings (fig. 50) tinged with brownish gray, marked across posterior cross-vein as in male. Apical section of 4th longitudinal vein a little convex backwards; posterior cross-vein a little convex outwards.

Fore legs. Coxae scattered with setae on anterior surface except near apex. Femora slender, lacking outstanding bristles. Tibiae as long as femora (37 : 36), with 2 antero- and 2 posterodorsal bristles; posteroventrals few and smaller. Basal 3 segments of tarsi as 16 : 10 : 9 in length.

Middle legs. Femora a little bent backwards, with anterior bristles beyond middle. Tibiae a little shorter than femora (51 : 55), with 2 antero- and 2 posterodorsal bristles; antero- and posteroventrals few and smaller; a ring of preapicals prominent. Basal 3 segments of tarsi as 29 : 19 : 12 in length.

Hind legs. Coxae with a tuft of some tightly appressed bristles, which are approximately as long as the outer bristle, at anteromesal angle. Trochanters with a small, hooked seta below. Femora rather strongly curved backwards, slightly sinuate in lateral view, with anterodorsal bristles towards apex. Tibiae somewhat shorter than femora (54 : 68); antero- and posterodorsal and smaller antero- and posteroventral bristles few. Basal 3 segments of tarsi as 25 : 22 : 14 in length.

Holotype, ♂, Kumano, Kii Peninsula, Honsyu, 22 V '63.

Paratypes, 200 ♂♂ and 100 ♀♀, Inubô-misaki, Honsyu, 6 VIII '63 (T. Saigusa & A.

Kato), 29 VIII '63; Kumano, 22 V '63.

### VII. *Abdominalis*-group

This group contains a peculiar species.

#### 16. *Conchopus abdominalis*, sp. n.

This species is quite unique by having sternal processes on the 2nd and 3rd as well as 5th and 6th abdominal segments in the male. The 4th abdominal segment of the male is remarkably lobed below on the lateral sides.

♂ (fig. 4). Length, about 5.5 mm.; of wing, about 5.5 mm.

Head (figs. 10 & 16). Frons, occiput and antennae dark brown, practically black; thin brownish pollen on frons over vertex to upper occiput and thin white pollen on lower occiput; frons and occiput slightly tinged with green. Upper orbital cilia of occiput descending half eye-height; beard rather thin. Face narrow, somewhat less than half as wide as ocellar tubercle, produced anteriorly and much compressed laterally, forming a distinct median ridge on epistoma, with dense, coarse, silvery white pollen; clypeus much prolonged below, forming front of long rostrum. Proboscis somewhat less than twice as long as eye-height, much compressed laterally; pharyngeal region of rostrum velvety blackish, transversely corrugated about base; labium grayish, theca, or proximal region of labium, scattered with fine setae; labrum and epipharyngeal armature exposed, shining black. Palpi about  $\times 6$  as long as wide, attaining base of labrum, silvery pollinose, scattered with many setae. Antennae somewhat shorter than head; 1st segment about twice as long as deep at apex, 3rd thrice as long as deep; arista nearly twice as long as basal segments united.

Thorax. Mesonotum (fig. 20): median band cleft apart medially behind suture; lateral bands scarcely reaching to posteriormost dorsocentrals; presutural prongs robust. Presutural sides of mesonotum covered with dense white pollen, but in lateral view appearing dark silvery gray; prescutellar depression with a large, rather cordate, dark silvery spot medially; humeral calli dark brown in a small spot posterolaterally. Acrostichal setae well represented, but absent behind suture; posterior notopleural practically as large as anterior. Scutellum dark brown, covered with brownish-gray pollen, slightly tinged with green, the lateral marginal setae being much smaller than mesals and fine. Pleura silvery gray owing to white pollen, slightly tinged with green; prothoracic setae rather hairy, 5-7 in number; mesopleurals small, 3-7, scattered.

Wings (fig. 51) tinged with gray. Second and 3rd longitudinal veins converging towards apex beyond middle of wing, then 3rd bent backwards near apex; apical section of 4th a little thickened for about basal  $2/3$ , gently sinuate, that of 5th somewhat longer than posterior cross-vein, which is convex outwards. Calypters dirty brown, cilia black or brown; halteres yellow.

Fore legs (fig. 88) less pollinose, showing dark brown ground colour, towards apical parts. Coxae concolorous with pleura, with several or some bristly long setae more or less in a cluster on anterior surface. Femora with many short hairs below about base. Tibiae as long as femora (48:50), somewhat thickened; a rather outstanding anterodorsal bristle

towards base, another sometimes present towards apex but much smaller; 1-3 posterodorsals small and inconspicuous; some hairs mingled with a posteroventral preapical bristle. Tarsi dark brown; first segment (fig. 79) slightly sinuate in dorsal view, the apical half being deformed to be lobed below on both anterior and posterior sides, with 3 curved long setae below on posterior side; basal lobe rounded, shining dark brown on anterior surface, with some quite tiny setae along margin on posterior side. Basal 3 segments of tarsi as 15 : 21 : 13 in length.

Middle legs nearly as in fore legs in colour. Coxae with a prominent curved bristle anterolaterally and several setae at anteromesal angle. Trochanters produced at basal tip into a slender, slightly curved, claw-like, yellowish process. Femora much less pollinose towards apex, slender, a little bent both backwards and downwards, a little compressed dorsoventrally towards apex, with some long bristly setae below about base, succeeded by some hairy posteroventral setae, and with anterior bristles beyond middle. Tibiae as long as femora (65 : 66), little compressed dorsoventrally; an antero- and a posterodorsal bristle towards base, another posterodorsal sometimes present about middle. First segment of tarsi as long as 2nd and 3rd united (39 : 23 : 17), 5th somewhat enlarged, cordate.

Hind legs (fig. 92) as in middle legs in colour. Coxae with outer bristle much smaller than that of middle coxae; a seta below outer bristle. Femora somewhat thickened, curved backwards, remarkably sinuate in lateral view, with many bristles below about base in 2 clusters and anterodorsal bristles on about apical half. Tibiae shorter than femora (70 : 83), somewhat thickened, sinuate in both dorsal and lateral views; a double row of elongate setae below towards apex, terminating in a strong preapical bristle and mingled with a subapical bristle which is as large as the preapical; antero- and posterodorsal bristles so small as to be not always distinct; apical spur lacking, but posteroventral side of apex velvety blackish in a small spot. Basal 3 segments of tarsi as 35 : 30 : 20 in length.

Abdomen greenish with coppery reflections, but covered with white pollen, 4th tergite much lobed out below on sides, with a wide blackish margin of pleural membrane along the lobe, with a "button-hole" (fig. 115); 4th sternite also much lobed out on sides, with strong setae on anterior margin, and a large cluster of many similar setae inside of lateral margin, of the lobe (fig. 116). Second sternite (fig. 116) with a small, rounded, minutely hairy-spinulose, sessile process just inside posterior margin, 3rd (fig. 116) with a similar, but larger one. Auriform process (figs. 116 & 117) quadrate. Pedunculate process of 6th sternite (figs. 116 & 117) terminating in a somewhat quadrate, minutely spinulose, vesicular enlargement. Hypopygium black, with white pollen. Outer lamellae of genitalia (figs. 126 & 142) shining black, compressed laterally, opposed to each other, quite robust, widening towards apex and truncated apically. Ventral lobes (fig. 161) slender, compressed laterally, with setae about apex. Inner lamellae (f. 190) dilated towards apex. Intromittent organ somewhat widening apically (figs. 120 & 121).

♀. Length, about 5 mm.; of wing, 5.2-6 mm.

Head. Face about half as wide as ocellar tubercle. Proboscis nearly twice as long as eye-height. Palpi nearly  $\times 7$  as long as wide. Face and palpi silvery-pollinose.

Thorax as in male.

Wings (fig. 52). Second and 3rd longitudinal veins slightly converging towards apex; apical section of 4th slightly convex forwards; posterior cross-vein slightly convex outwards.

Fore legs. Coxae scattered with bristly setae on anterior side. Tibiae somewhat shorter than femora (52 : 60), normally with 2 antero- and 2 posterodorsal bristles. Basal 3 segments of tarsi as 23 : 15 : 11 in length.

Middle legs. Coxae as in male. Trochanters with a basal process much shorter than in male, rather robust and conical. Femora little bent backwards, with anterior bristles beyond middle. Tibiae as long as femora (77 : 78), with antero- and posterodorsal and smaller antero- and posteroventral bristles, all few. Basal 3 segments of tarsi as 36 : 20 : 13 in length.

Hind legs. Coxae as in male. Femora curved backwards, only slightly sinuate in lateral view, with more or less distinct dorsal (or rather anterodorsal) bristles beyond middle. Tibiae somewhat shorter than femora (76 : 87), their bristles approximately as in middle legs. Basal 3 segments of tarsi as 34 : 26 : 16 in length.

Holotype, ♂, Kumano, Kii Peninsula, Honsyu, 22 V '63.

Paratypes, 14 ♂♂ and 27 ♀♀, Kumano, 22 V '63; Sirahama, Kii Peninsula, 21 V '63, 4 VII '63 (K. Kamimura).

#### *Acymatopus*, gen. n.

Type-species. *Acymatopus major*, sp. n.

General characters as in *Conchopus* in the main, but body small and, in both sexes, sombre. Head wider than high above middle, vertex quite wide, frons a little narrowing towards antennae. Face wide, with a complete transverse suture; clypeus gently convex apically, a little or scarcely produced below eyes. Palpi rather small; proboscis produced below eyes, but clypeopharyngeal region not particularly prolonged. Postvertical setae strong, surpassing orbitals in size; cilia of lower orbit composed of more or less bristly setae, but not of long, fine hairs. Antennae inserted a little above middle of head, 1st segment bare or having several setae above, 3rd short; arista bare or quite minutely plumose, with a short basal segment. Acrostichal setae in a biserial row extending a little or scarcely beyond border of prescutellar depression, postsutural ones pointing forwards; small supplementary setae not only on front but also in dorsocentral bristles, along presutural, sutural and supraalar, and in a descending row on notopleural depression. Scutellum with 2 pairs of marginal setae all strongly developed. Prothoracic pleura normally with 3 bristles mingled with 1-5 small setae; mesopleural setae small, numerous; a few small setae present below wing-roots in front of posterior spiracles as in the *rectus*-group of *Conchopus*. Wings with 1st longitudinal vein not reaching middle. Hind femora more or less curved backwards, but middle ones not. Tergites of abdomen with marginal setae more or less distinct.

Male characters. The male is not particularly deformed or ornamented except for the fore basitarsi which are slightly curved downwards and furnished with a strong bristle mingled with some much smaller ones below about the base. In some species, the 3rd

segment of the fore tarsi has prominent bristles on the dorsal side. The abdominal sternites lack any processes. The genitalia are simple in structure. The outer lamellae are well developed, much elongate and compressed dorsoventrally, with many setae. Anteriorly to the outer lamellae any prominent ventral extensions of the hypopygium are not seen, but 3 remarkable setae occur on each side towards the base on the ventral margin, in certain species on a slight marginal prominence. I will call these setae "ventral setae" in this paper. At the base of the hypopygium is an unpaired appendage, which is slender, simple in shape and articulated with the hypopygium by means of a pair of rod-like basal apodemes. On account of the position and articulation this appendage is regarded here as homologous with the paired inner lamellae of *Conchopus*.

Female characters. The abdomen is as in *Conchopus* in structure, but the 9th tergite bears normally 5 dactyloid setae on each plate.

Remarks. Externally this genus may be distinguished from *Conchopus* by having supplementary setae over the mesonotum. Above all, the males differ from those of *Conchopus* by the dark brown mesonotum, by the slender simple legs and by lacking any sternal processes on the abdomen; the male genitalia are characterized by the ventral setae instead of ventral lobes and by the unpaired inner lamella. In certain respects, this genus may be rather placed near *Cymatopus*, from which it is distinguished by having acrostichal setae and 6 dorso-central bristles.

1. *Acymatopus major*, sp. n.

The 1st segment of the antennae is a little longer than deep, with several setae above; the 3rd segment as long as deep; and the arista microscopically plumose.

♂ (fig. 5). Length, 3.4-3.7 mm.; of wing, 3.7-4 mm.

Head (figs. 11 & 14). Frons over vertex to upper occiput blackish, covered with grayish-brown pollen, lower greater part of occiput with thin whitish pollen, all well tinged with green. Upper orbital cilia of occiput short, composed of 4 or 5 strong setae. Face much wider than ocellar tubercle even across narrowest part (21 : 16), covered with coarse white pollen, well tinged with green; clypeus only a little produced below eyes. Palpi about twice as long as wide, covered with coarse brownish-gray pollen, scattered with setae, of which some marginal ones are more or less strong. Proboscis somewhat shorter than half eye-height, theca, or proximal region of labium, occupying base of proboscis behind, blackish, covered with thin whitish pollen, well tinged with green, with coppery reflections in some lights, with a pair of long hairs mingled with a marginal ciliation. Antennae half as long as head, blackish; 1st segment a little longer than deep at apex, with several setae above, 3rd as long as deep; arista about twice as long as antennal segments united, quite minutely plumose.

Thorax. Mesonotum blackish, covered with grayish-brown pollen except on prescutellar and notopleural depressions, well tinged with green, blue or purple, with a pair of dark median stripes not distinct laterally to acrostichals, the depressions being grayish-pollinose; prescutellar depression with a fine silvery stripe medially. Scutellum as in mesonotum in colour and pollinosity, with lateral marginal setae as large as mesal marginals. Pleura grayish

owing to white pollen, tinged with green; mesopleural setae about 10-20 in number, scattered; 1-3 small setae present below wing-root.

Wings (fig. 53) tinged with brownish-gray, infuscate along veins. Second and 3rd longitudinal veins gently divergent towards apex; apical section of 4th subparallel with 3rd, that of 5th a little at angle to basal section, somewhat longer than posterior cross-vein (20 : 15), which is straight or only slightly convex outwards. Calypters dirty brown, cilia black or appearing brownish in some lights; halteres yellow.

Fore legs. Coxae concolorous with pleura, scattered with bristly setae over anterior surface, one of them in lateral basal corner more or less surpassing others in size. Femora less pollinose, showing dark brown ground colour apically, well tinged with green or blue. Tibiae so thinly pollinose as to show dark brown ground colour, somewhat shorter than femora (35 : 40), with a more or less distinct anterodorsal bristle a little basally to middle and with 2 posterodorsals. Tarsi dark brown; 3rd segment (fig. 80) with a double row of some elongate bristles above, ending in a strong bristle longer than the segment; basal 3 segments as 17 : 11 : 7 in length.

Middle legs as in fore legs in colour. Coxae with setae in an irregularly double, partly single, descending row passing outer bristle into anterior apical angle which is thickly setose. Femora with 2 strong anterior bristles towards apex; a subapical posterior practically as strong as the anteriors; a short subapical anterodorsal; and a slender posterior beyond middle. Tibiae shorter than femora (50 : 55), with a strong anterodorsal bristle towards base, 2 posterodorsals as strong as the anterodorsal, 2 antero- and 2 posteroventrals smaller but strong, and a ring of prominent preapicals. Basal 3 segments of tarsi as 27 : 15 : 9 in length.

Hind legs as in fore legs in colour. Coxae with 2 or 3 setae below outer bristle near apex and with a slender seta at anteromesal apical angle. Trochanters with several setae ventrally. Femora with 2 widely spaced anterior bristles, or at times 3, on apical half, 2-4 anterodorsals towards apex, and a subapical posterior; another smaller posterior at times present beyond middle. Tibiae shorter than femora (55 : 62), their bristles normally as in middle tibiae. First segment of tarsi with a strong bristle below at base; basal 3 segments of tarsi as 22 : 20 : 11 in length.

Abdomen dark greenish with coppery reflections, sides with white pollen; hypopygium blackish, covered with grayish pollen. Sixth sternite lacking setae. Outer lamellae of genitalia (fig. 143) similar to hypopygium in colour but lighter apically, spatulate. Ventral setae (fig. 162) on a small marginal prominence of hypopygium, one of them quite strong, another much less strong and the rest slender. Inner lamella (figs. 165 & 166) compressed laterally, pediform apically. Intromittent organ (fig. 122).

♀ (fig. 6). Length, 3.5-4 mm.; of wing, 4.2-4.5 mm.

Face somewhat wider than in male; epistoma covered with whitish pollen in some lights, clypeus with brownish-gray pollen. Proboscis robust, a little longer than half eye-height. Fore legs: tibiae with an anterodorsal bristle somewhat basally to middle, 2 posterodorsals rather widely spaced and a posteroventral somewhat beyond middle, all distinct; tarsi with a bristle on 1st segment below near base, otherwise lacking prominent setae;

basal 3 tarsal segments as 20 : 12 : 7 in length. Wings (fig. 54).

Holotype, ♂, Sata-misaki, Kyusyu, 26 IV '63.

Paratypes, 150 ♂♂ and 150 ♀♀, Kii Peninsula, Honsyu: Ise, 24 V '63; Singū, 19 VI '63 (I. Miyagi); Nati, 20 VI '63 (I. Miyagi). Kyusyu: Kagosima, 23 IV '63, 30 IV '63; Sata-misaki, 1 V '62 (F. Nakasuji), 26 IV '63.

## 2. *Acymatopus minor*, sp. n.

This species may be distinguishable from *A. major* by the following features. Moreover, it is easily distinguished from any other species by the coxae apically, trochanters, femora apically and tibiae basally yellowish in all legs.

♂. Length, 2.5–3.2 mm.; of wing, 3.1–3.7 mm.

Face only a little wider than ocellar tubercle across narrowest part (15 : 13). Proboscis only a little shorter than half eye-height. First segment of antennae as long as deep at apex, lacking setae above, 3rd about  $\times 1.5$  as long as deep; arista about  $\times 1.5$  as long as antennal segments united. Mesopleural setae 7–16 in number. Wings (fig. 55) with apical section of 5th longitudinal vein much longer than posterior cross-vein (23 : 12; 20 : 11). Coxae apically, trochanters, femora apically and tibiae basally yellowish in all legs. Fore tibiae with an antero- and 2 posterodorsal bristles small, not always distinct. Third segment of fore tarsi (fig. 81) lacking strong setae. Middle femora often lacking a subapical anterodorsal bristle and an intermediate posterior. Middle and hind tibiae with antero- and posteroventral bristles not always distinct. Sixth sternite with 3 or 4 setae on each side marginally. Outer lamellae (fig. 144); inner lamella (fig. 167).

♀. Length, 2.5–3.2 mm.; of wing, 3–4 mm.

Face much wider than ocellar tubercle across narrowest part (21 : 14). Proboscis about half as long as eye-height, less stout than in *A. major*. Antennae as in male. Legs as in male in colour. Fore tibiae with an anterodorsal bristle distinct, but 2 posterodorsals not always so; middle femora at times lacking an anterodorsal and a posterior, and hind femora a posterior, subapically. Wings (fig. 56).

Holotype, ♂, Yasima, Sikoku, 17 V '63.

Paratypes, 250 ♂♂ and 150 ♀♀, Hokkaido: Okoppe, 16 VII '62 (I. Miyagi); Tokoro, 26 VII '62; Abasiri, 25 VII '62; Monbetu 16 VII '62 (I. Miyagi); Otaru, 25 VII '62 (I. Miyagi). Honsyu: Ise, Kii Peninsula, 24 V '63. Sikoku: Yasima, 17 V '63; Imabari, 12 V '63; Matuyama, 15 V '63; Uwazima, 10 V '63. Kyusyu: Hukuoka, 9 IX '62 (T. Saigusa); Sasebo, 5 V '63; Kagosima, 23 V '63, 30 V '63; Tarumizu, Kagosima-ken, 25 V '63.

## 3. *Acymatopus longisetosus*, sp. n.

This species is quite similar to *A. major* in external characters, but is distinct by the inner lamella of the genitalia.

♂. Length, 3.2–3.5 mm.; of wing, 3.3–3.7 mm.

Proboscis about half as long as eye-height. First segment of antennae as long as deep at apex, 3rd a little longer than deep; arista not plumose. Mesopleural setae 10–15 in number, scattered. Wings (fig. 57) with apical section of 5th longitudinal vein more or less

longer than posterior cross-vein (19 : 14; 17 : 14). Fore tibiae with an antero- and 2 posterodorsal bristles small and not always distinct, otherwise bristles on legs approximately as in *A. major*; fore tarsi (fig. 82). Outer lamellae (fig. 145). Ventral setae of genitalia (fig. 163) on a slight marginal prominence of hypopygium on each side. Inner lamella (fig. 168) compressed dorsoventrally, a little dilated towards apex, truncate and a little concave apically.

♀. Length, 3.3–3.7 mm.; of wing, 3.5–3.9 mm.

Proboscis about half as long as eye-height, less stout than in *A. major*. Antennae as in male. Wings (fig. 58).

Holotype, ♂, Inubō-misaki, Honsyu, 6 VII '63 (T. Saigusa & A. Kato).

Paratypes, 60 ♂♂ and 20 ♀♀, Inubō-misaki, 6 VIII '63 (T. Saigusa & A. Kato), 29 VIII '63.

#### 4. *Acymatopus femoralis*, sp. n.

This species differs from *A. major* mainly by the following features. Moreover, it is distinguishable from any other species by the fore femora having 1–4 distinct posterodorsal bristles.

♂. Length, 3–3.7 mm.; of wing, about 4 mm.

Face much wider than ocellar tubercle across narrowest part (23 : 15), with grayish pollen; clypeus scarcely produced below eyes. Palpi about  $\times 1.5$  as long as wide. Wings (fig. 59) with apical section of 5th longitudinal vein more or less longer than posterior cross-vein (19 : 17; 22 : 16). First segment of antennae lacking setae above. Fore coxae with an irregularly double descending row of elongate bristly setae anterolaterally and some small setae on anterior surface. Fore femora with 1–4 distinct intermediate posterodorsal bristles. Fore tibiae with an anterodorsal bristle not strong but more or less distinct and with 2 posterodorsals not always distinct. Third segment of fore tarsi (fig. 83) lacking strong setae. Hind femora with some anterodorsal, dorsal and posterodorsal bristles towards apex, lacking anteriors and posteriors; otherwise bristles of legs approximately as in *A. major*. Outer lamellae (fig. 146). Ventral setae of genitalia (fig. 164) all slender. Inner lamella (fig. 169) rod-like, blunt apically.

♀. Length, 3.3–3.5 mm.; of wing, about 4 mm.

Face wholly covered with grayish-brown pollen; clypeus scarcely produced below eyes. Palpi and proboscis practically as in male. Wings (fig. 60) with apical section of 5th longitudinal vein about as long as posterior cross-vein. Fore coxae with many setae scattered over anterior surface. Fore femora with bristles as in male. Fore tibiae with an anterodorsal bristle more or less strong and 2 posterodorsals distinct, lacking a posteroventral. Hind femora with bristles approximately as in male.

Holotype, ♂, Kagosima, Kyusyu, 23 IV '63.

Paratypes, 130 ♂♂ and 100 ♀♀, Sikoku: Yasima, 17 V '63; Imabari, 12 V '63; Matuyama, 15 V '63. Kyusyu: Sika-Sima, Hukuoka-ken, 1 V '63; Sasebo, 5 V '63; Kagosima, 23 IV '63, 30 IV '63; Takasu, Kagosima-ken, 28 IV '63.

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## Explanation of plates

**Plate I.** Outline of body. Fig. 1, *Conchopus rectus*, ♂; 2, *C. rectus*, ♀; 3, *C. poseidonius*, ♂; 4, *C. abdominalis*, ♂; 5, *Acymatopus major*, ♂; 6, *A. major*, ♀.

**Plates II & III.** Head of male in frontal (fig. 7-11) or lateral view (12-16); mesonotum of male (17-20). Figs. 7, 13 & 17, *Conchopus rectus*; 8, 12 & 18, *C. sinuatus*; 9 & 15, *C. sigmiger*; 10, 16 & 20, *C. abdominalis*; 11 & 14, *Acymatopus major*; 19, *C. poseidonius*.

**Plates IV, V & VI.** Wing. Fig. 21, *Conchopus rectus*, ♂; 22, *C. rectus*, ♀; 23, *C. borealis*, ♂; 24, *C. borealis*, ♀; 25, *C. sikokianus*, ♂; 26, *C. sikokianus*, ♀; 27, *C. pudicus*, ♂; 28, *C. pudicus*, ♀; 29, *C. sinuatus*, ♂; 30, *C. sinuatus*, ♀; 31, *C. corvus*, ♂; 32, *C. corvus*, ♀; 33, *C. sigmiger*, ♂; 34, *C. sigmiger*, ♀; 35, *C. saigusai*, ♂; 36, *C. saigusai*, ♀; 37, *C. uvasima*, ♂; 38, *C. uvasima*, ♀; 39, *C. convergens*, ♂; 40, *C. convergens*, ♀; 41, *C. poseidonius*, ♂; 42, *C. poseidonius*, ♀; 43, *C. signatus*, ♂; 44, *C. signatus*, ♀; 45, *C. nodulatus*, ♂; 46, *C. nodulatus*, ♀; 47, *C. mammothus*, ♂; 48, *C. mammothus*, ♀; 49, *C. anomalopus*, ♂; 50, *C. anomalopus*, ♀; 51, *C. abdominalis*, ♂; 52, *C. abdominalis*, ♀; 53, *Acymatopus major*, ♂; 54, *A. major*, ♀; 55, *A. minor*, ♂; 56, *A. minor*, ♀; 57, *A. longisetosus*, ♂; 58, *A. longisetosus*, ♀; 59, *A. femoralis*, ♂; 60, *A. femoralis*, ♀.

**Plates VII & VIII.** First (fig. 61-79) or 3rd segment of fore tarsus (80-83) of male in anterior view, figs. 62, 65 & 68 on microscope slide. Figs. 61 & 62, *Conchopus rectus*; 63, *C. borealis*; 64 & 65, *C. sikokianus*; 66, *C. pudicus*; 67 & 68, *C. sinuatus*; 69, *C. corvus*; 70, *C.*

*sigmiger*; 71, *C. saigusai*; 72, *C. uvasima*; 73, *C. convergens*; 74, *C. poseidonius*; 75, *C. signatus*; 76, *C. nodulatus*; 77, *C. mammuthus*; 78, *C. anomalopus*; 79, *C. abdominalis*; 80, *Acymatopus major*; 81, *A. minor*; 82, *A. longisetosus*; 83, *A. femoralis*.

**Plate IX.** Fore leg of male in anterior view. Fig. 84, *Conchopus rectus*; 85, *C. sinuatus*; 86, *C. convergens*; 87, *C. anomalopus*; 88, *C. abdominalis*.

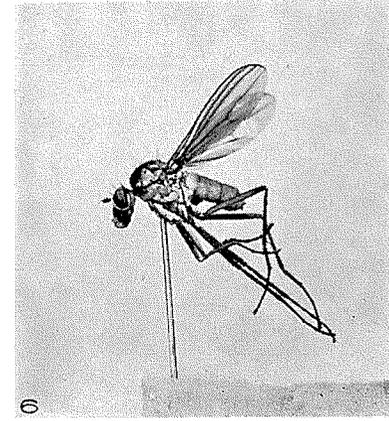
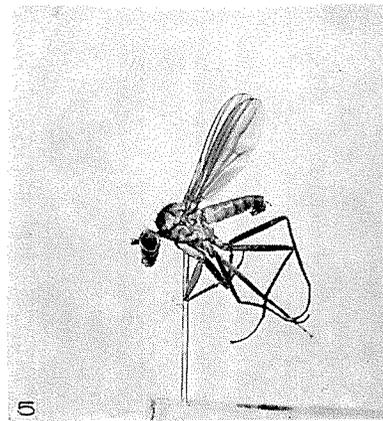
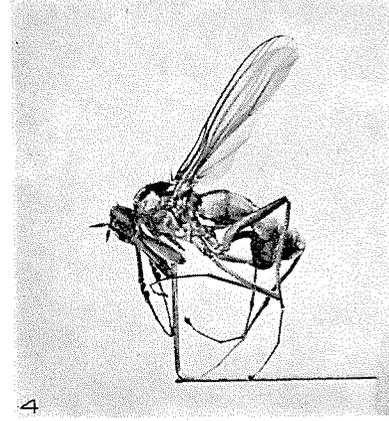
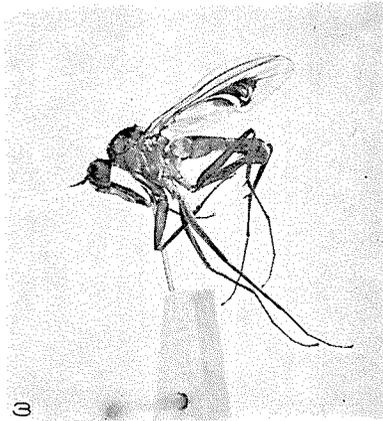
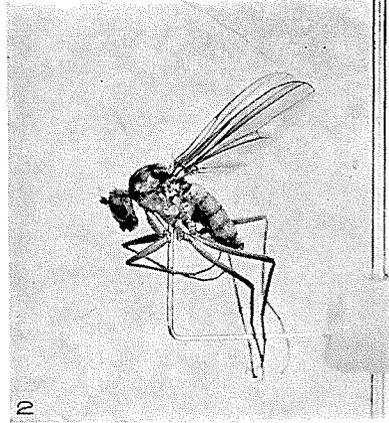
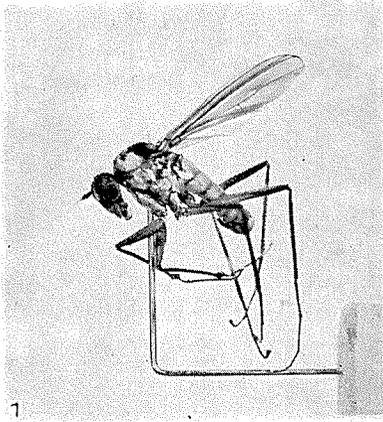
**Plate X.** Hind leg of male in anterior view. Fig. 89, *Conchopus rectus*; 90, *C. signatus*; 91, *C. anomalopus*; 92, *C. abdominalis*; 93, *C. convergens*.

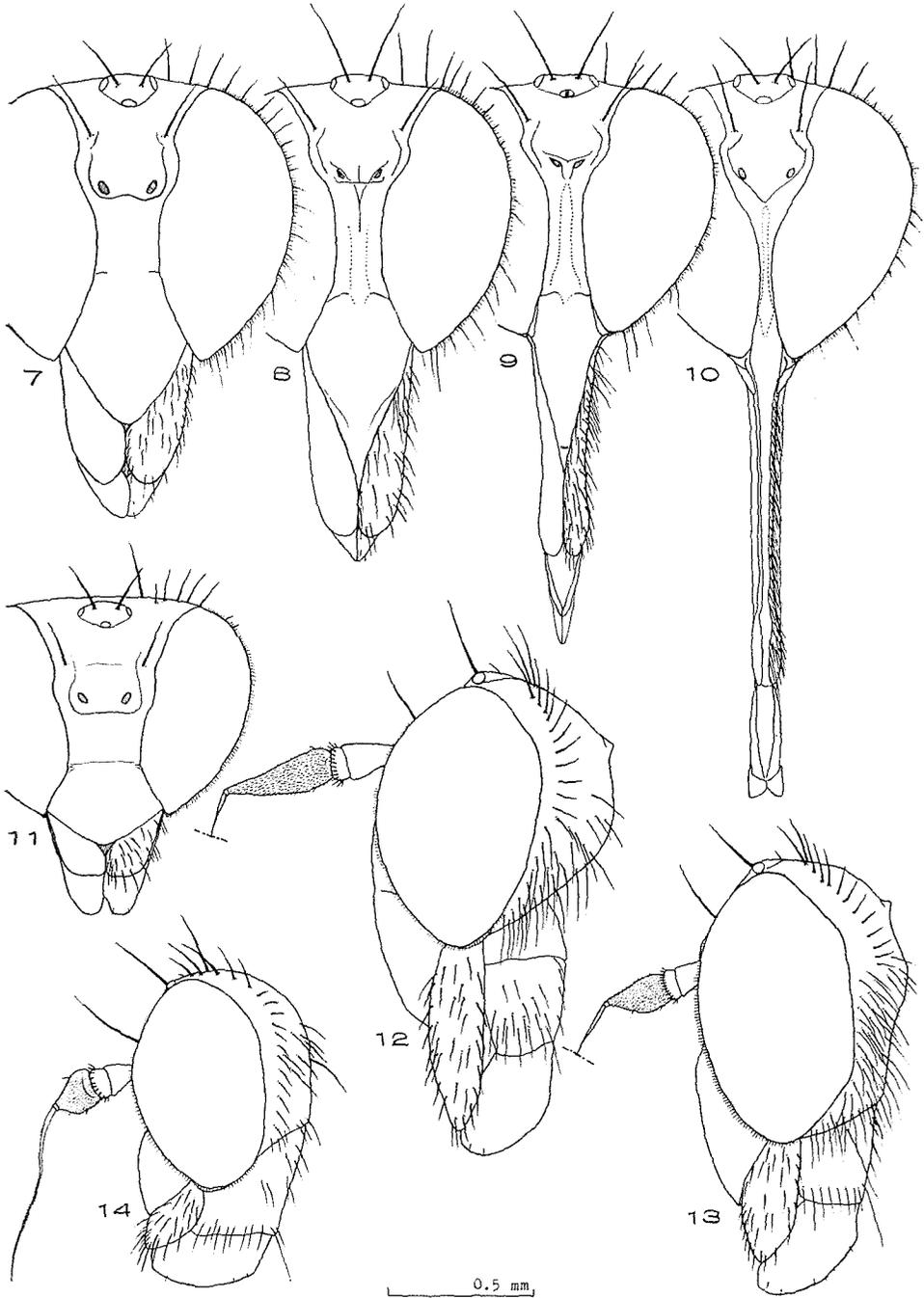
**Plates XI & XII.** Outline of abdomen of male (fig. 115); sternites of abdomen of male (94-114, 116, 117), figs. 99, 102, 106, 109, 111, 114 & 117 showing pedunculate and auriform processes. Fig. 94, *Conchopus rectus*; 95, *C. borealis*; 96, *C. sikokianus*; 97, *C. pudicus*; 98 & 99, *C. sinuatus*; 100, *C. corvus*; 101 & 102, *C. sigmiger*; 103, *C. saigusai*; 104, *C. uvasima*; 105 & 106, *C. convergens*; 107, *C. poseidonius*; 108 & 109, *C. signatus*; 110 & 111, *C. nodulatus*; 112, *C. mammuthus*; 113 & 114, *C. anomalopus*; 115-117, *C. abdominalis*.

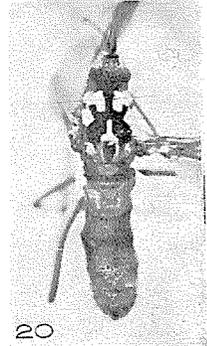
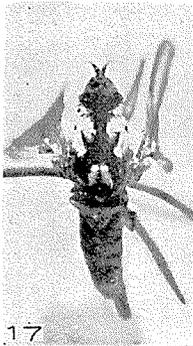
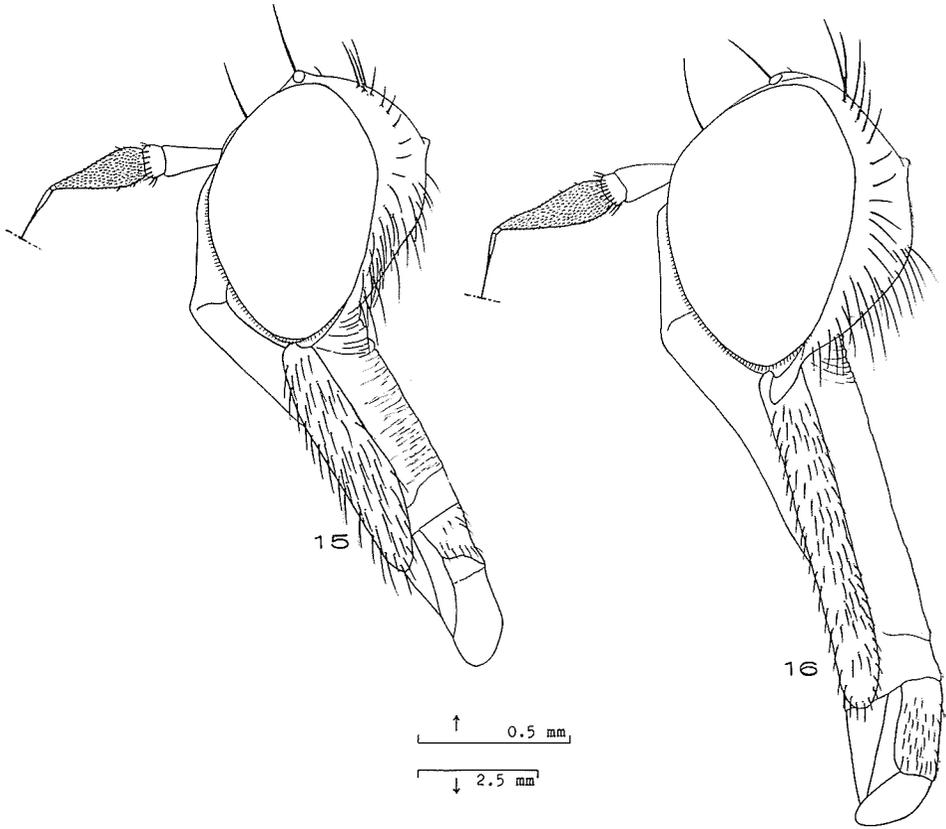
**Plates XIII & XIV.** Intromittent organ of male genitalia (118-122), 121 showing apex of 120; outer lamellae of male genitalia (123-146). Figs. 118 & 127, *C. rectus*; 128, *C. borealis*; 123 & 129, *C. sikokianus*; 130, *C. pudicus*; 119, 124 & 131, *C. sinuatus*; 132, *C. corvus*; 125 & 133, *C. sigmiger*; 134, *C. saigusai*; 135, *C. uvasima*; 136, *C. convergens*; 137, *C. poseidonius*; 138, *C. signatus*; 139, *C. nodulatus*; 140, *C. mammuthus*; 141, *C. anomalopus*; 120, 121, 126 & 142, *C. abdominalis*; 122 & 143, *Acymatopus major*; 144, *A. minor*; 145, *A. longisetosus*; 146, *A. femoralis*.

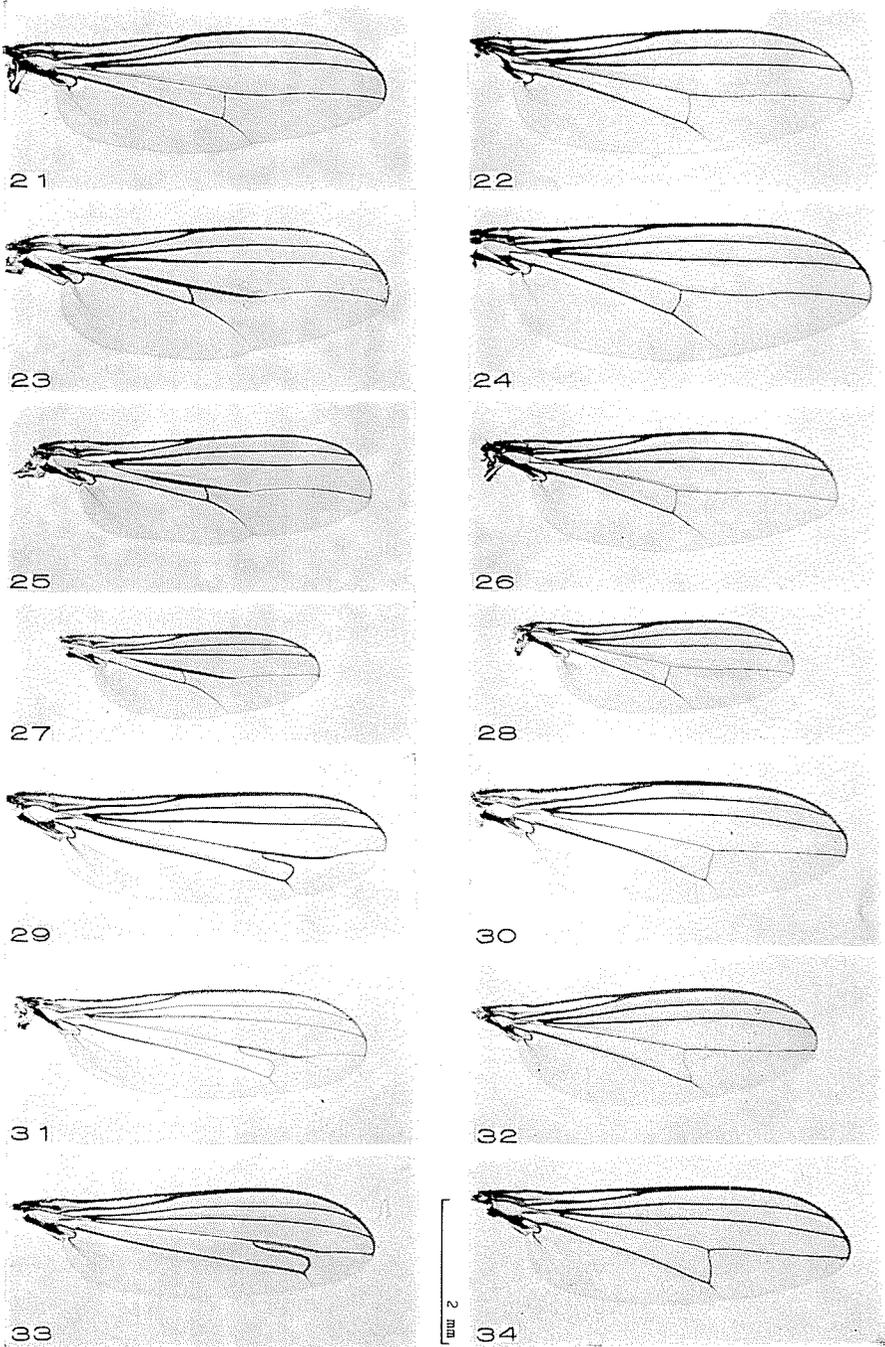
**Plate XV.** Ventral lobe of male genitalia (147-161), figs. 151-160 in ventral view, others in lateral view; ventral setae of male genitalia (162-164); inner lamella of male genitalia (165-169), figs. 166 & 167 in lateral view, others in dorsal view. Fig. 147, *Conchopus rectus*; 148, *C. borealis*; 149, *C. sikokianus*; 150, *C. pudicus*; 151, *C. sinuatus*; 152, *C. corvus*; 153, *C. sigmiger*; 154, *C. saigusai*; 155, *C. uvasima*; 156, *C. convergens*; 157, *C. poseidonius*; 158, *C. nodulatus*; 159, *C. mammuthus*; 160, *C. anomalopus*; 161, *C. abdominalis*; 162, 165 & 166, *Acymatopus major*; 163 & 168, *A. longisetosus*; 164 & 169, *A. femoralis*; 167, *A. minor*.

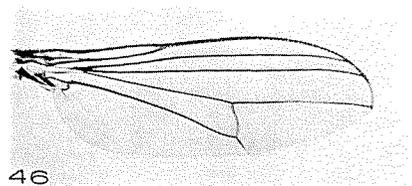
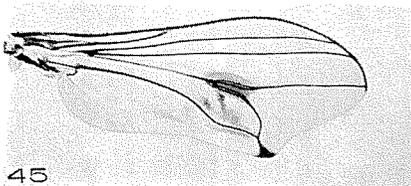
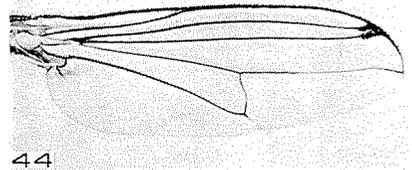
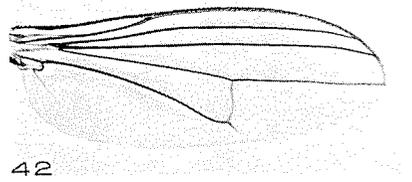
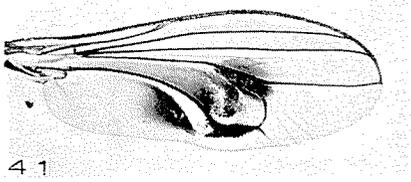
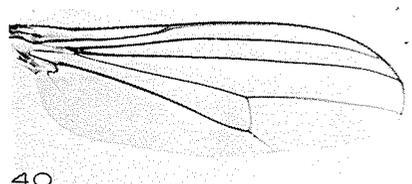
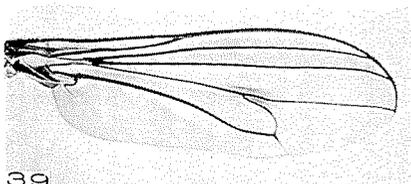
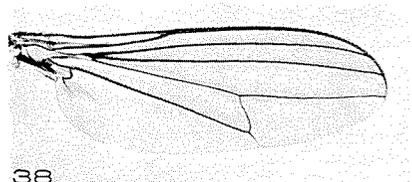
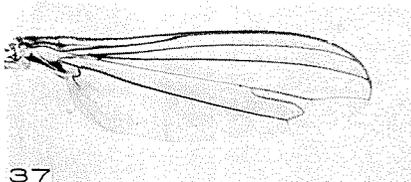
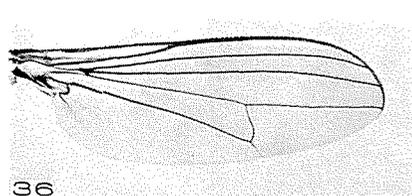
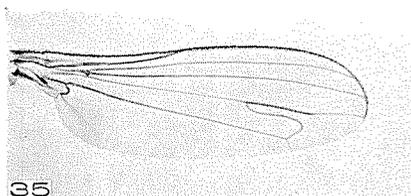
**Plate XVI.** Inner lamellae of male genitalia, figs. 176, 178, 182, 184 & 187 in dorsal view, others in lateral view. Fig. 170, *C. rectus*; 171, *C. borealis*; 172, *C. sikokianus*; 173, *C. pudicus*; 174, *C. sinuatus*; 175 & 176, *C. corvus*; 177 & 178, *C. sigmiger*; 179, *C. saigusai*; 180, *C. uvasima*; 181 & 182, *C. convergens*; 183 & 184, *C. poseidonius*; 185, *C. signatus*; 186 & 187, *C. nodulatus*; 188, *C. mammuthus*; 189, *C. anomalopus*; 190, *C. abdominalis*.

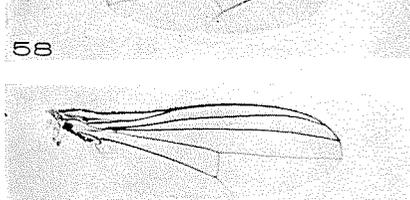
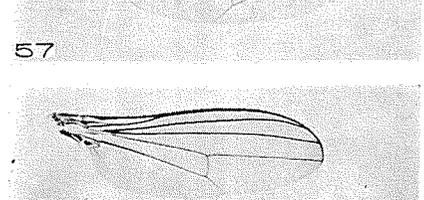
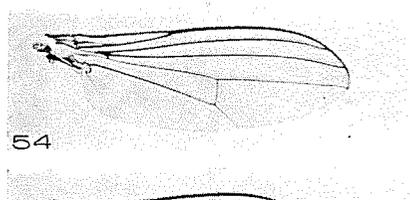
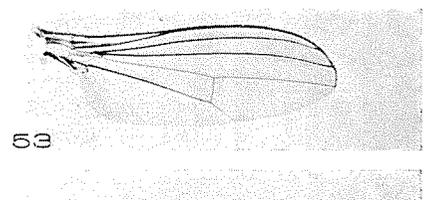
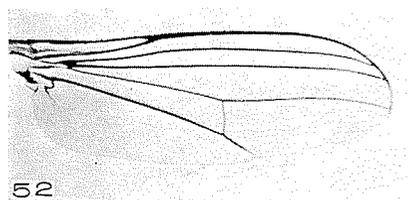
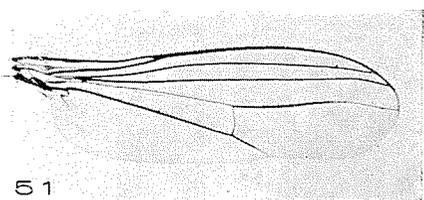
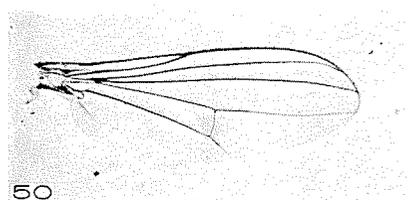
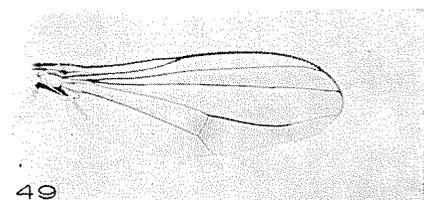
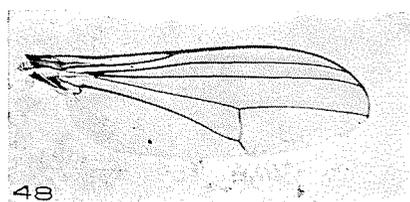
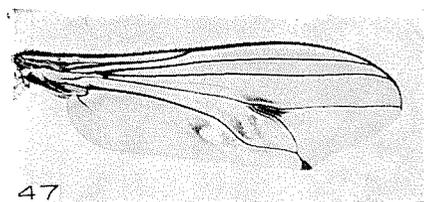


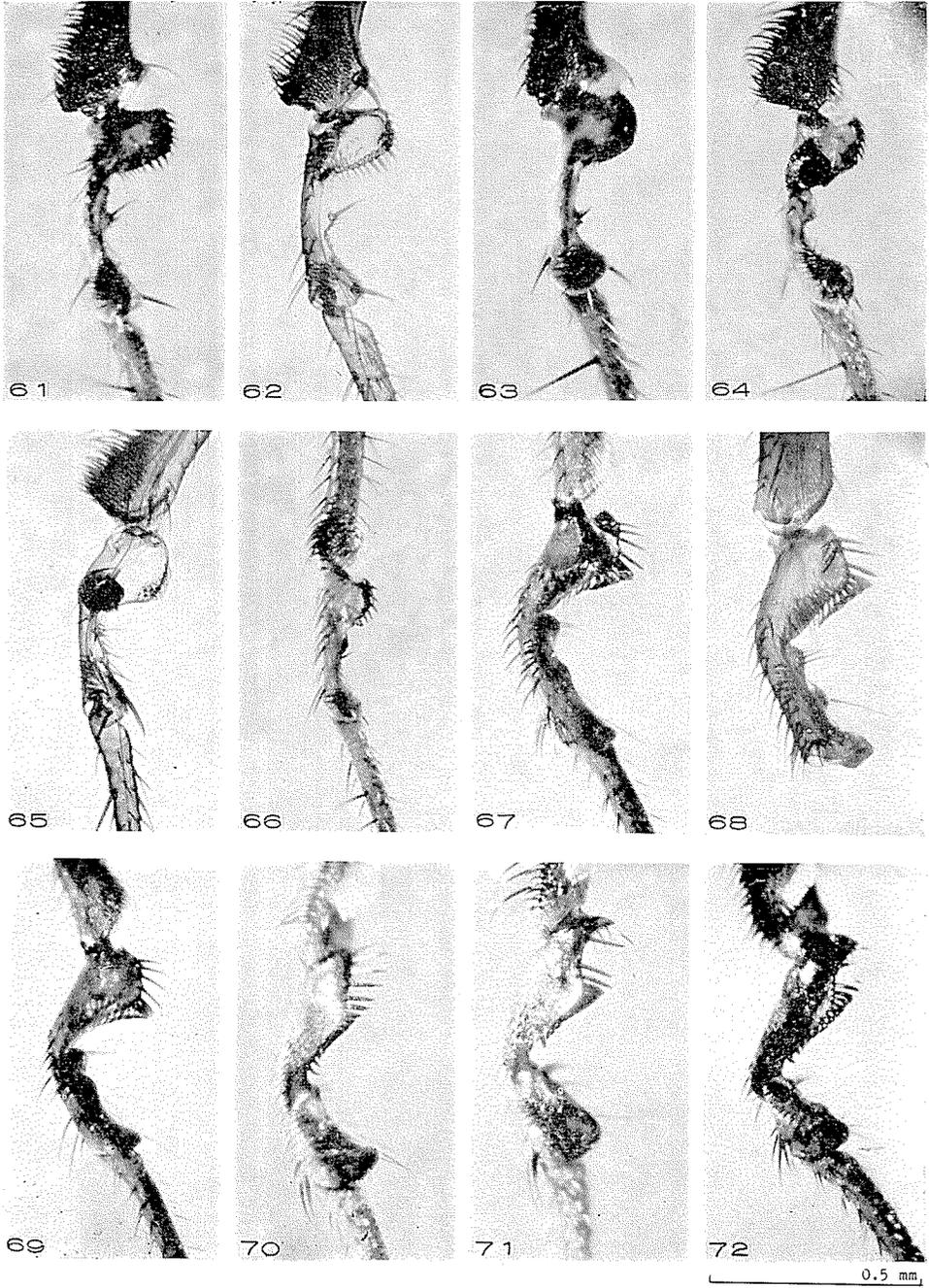


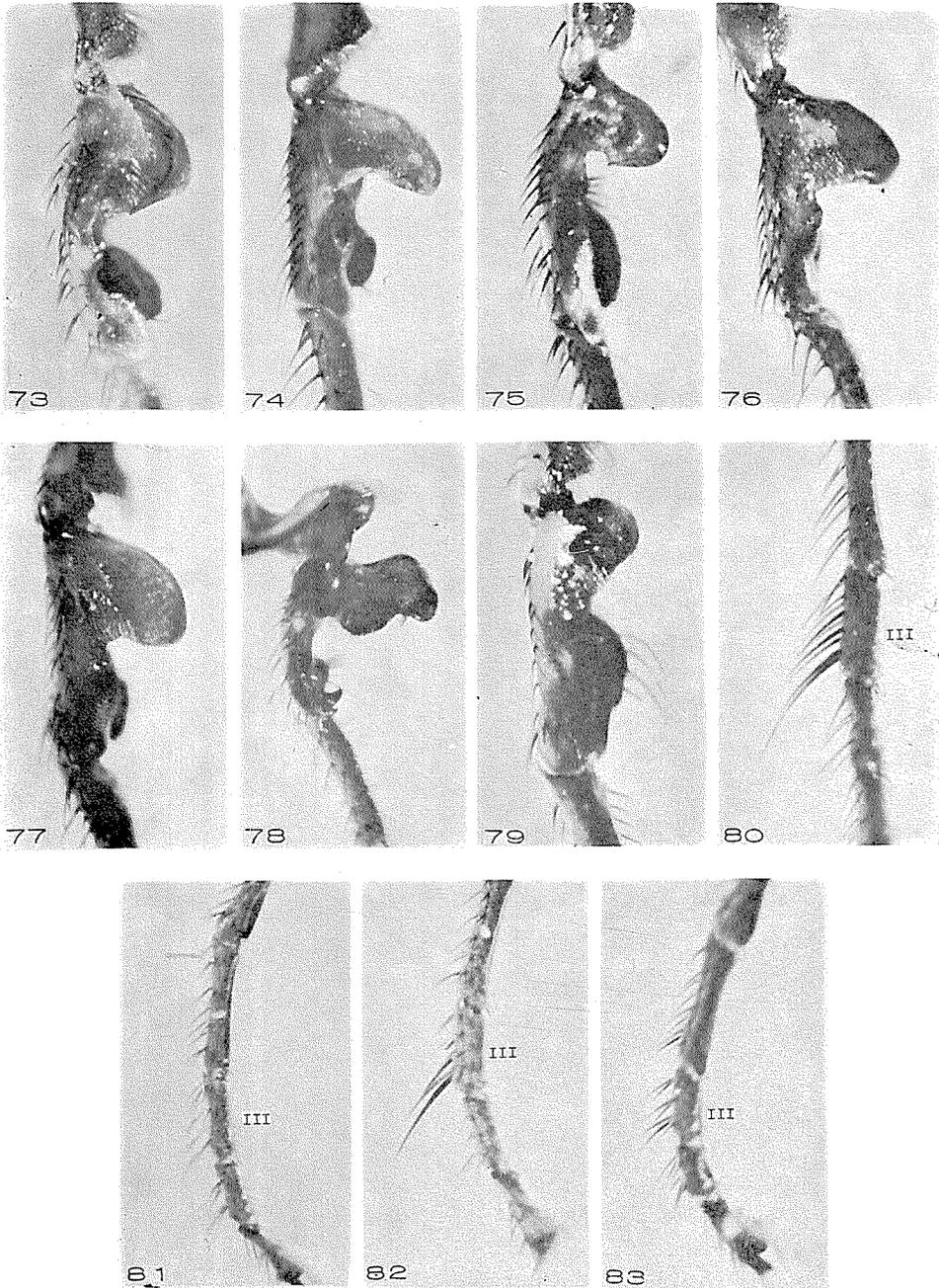


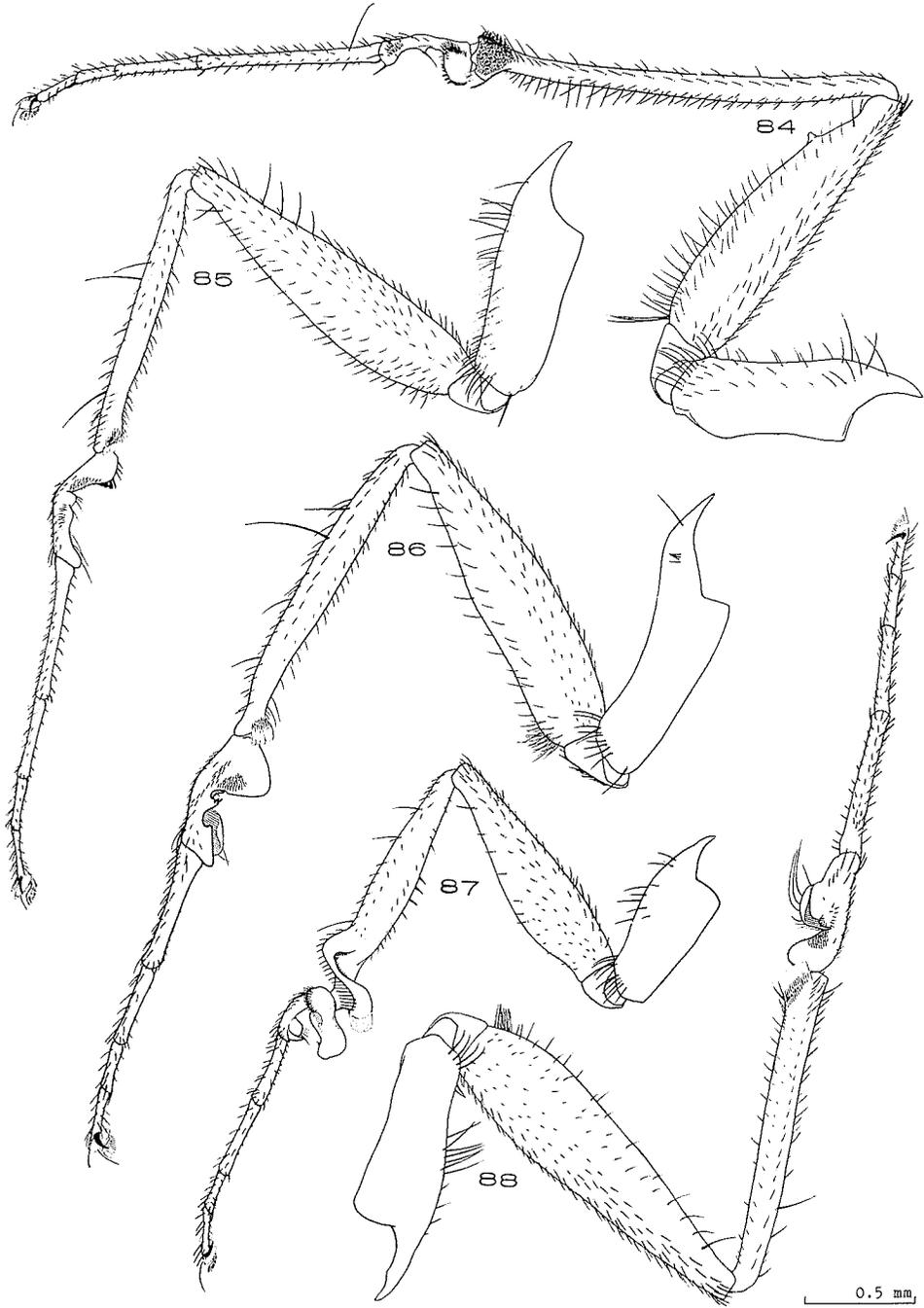


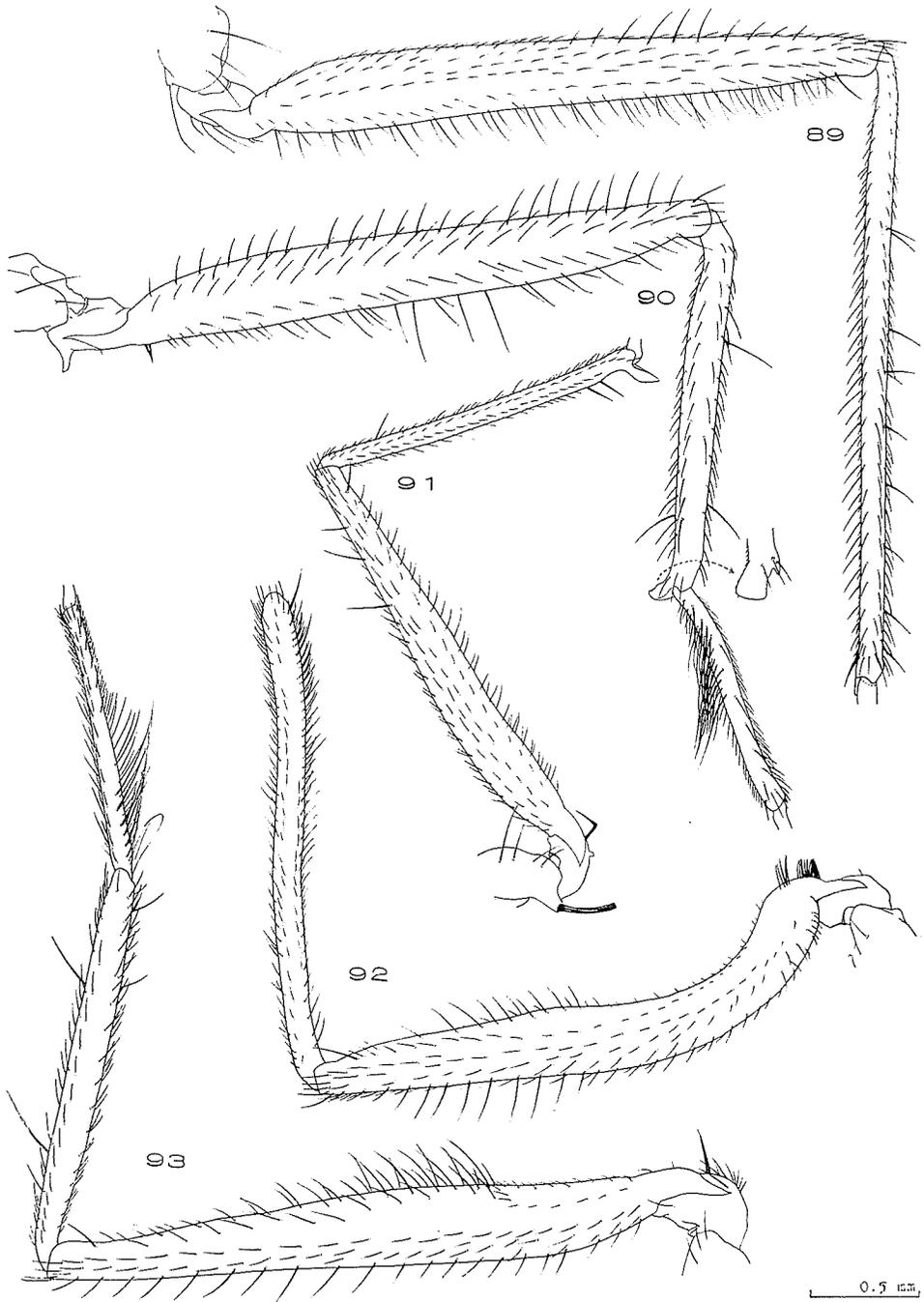


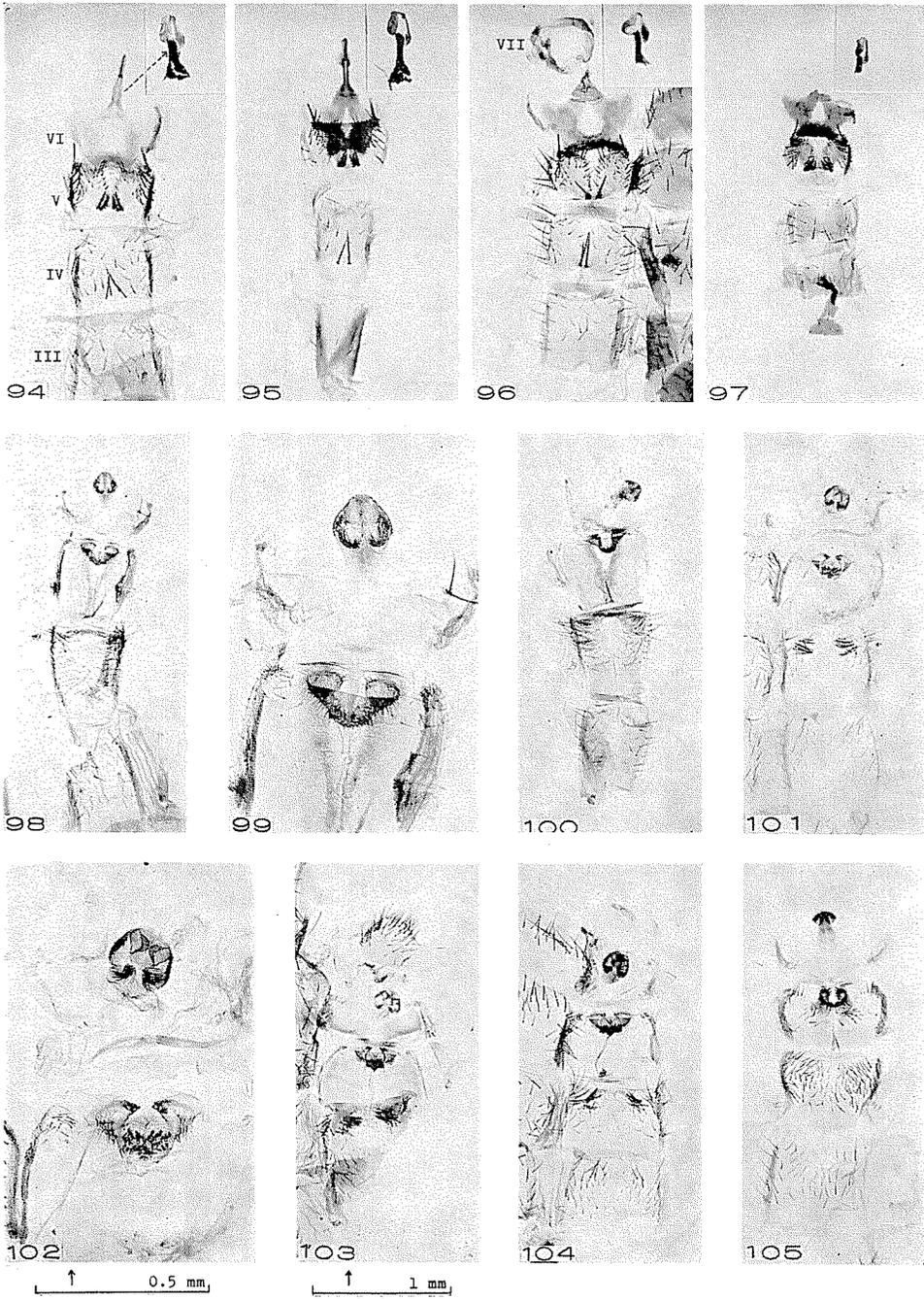


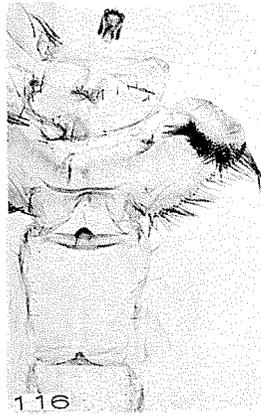
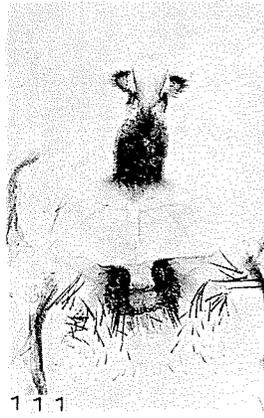
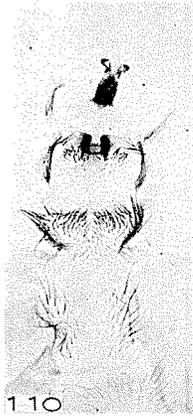
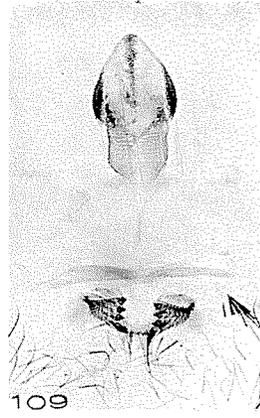


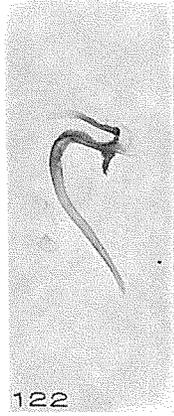
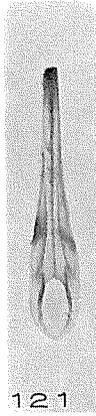
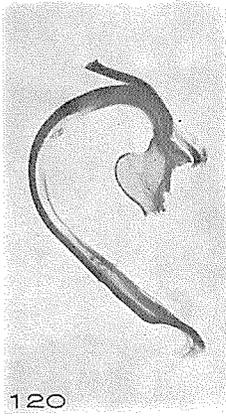
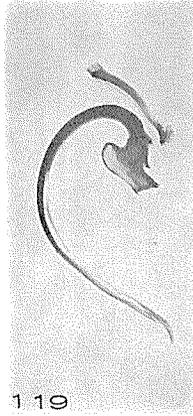






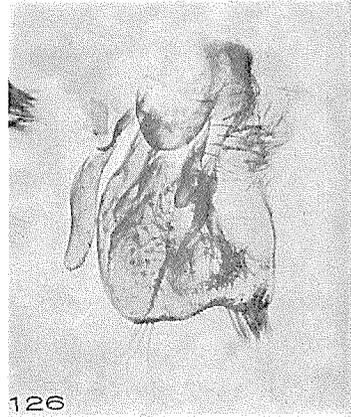
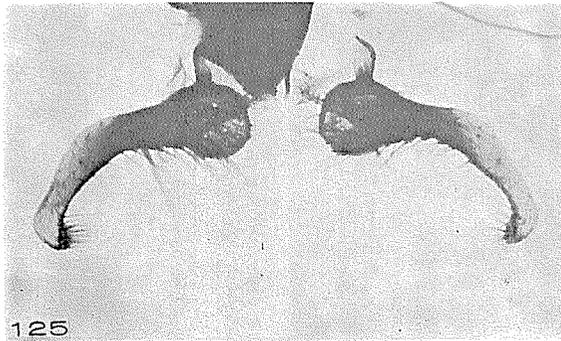
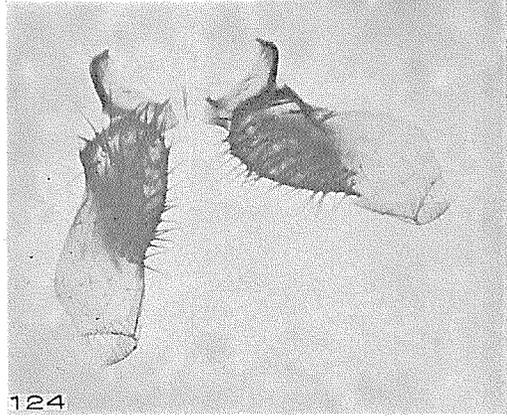
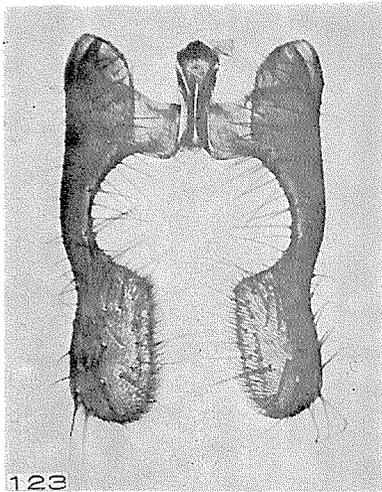


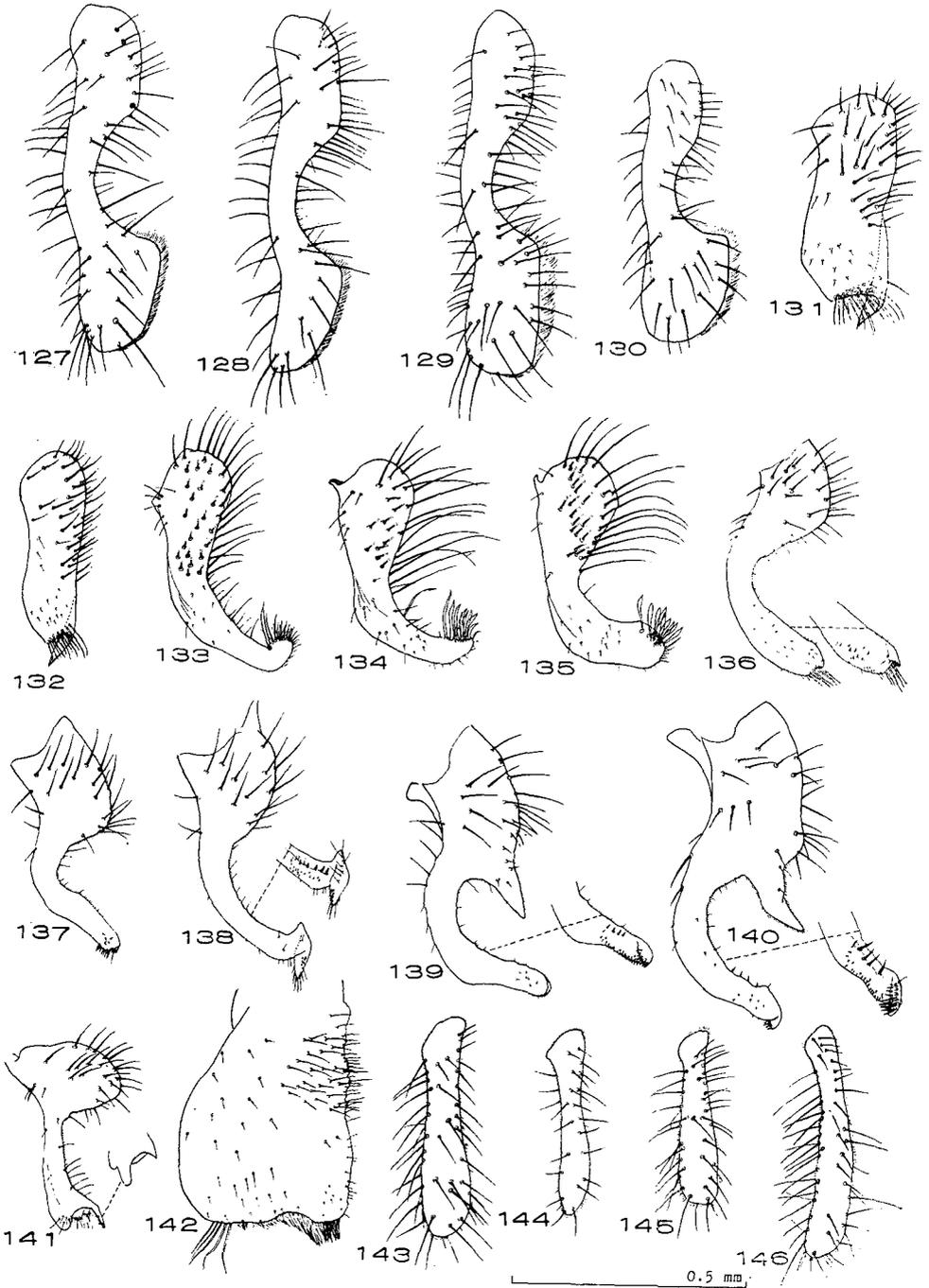


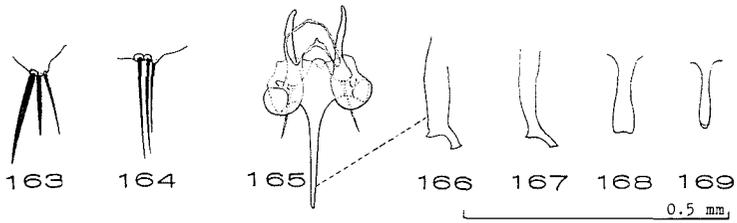
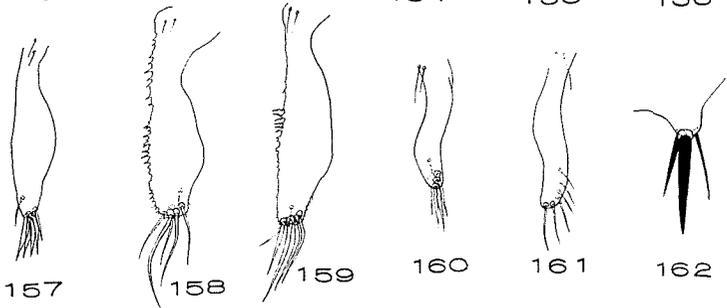
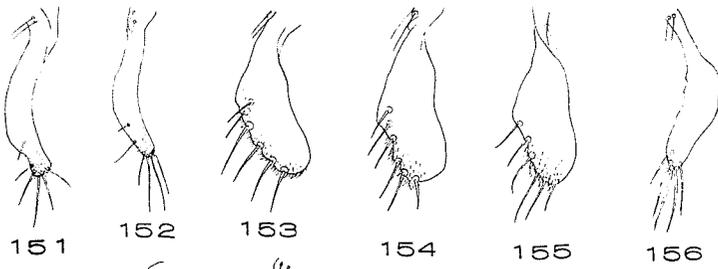
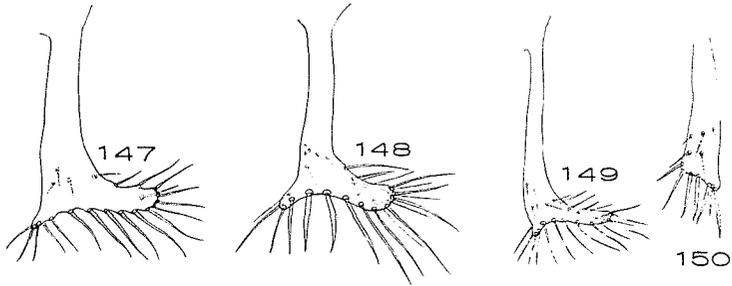


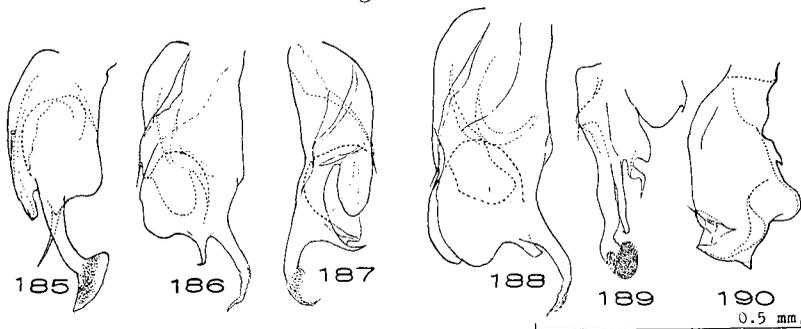
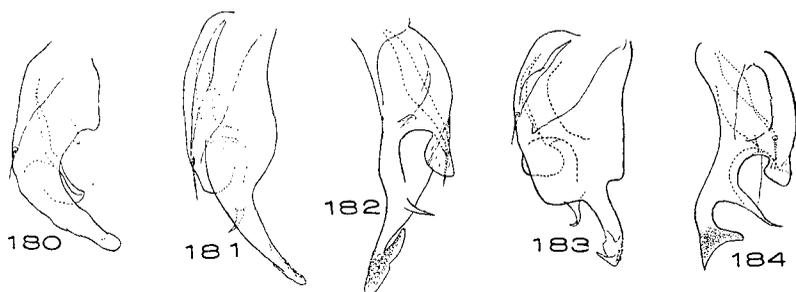
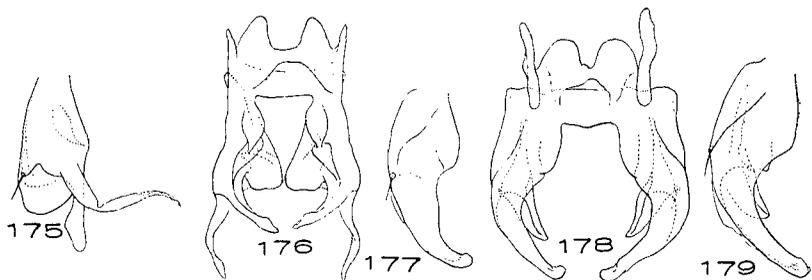
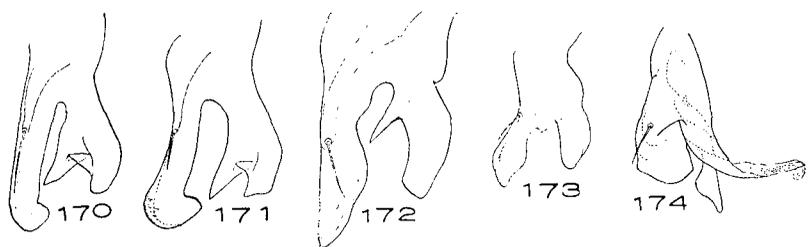
↑ 0.5 mm

↓ 0.5 mm









### Errata

- Vol. 26, No. 1, 1963, p. 37, line 11 from bottom, for "ing" read "shading".  
Vol. 26, No. 2, 1963, p. 79, line 10 from top, for "apically" read "basally".  
Vol. 26, No. 2, 1963, p. 79, line 15 from top, for "basally" read "apically".  
Vol. 27, No. 2, 1965, p. 82, line 9 from top, for "VII" read "VIII".  
Vol. 27, No. 2, 1965, p. 98, between lines 3 and 4 from bottom add  
"Distribution: Marshall Is. and Caroline Is."  
Vol. 27, No. 2, 1965, p. 114, line 10 from bottom; p. 115, line 15 from  
top; p. 116, line 7 from bottom; p. 117, line 17 from top and line 3 from  
bottom; p. 118, line 14 from bottom; p. 119, line 12 from bottom; p. 121,  
lines 8 and 11 from top; p. 122, lines 5 and 8 from top, for "ocellus" read  
"eye".

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