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THE PHORID FLIES OF GUAM

By G. E. BOHART

THE primary purpose of this paper is to make available the names of several species of Phoridae (Diptera) whose biology and life history will be discussed in a paper (to be published by the Navy) on the filth-inhabiting flies of Guam. In it will appear biological notes and descriptions and illustrations of the early stages of many of the phorids herein described.

Except for those species reared from filthy environments no particular effort was made to collect phorids. Consequently, several of the species described are represented by unique specimens, and it may be inferred that numerous species remain to be discovered on the island. Because of the paucity of material I felt it advisable to illustrate the species as fully as possible, so that if some of these described as new prove to be already named, or if the discovery of many more species reduces the value of the key, the figures will still prove useful. In most cases, in view of the full illustrations, descriptions have been kept at a minimum size.

The field work in connection with this study was done on Guam at the field laboratories of Naval Medical Research Unit No. 2 under the direction of Commodore Thomas J. Rivers. The taxonomic work and the preparation of the paper were done at the U. S. National Museum under the auspices of the Research Division of the Bureau of Medicine and Surgery. I am much indebted to Lt. (jg) J. L. Gressitt, who worked with me on Guam, for some of the rearing and collecting of specimens and for carrying on the work after I left the island. The men at the National Museum have done their usual utmost to provide facilities and assist me whenever necessary.

Phorids, in relation to the insect fauna as a whole, are prominent on Guam both as to species and individuals. The cosmopolitan *Megaselia scalaris* (Loew) was abundant in all inhabited areas and bred freely in such diverse materials as green cornstalks, rotting coconuts, carrion, and human excrement. It was almost impossible to keep it from contaminating our cultures of other flies, and it bred freely in fresh stools under examination for intestinal parasites by the parasitology laboratory. The highly degenerate *Chonocephalus subglaber* had the habit of swarming on decaying fruit by thousands, and it could nearly always be taken in decaying wood. Collections of rotting shells buried just beneath the ground surface furnished breeding material for six species of phorids, including two of the wingless genus *Puliciphora*.

The figures are from drawings by the author. For subjects I used specimens in dilute alcohol after softening (but not decolorizing) in KOH. The genitalia were drawn from dissected specimens in alcohol and checked again for accuracy of details with the same specimens mounted in euparal.

The holotypes and allotypes of the new species are in the collection of the U. S. National Museum. Paratypes will be deposited in the California Academy of Sciences, the collection of the Hawaiian Sugar Planters' Association, and the author's collection.

Genus MEGASELIA Rondani

MEGASELIA (MEGASELIA) SETIFEMUR, new species

FIGURE 38

Holotype, male.—Length 1.2 mm.; length of wing 1 mm.; frons, dorsum of thorax, abdomen, and halteres uniformly piceous-brown; pleura, venter of abdomen, and legs pale testaceous except for darker apices of hind femora. *Head*: Frontal bristles thick but not long (not more than two-thirds as long as width of frons); antiales and lower frontals close together and both lower than upper supra-antennals, which are about twice as long and far apart as the lower supra-antennals; cheeks with two strong bristles at lower angle and two moderate ones at level of antennal insertion; frontal hair rather sparse and long. *Thorax*: Dorsal hairs short but strong, becoming sparse and bristly toward scutellum; posterior edge of scutum with four bristles, the outer ones about one-half longer than the inner; scutellum with a strong inner, apical pair of bristles about as strong as the outer scutal ones, and a very weak outer basal pair less than half as long as the inner ones; pleura bare except for three bristles on ventral margin of propleuron; anterior spiracles included in separate sclerites. *Legs*: Of moderate length, the posterior tibiae and tarsi about as long as wings; posterior tibiae with a single dorsal row of setae inside the dorsal hair fringe; posterior metatarsi with two inner bristles some-

what longer than the others along the same row; ventral margin of posterior femora with about four basal hairs, much longer than any toward the apex. *Wings*: Membrane lightly infuscated, costal bristles long and sparse; wings otherwise bare except for a few bristles basally on posterior margin; veins placed as shown in figure 38. *Abdomen*: Tergites almost uniformly brown, slightly paler basally and medially and very sparsely pubescent, the hairs mostly in patches laterally and along posterior margins; genitalia small, the apical lamella divided into two parts, the upper part with scattered hairs as long as the pair of terminal bristles on the lower part.

Holotype (unique) (U. S. N. M. No. 57990): Pago River Valley, Guam, June 1945, swept from dense jungle vegetation on a steep slope (G. E. Bohart).

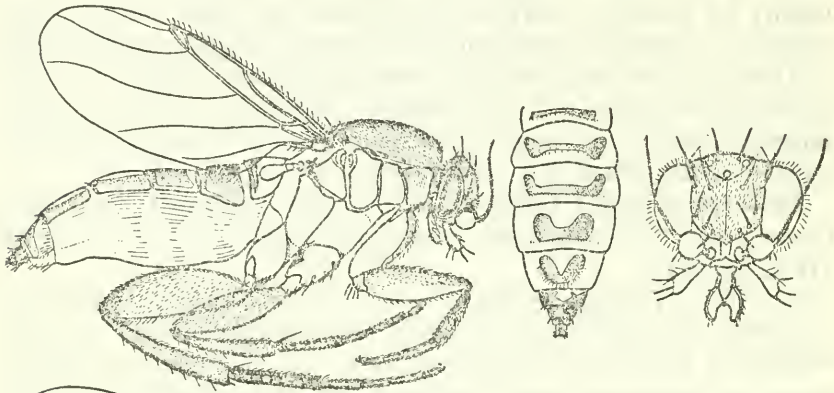
Remarks.—This species is similar in coloration and costal fringe of the wing to *parabasiseta* but lacks mesopleural bristles and any bristles on the third longitudinal vein. It runs close to *equisetula* Brues and *unisetosa* Brues in his key to the Philippine species (1936) but differs from the former in having lighter color, longer and sparser costal wing fringe, and shorter frontal bristles. It differs from *unisetosa* in lacking a bristle on the base of the radial sector vein and having four bristles on the posterior scutal margin. It runs to couplet 55 in Malloch's key to the *Megaselia* in the U. S. National Museum (1912) but differs from either *conspicualis* Malloch or *inornata* Malloch by having a normal costa and brown halteres. The male genitalia and basal ventral hairs of the hind femora will probably serve to characterize this species.

MEGASELIA SUIS, new species

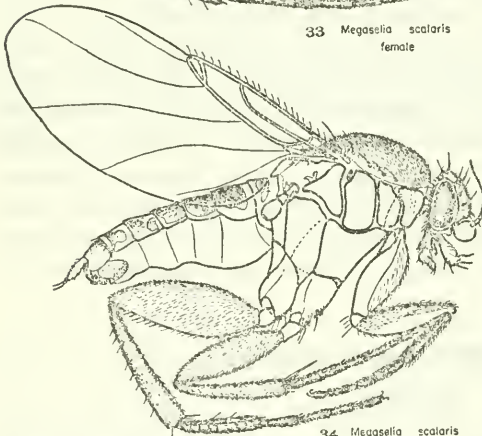
FIGURE 36

Holotype, male.—Length 1.5 mm.; length of wing 1.4 mm.; body yellow; frons somewhat darkened above; scutum testaceous; abdomen yellow, with fourth tergite dark except ventrally, second and third tergites dark apically and laterally; genitalia dark basally; hind femora strongly darkened apically; wings almost hyaline. *Head*: Frontal bristles exceptionally long and slender; antiales as close to supra-antennals as to lower frontals; inner supra-antennals only half as long as outer; antennal arista no longer than head height; palpi with weak bristles basally in addition to four outwardly directed apical or subapical ones and an inwardly directed one; genal angles with two strong bristles. *Thorax*: Dorsal pubescence short and close, becoming bristly posteriorly; posterior scutal margin with a pair of inner bristles over half as long as the usual outer ones; bristles along outer margin of scutum as long as free end of $R_{1,2}$; scutellum with a pair of long posterior bristles and a pair of very reduced hairlike ones

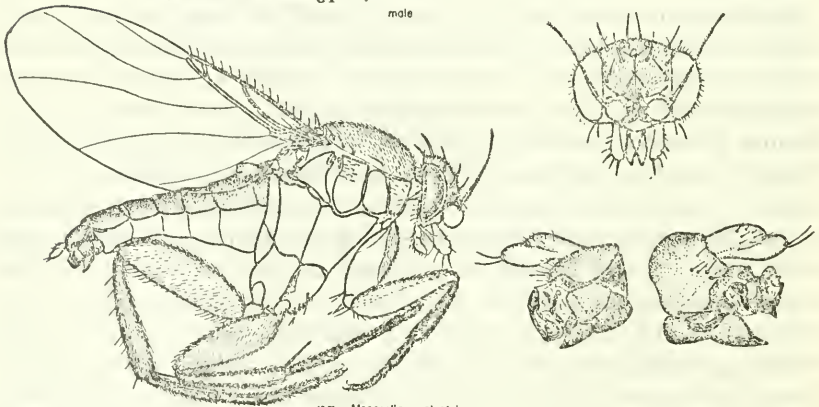
anteriorly; pleura bare except for four ventral bristles and a postero-dorsal patch of pubescence on the propleura. *Legs*: Hind tibiae and tarsi together a little longer than wings and with relative lengths of



33 *Megaselia scalaris*
female



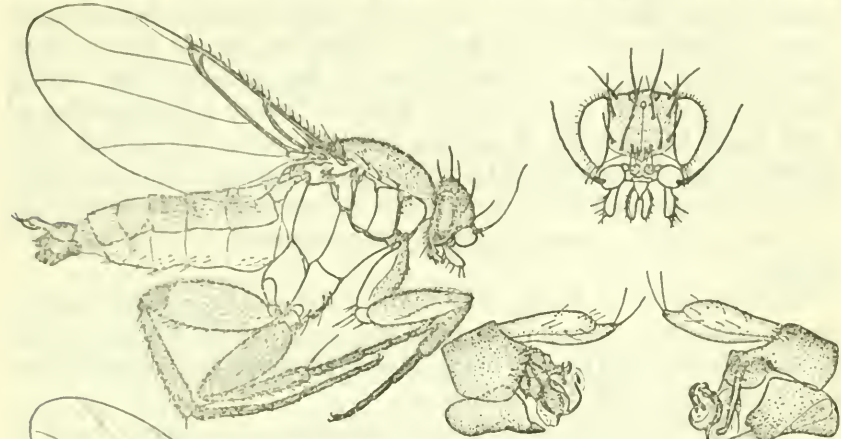
34 *Megaselia scalaris*
male



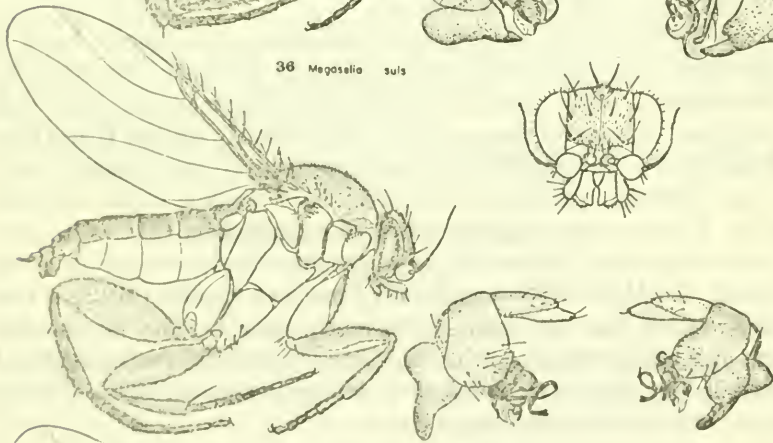
35 *Megaselia stuntzi*

FIGURES 33-35.—Phoridae of Guam: 33, Female of *Megaselia scalaris* (Loew); 34, male of *Megaselia scalaris*; 35, *Megaselia stuntzi*, new species,

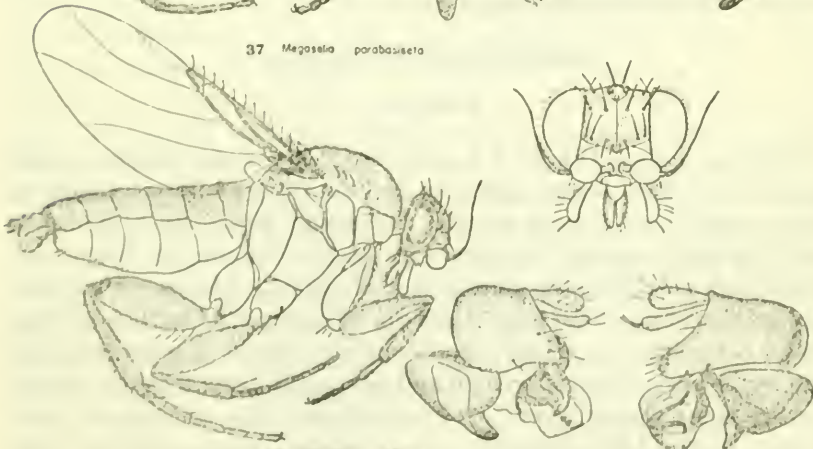
2: 3: 5; hind tibiae with a single dorsal row of 11 setae along their inner sides; midtibiae with a weak dorsal row of setae; fore coxae with three strong apical bristles, the longest as long as scutellar bristles; ventral



36 *Megaselia suis*



37 *Megaselia parabasiseta*



38 *Megaselia setifemur*

FIGURES 36-38.—Phoridae of Guam: 36, *Megaselia suis*, new species; 37, *Megaselia parabasiseta*, new species; 38, *Megaselia setifemur*, new species.

margins of hind femora with hairs of apical third longer than elsewhere. *Wings*: About two-fifths as broad as long; setae along costa moderately long, becoming more upright beyond point midway from humeral cross vein to apex of R_1 ; costa nearly two-thirds as long as wings; placement of veins as shown in figure 36; second vein without setae basally. *Abdomen*: Lateral areas of first tergite rather closely covered with minute hairs; tergites 3 to 5 each with lateral patches of a few small hairs; sides of tergites 5 and 6 uniformly haired, with distinct apical fringe, especially on tergite 6; sternites 3 to 6 ventrally with rather numerous setae or coarse hairs; genitalia of moderate size, the lamella large, creamy in color, with terminal bristles long and delicate.

Holotype (U. S. N. M. No. 57991) and three paratype males: Agana, Guam, June 1945, reared from fresh pig dung (G. E. Bohart). One paratype male: Pago River, Guam, June 1945, swept from dense foliage near a garbage dump (G. E. Bohart).

Remarks.—On Guam this species resembles only *scalaris* Loew in general appearance but can be separated by its greater extent of yellow on the abdomen, more confined propleural pubescence, and more delicate terminal bristles on the genitalia. It is close to *sauteri* Brues from the Philippines (Brues, 1936) but has longer costal setae, darker palpi and legs (grayish instead of whitish), and weaker supra-antennal bristles. It runs close to *safunae* Malloch from Samoa (Malloch, 1935) but differs by having yellow frons and antennae and more yellow on the abdomen. In Malloch's key to North American species (1912) it runs to *subflava* but has narrower costal cells, more bristles on the propleura, and weaker hairs on the sides of second abdominal tergite. It is much larger than *bisecta* Brues to which it runs in Brues's key, is a deeper yellow and has a longer costa.

MEGASELIA STUNTZI, new species

FIGURE 35

Holotype, male.—Length 1.7 mm.; length of wing 1.4 mm.; body dark brown above, brown laterally and ventrally, without yellow or creamy areas; hind femora apically darkened. *Head*: Frontal bristles relatively short but very thick and arranged as in figure 35; lower margin of head, seen from the side, with six bristles. *Thorax*: Dorsal pubescence short and close; lateral margin of mesonotum with four stout bristles before the wing base; propleura with about 12 scattered small hairs in the upper posterior third and two small bristles at the ventral corners; posterodorsal portion of mesopleura with a patch of about 12 short hairs a little stronger than propleural ones; scutellum with two pairs of strong subequal bristles; posterior scutal margin with two pairs of bristles, the inner nearly as long as the outer. *Legs*:

Hind tibiae and tarsi together distinctly longer than wings; inner posterior margins of hind tibiae with eight bristles; hind femora with basal ventral bristles longer than apical ventral ones; mid coxae with three strong bristles. *Wings*: Slightly yellowish, with costal fringe and placement of veins as shown in figure 35; second vein without setae. *Abdomen*: Uniformly blackish brown; segments nearly bare except for apical fringes and for small lateral patches on first two segments; sternal hairs small and few; genitalia small, with a short lamella, bearing slender lamellar bristles; genitalic details as in figure 35.

Holotype (U. S. N. M. No. 57992) and one paratype male: Point Oca, Guam, June 21, 1945, reared from dead mollusks (G. E. Bohart and J. R. Stuntz).

Remarks.—This species resembles *setifemur* but is larger and has mesopleural vestiture. It also resembles *parabasiseta* but has no dominant mesopleural bristle and has a much shorter costal wing fringe. In Malloch's key to the Phoridae of Samoa (1935) it runs to *M. pacifica* but has the first longitudinal vein ending closer to the second than to the humeral cross-vein.

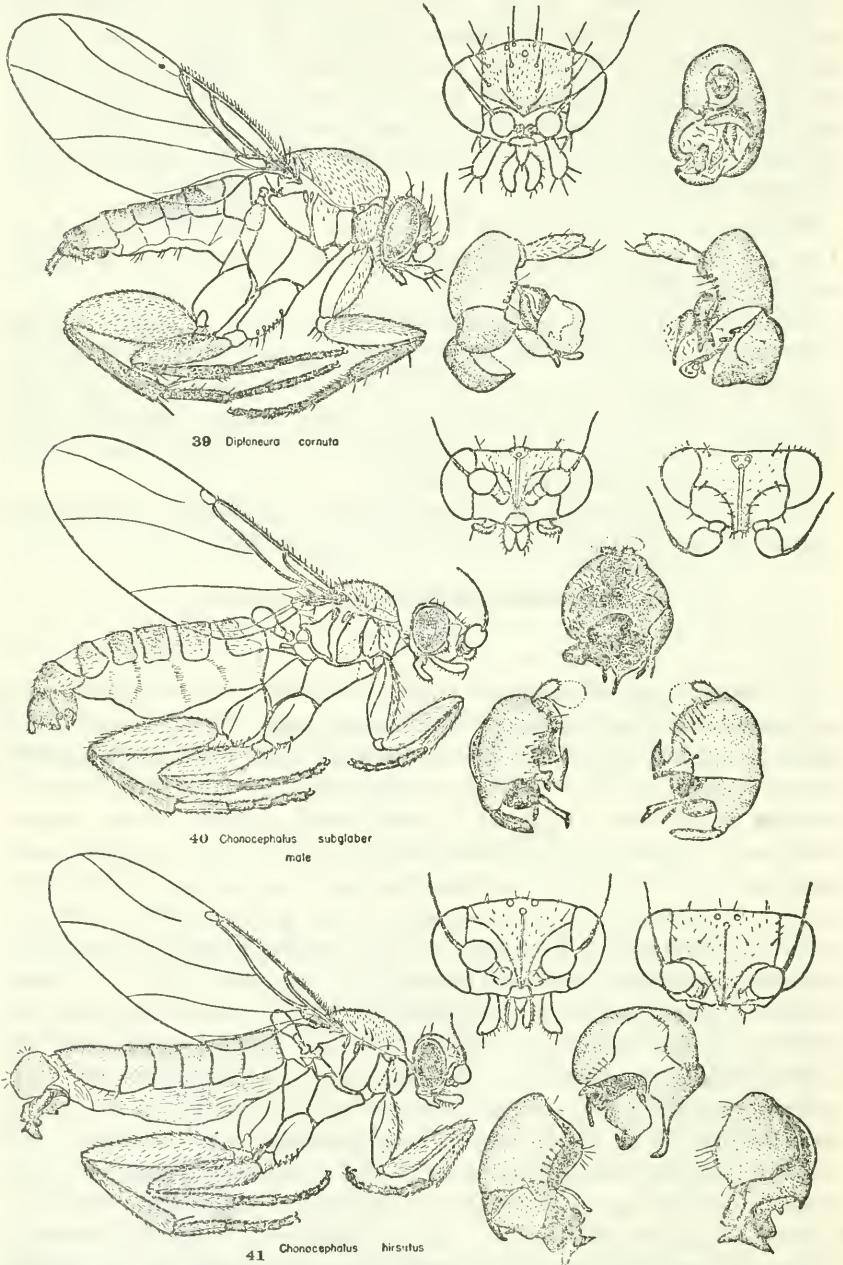
The fly is named for J. R. Stuntz, who did much of the rearing work on Guam for our studies on filth-inhabiting flies.

MEGASELIA PARABASISETA, new species

FIGURE 37

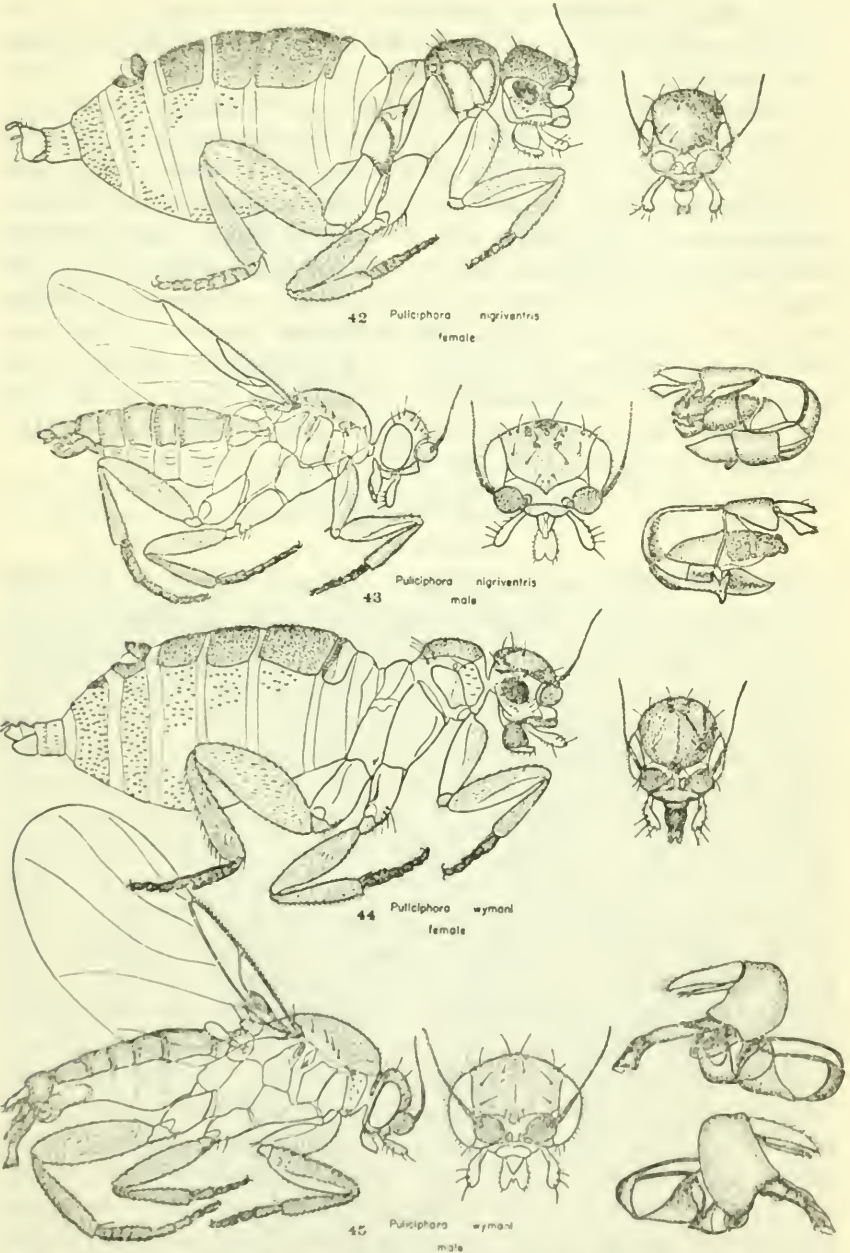
Holotype, male.—Length 1.1 mm.; length of wing 0.9 mm., body color a uniform dark brown, palpi, pleura, sides of abdomen, and legs light brown but not yellow; wings distinctly brownish, frons blackish brown; apex of hind femora scarcely darkened. *Head*: Frontal bristles moderately long and exceptionally thick; lower supra-antennals weaker than but extending as far forward as upper ones; antiales much closer to lower frontals than to upper supra-antennals; palpi very broad, with five roughly similar major bristles extending outward from outer, forward margin; labium greatly expanded in softened specimen; antennal arista no longer than height of head; cheeks apparently with only one strong bristle at genal angle and with three weak ones farther forward. *Thorax*: Dorsal hairs short but strong, becoming sparse near wing and bristly toward posterior margin; scutum and posterior edge of scutellum each with only one pair of bristles; propleura with a single dorsal posterior row of setae and two ventral bristles; mesopleura with dorsal posterior corners bearing a patch of small setae in addition to a stronger bristle; anterior spiracles enclosed in a separate sclerite. *Legs*: Moderately long, the posterior tibiae and tarsi about as long as the wings and with relative proportions of 3:4; posterior tibiae with a single dorsal row of only four or five

setae; ventral margin of posterior femora with hairs of about equal length throughout, a little weaker in the middle; metatarsi without outstanding setae on the fringes. *Wings*: Rather narrow, about one-



FIGURES 39-41.—Phoridae of Guam: 39, *Diploneura cornuta* (Bigot); 40, male of *Chonocephalus subglaber*, new species; 41, male of *Chonocephalus hirsutus*, new species.

third as broad as long and with hairs of costal fringe sparse, about 11 in each row; basal portion of R_{1+2} bearing on the inner side a seta about as long as the costal setae; veins placed as shown in figure 37.



FIGURES 42-45.—Phoridae of Guam: 42, Female of *Puliciphora nigriventris*, new species; 43, male of *Puliciphora nigriventris*; 44, female of *Puliciphora wymani*, new species; 45, male of *Puliciphora wymani*.

Abdomen: Tergites uniformly dark brown, sparsely hairy, the apical fringes not longer than hairs on other portions except on sixth tergite; genitalia small, aedeagus with a complex group of hornlike appendices; lamella single, with short terminal setae.

Holotype (unique) (U. S. N. M. No. 57989): Pilgo River, Guam, June 1945 (G. E. Bohart).

Remarks.—This species resembles *setifemur* in general appearance but has mesopleural vestiture. It runs to *arizonensis* Malloch or *monticola* Malloch in his key (1912) but has a longer costa than *arizonensis* and differs from *monticola* in having the first two divisions of the costa subequal instead of 2:1. It also differs from *monticola* in having the outer supra-antennals only one-third as far apart as the width of the frons. It runs to *galugensis* Brues or *laluwensis* Brues in the key to Philippine species (1936) but has narrower wings than *laluwensis* and the seta on the base of R_{1+2} , which is missing in the latter. It differs from *galugensis* in its sparse costal bristles and darker color. It is apparently similar to *basiseta* from Samoa (Malloch, 1935) (hence its name) but has mesopleural vestiture.

MEGASELIA SCALARIS (Loew)

FIGURES 33, 34

Phora scalaris LOEW, Berlin Ent. Zeitschr. (Centuria VII), vol. 10, p. 53, 1866.

Length 1.6 to 3 mm.; length of wing of a 3-mm. specimen 2.8 mm., body yellowish (frons of male sometimes largely black) with indistinct brownish markings on the scutum, forming a pair of dorsal longitudinal stripes, another pair of more lateral and posterior stripes, and several angular spots anterior to these; abdomen marked as illustrated but sometimes more extensively dark so that the yellow is constricted to basal and apical bands on the second and third tergites and basal central spots on the fourth and fifth tergites. The first tergite and the apical lobes of the last always remain largely yellow; palpi, halteres, pleura, and legs (except for apices of hind femora) creamy yellow. *Head:* Frontal bristles long and moderately heavy, the supra-antennals about equidistant and the outer ones only a little stronger than the inner; antiales a little higher than the outer supra-antennals and much lower than but nearly as far apart as lower frontals; proboscis of females short and fleshy. *Thorax:* Propleura with numerous scattered hairs in addition to a dorsal posterior fringe and two to four ventral bristles; pleura otherwise bare; posterior margin of scutum with single pair of long slender bristles and scutellum with two pairs of subequal bristles; scutal pubescence dense and composed of very small hairs; halteres yellow, sometimes with darker apical spot. *Wings:* Costa distinctly longer than succeeding length of wing; veins bare except for moderately short and dense costal fringe and the usual bristles on the basal posterior margin; costa from

humeral cross vein to second longitudinal slightly longer than from the latter to apex of third longitudinal. *Legs*: Midtibiae with a weak fringe of setae outside the dorsal hair fringe as well as a stronger one inside; hind tibiae with an outer fringe composed of 9 to 12 rather strong setae; fore tibiae setose dorsally but without a definite row of setae; hind tibial spur of male nearly as long as the metatarsus. *Abdomen*: Tergites sparsely covered with short, stiff hairs laterally and with long ones apically on tergites 5 to 7. Genitalia as figured, the lamella yellow with strong terminal bristles.

This is a cosmopolitan species that breeds in a wide variety of materials. It is easily distinguished from the other species on Guam by its color pattern, types of pleural pubescence, and the male genitalia.

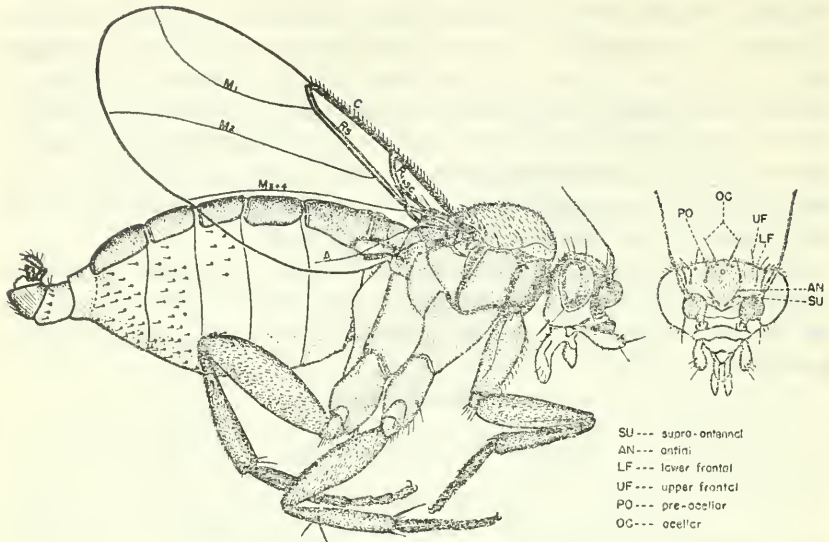
Genus *DIPLONEURA* Lioy

DIPLONEURA CORNUTA (Bigot)

FIGURE 39

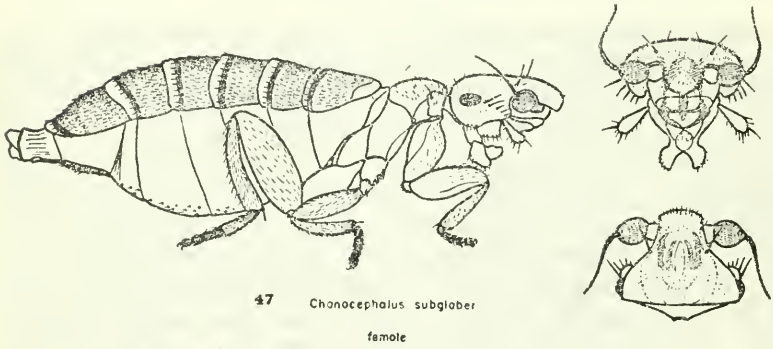
Phora cornuta BIGOT, in de la Sagra's "Histoire physique, politique et naturelle de l'île de Cuba" (French ed.), p. 827, 1857.

Length 1.4 to 2.1 mm.; length of wing of a 3-mm. specimen 0.95 mm.; color yellowish brown; frons blackish above; thorax with median and lateral brown areas; scutellum brown; abdomen yellow with blackish areas laterally and apically on tergites 2 to 5 and covering most of 6 and 7; palpi, proboscis, pleura, and legs rather clear yellow; wings hyaline. *Head*: Frons with long slender spines, averaging over half as long as width of frons; spacing as shown in figure 39; antennal arista slightly longer than head width; proboscis of female narrow, chitinized, extending one-third its length beyond palpi; palpi with five long apical and subapical spines, fourth from apex longer than antial bristles and directed downward; checks with two long bristles near genal angles and a single long one at level of antennal insertions. *Thorax*: Dorsum broader than long, with five bristles along each lateral margin, the longest on posterolateral corner of scutum; apical margin of scutum otherwise with one pair of long bristles and two much shorter inner pairs of hairlike ones; scutellum with one pair of long bristles on the posterolateral corners. Pubescence of pleura as shown in figure 39. *Legs*: Posterior tibiae with dense dorsal fringe of hair and a series of weak setae inside and hidden by the dorsal fringe; anterior tibiae with four setae on outer margins; inner sides of midtibiae with hairs arranged in transverse series and with apical spurs nearly as long as metatarsi; posterior metatarsi with two outstanding setae before the middle along ventral margins. *Wings*: With whitish microtrichia; placement of veins and costal fringe as shown in figure

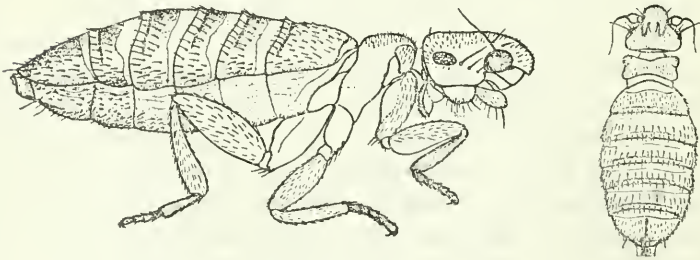


46 *Parafannia molluscovora*

SU --- supra-antennal
 AN --- antenna
 LF --- lower frontal
 UF --- upper frontal
 PO --- pre-ocellar
 OC --- ocellar



47 *Chonocephalus subglaber*
 female



48 *Chonocephalus hirsutus*
 female

FIGURES 46-48.—Phoridae of Guam: 46, *Parafannia molluscovora*, new species; 47, female of *Chonocephalus subglaber*, new species; 48, female of *Chonocephalus hirsutus*, new species.

39. *Abdomen*: Tergites 1 to 5 practically bare, 6 and 7 with sparse general pubescence and long apical fringe hairs; sternites distinctly setose, the longest ones on sternites 5 to 7 nearly as long as frontal bristles; ovipositor reddish with dorsal and ventral pairs of hairs as long as frontal bristles.

This tropicopolitan species is the only representative of its genus so far found on Guam. It has been recorded from southern Europe, Asia, and southeastern United States. The figures of the male genitalia should serve to distinguish it from other species, if they should be found.

It was reared on Guam from decaying mollusks and swept from vegetation along the seacoast.

Genus CHONOCEPHALUS Wandolleck

CHONOCEPHALUS HIRSUTUS, new species

FIGURES 41, 48

Holotype, female.—Length 1 mm.; body brown above, testaceous beneath, with a fine transverse subapical dark brown streak extending about three-fourths the distance across each abdominal tergite. *Head*: Eyes with about 12 facets; sides of head with four bristles anterior to eyes, the posteriormost about one-third as long as head; palpi about as broad as antennae and with terminal bristles as long as palpi. *Thorax*: Propleura with numerous minute hairs but no dominant one; notal pubescence short and erect. *Legs*: Sparsely hairy; forelegs with first tarsal segment a little shorter than next two combined and about half as long as first hind tarsal segment. *Abdomen*: Only slightly darker above than below; tergites 2 to 5 with two transverse rows of setae, except laterally where there are about 10 setae on each segment as strong as the ones in the transverse rows; fifth and sixth sternites with small setae laterally; sternites 4 to 7 with ventral setae, the apical ones on sternite 7 longer than setae in the tergal rows; spatula-shaped sternal structure with "handle" about three times as long as "blade" and with "blade" about as wide as long.

Allotype, male.—Length 1.1 mm.; length of wing 1 mm.; blackish brown, somewhat velvety; antennae, palpi, pleurae, and legs brown; wings lightly infuscated. *Head*: Bristles weak, the postocellars and lowermost frontals the strongest; median groove of frons narrow, not dividing the lower portion into two widely separated ridges. *Thorax*: Dorsal pubescence sparse and fine; posterior scutal margin with four bristles, the basal pair about half as long as the apical. Lateral vestiture as in figure 41. *Wings*: Veins very delicate; costal fringe composed of many short, weak setae; humeral cross vein and subcosta absent. *Abdomen*: First tergite as long as second

and sixth twice as long as fifth; tergal pubescence minute; genitalia large, the right side with a long bootlike process; the left side with its hair fringe mainly confined to a single row close to posterior border.

Holotype female and allotype male (U. S. N. M. No. 57994): F. E. A. Farm, near Agana, Guam, October 1945, female taken from pig dung, male swept from above mud in the pig pen (G. E. Bohart). Paratype male: From light trap, Point Oca, Guam, June 1945 (G. E. Bohart and J. L. Gressitt).

Remarks.—The two specimens of males (both mounted in euparal) vary in the extension of the aedeagus and the expansion of the wings, but this is due to mounting techniques. The allotype has one mesopleural bristle whereas the paratype has two. The holotype is mounted in euparal but is unfortunately somewhat collapsed and shrunken. This species is close to *subglaber*, but the female has stronger and more numerous abdominal setae and a more uniform abdominal color. The male genitalia also differentiates it from *subglaber* and from other species for which genitalia have been described or figured.

CHONOCEPHALUS SUBGLABER, new species

FIGURES 40, 47

Holotype, female.—Length 0.9 mm.; dark brown to blackish brown above, brown laterally on thorax and creamy white laterally and ventrally on abdomen; abdominal tergites with broad, complete transverse preapical black bands containing pale circles at the bases of the fringe setae. *Head*: Eyes with about 15 facets; sides of head with five bristles anterior to eyes, the posteriormost about one-fourth as long as head; palpi narrower than antennae. *Thorax*: Propleura with a dorsal bristle in addition to scattered small setae. *Abdomen*: Tergal pubescence scattered and minute except in preapical fringes; bases of fringe hairs completely enclosed in the broad preapical black stripes; sternites 4 to 6 with a few minute setae medially and sternite 7 with a median sclerite bearing short setae; spatula-shaped sternal structure with "handle" less than three times as long as "blade."

Allotype, male.—Length of wing 1 mm.; body color as in *hirsutus*. *Head*: Bristles moderately strong, those extending from the eye along the anterior margin of the frons and along the forward prolongation of frons gradually diminishing in strength but most of them as strong as postocellars or postverticals; median groove broad and shallow, separating forward prolongation of frons into widely separate ridges. *Thorax*: Hairs of propleura scattered and mesopleura with three setae. *Legs*: As in *hirsutus* but not so sparsely pubescent. *Wings*: Costal fringe short, with numerous hairs, those on basal half

distinctly longer and sparser than elsewhere. *Abdomen*: Sixth tergite only one and one-half times as long as fifth and with noticeable hairs in addition to apical fringe; genitalia without a strong bootlike process on left side but with a fingerlike process on the right side bearing an apical peg and a thick spine beyond the middle.

Holotype female (U. S. N. M. No. 57995) and 15 paratype females: Point Oca, Guam, June 1945, from breadfruit (G. E. Bohart and J. L. Gressitt).

Allotype male (U. S. N. M. No. 57995): Point Oca, Guam, June 1945 (G. E. Bohart and J. L. Gressitt); 3 paratype males: Point Oca, December 1945 (reared from bananas by J. L. Gressitt).

Remarks.—The female differs from *hirsutus* by its weaker abdominal pubescence and stronger transverse dark bands on the abdomen. It is almost identical with *buccalis* Malloch in the female but males are readily distinguishable by the genitalia. The male differs from *hirsutus* chiefly in the stronger frontal bristles and in the genitalia. It differs from the closely related *buccalis* Malloch (1912) and from any of the species described from the Bismarck Archipelago by Schmitz (1929a, pl. 1) by the genitalic processes mentioned in the above description.

Genus PULICIPHORA Dahl

PULICIPHORA WYMANI, new species

FIGURES 44, 45

Holotype, female.—Length 1.1 mm.; brown above and pale testaceous beneath; frons usually with indefinite median and oblique sublateral darker bars; thoracic pleura without dark areas. *Head*: Frons with only one pair of lower frontals. *Thorax*: Propleura with a few scattered setae in addition to the dorsal bristle; dorsum with three pairs of bristles, the lateralmost inserted near posterior corners of mesopleura. *Legs*: Hind tibiae with hairs of dorsal margin longer and stouter than elsewhere on legs. *Abdomen*: Tergite 6 with a small, humeral sclerite at the base; sternite 5 uniformly ringed with setae; sternite 2 with a group of setae just below the tergite.

Allotype, male.—Length 1.2 mm.; length of wing 1.1 mm.; thorax dark brown above, light brown beneath; dorsum of abdomen and frons blackish brown. *Head*: Antiales about as far apart as the lower frontals; palpi with five strong bristles. *Thorax*: Propleura with scattered setae in addition to dorsal bristle; posterior border of thorax with one pair of bristles near the lateral corners; scutellum with four bristles, the inner ones about two-thirds as long as the outer. *Legs*: Midtarsi only slightly longer than midtibiae, about equal to fore tarsi. *Wings*: Very broad, with radial vein ending at about middle. *Abdomen*: Genitalia large, with an anteriorly developed ventral loop and

an extensible process, apical lamella elongate and with a slender ventral lobe.

Holotype female, allotype male (U. S. N. M. No. 57997), 6 paratype males, and 10 paratype females: Point Oca, Guam, June 1945, from dead shellfish, and December 1945 from canned salmon (G. E. Bohart and J. L. Gressitt).

Remarks.—Females are somewhat variable in the distinctness of the head markings and in the color of the haustellum, which may be light or dark. Males sometimes have the terminal process (aedeagus) of the genitalia retracted.

This species can be distinguished in the female from *nigriventris* by the paler dorsal color, lack of dark pleural areas, and more complete abdominal setosity. The male can be told from *nigriventris* and other species by its large aedeagus and the anterior loop of its associated genitalic structures.

The fly is named for C. L. Wyman, who worked with me many months overseas and in Washington, D. C.

PULICIPHORA NIGRIVENTRIS, new species

FIGURES 42, 43

Holotype, female.—Length 1 mm.; clypeus, frons, antennal grooves, sides of pronotum, anterior margins of propleura, anterior band, and ventral surface of sternopleura black; legs, antennae, palpi, proboscis, cheeks, occiput, central portions of thoracic pleura and metanotum, basal two-thirds of first abdominal segment, and basal lunule of fifth segment yellowish brown or testaceous; abdominal sternites and all of abdomen beyond segment 5 creamy to translucent whitish. *Head*: With two pairs of lower frontals and with supra-antennals about as long as postocellars. *Thorax*: Propleura with only one distinct seta; posterior margin of scutum with two pairs of subequal bristles. *Legs*: Hind tibiae with hairs of dorsal margin rather long but no stouter than elsewhere on the tibiae. *Abdomen*: Segment 5 (with dorsal gland) with rows of setae which are incomplete laterally; segment 2 without lateral setae; segment 6 without a dorsal sclerite.

Allotype, male.—Length 1.2 mm. (expanded), length of wing 0.9 mm. (incompletely formed); blackish brown, thorax somewhat lighter. *Head*: Antiales much closer together than lower frontals; palpi with four strong bristles. *Thorax*: Propleura with only one distinct hair or bristle: prothoracic spiracle in a distinct sclerite. *Legs*: Midtarsi considerably longer than foretarsi or midtibiae. *Wings*: Poorly developed in holotype because of teneral condition. *Abdomen*: Genitalia not particularly large; apical lamella short and with prominent ventral lobe; ventral portion of genitalia not produced basally into abdomen.

Holotype, allotype (U.S.N.M. No. 57996), and 8 paratypes (including one male): Point Oca, Guam, June 1945, reared from dead shellfish (G. E. Bohart and J. L. Gressitt).

Remarks.—This species resembles *wymani* but can be distinguished by its blacker color and fewer abdominal setae in the female and by the smaller, simpler appearing genitalia in the male. It comes close to *tokyoensis* Kinoshita (see Schmitz, in Lindner, 1938) but lacks the mesopleural bristle and scattered propleural setae of the latter.

PARAFANNIA, new genus

Head: Clypeus convex and strongly projecting, separated from antennal scrobes by membranous area; third antennal segment sub-spherical, with arista inserted dorsally and over twice as long as frons; cheeks produced ventrally and posteriorly, the genal angles considerably below and behind the nearest margin of the eyes and bearing a single long bristle; cheeks otherwise with only a few short bristles at inner angles, palpi with only two long bristles near apices, with two rows of lesser ones extending along entire outer and ventral sides; proboscis fleshy, broadly and deeply bilobed; frons much broader than long, with one pair of erect supra-antennals, one pair of outwardly directed antiales, two pairs of laterals, the lowermost only slightly below the level of preocellars; upper verticals directed inward and postverticals directed outward; ocelli rather small and far separated. *Thorax:* Scutum about two-thirds as long as broad, with six pairs of lateral bristles, one pair along truncate posterior margin; scutellum posteriorly with one pair of bristles and with strongly convex posterior margin; propleura lateral, about twice as high seen from the side as posterior portion of pronotum; anterior spiracles not above dorsal margins of pro- and mesopleura; mesopleura not divided into anterior and posterior sections, more than twice as high as dorsal length, entirely bare; a distinct 5-sided sclerite separated from the hypopleura and interposed between the latter and the pteropleura; postnotum shorter than scutellum. *Legs:* Dorsal side of foretibiae with a single subbasal seta, which is somewhat stronger than hairs along dorsal margin; midtibiae with a subbasal pair of strong bristles on dorsal side, with two strong bristles near apex; hind tibiae without dorsal hair fringes, with a single strong bristle on outer side one-third the distance from base to apex, and apically with a short subdorsal bristle in addition to two moderate ventral bristles. *Wings:* M_{2+3} (second longitudinal) not separated apically from M_{1+5} (third longitudinal); $R_1 + Sc$ (first longitudinal) short; base of R_s on inner side with long bristle; veins not swollen and pterostigmae lacking. *Abdomen:* Nearly bare dorsally except for apical fringe of sixth tergite, laterally and ventrally with short setose hairs set in distinct sockets (as in *Puli-*

ciphora]; ovipositor, when exerted, composing seventh and eighth segments, which are tubular and have fine chitinized striae, and terminal structures composed of a dorsal piece connected to a pair of ventral sclerites and a pair of spatulate distal processes.

This genus is in the subfamily Phorinae of Schmitz and runs close to *Citrigo* Schmitz in his key to the world genera (1929a). It differs from this, however, in the possession of an anterodorsal bristle on the hind tibiae and in the strongly produced clypeus. It differs from *Hypocera* in having bare mesopleura and from *Diploneura* in lacking a free end to the radial vein.

Type of the genus: *Parafannia molluscovora*, new species.

PARAFANNIA MOLLUSCOVORA, new species

FIGURE 46

Holotype, female.—Length (expanded) 2.2 mm.; length of wing 1.6 mm.; sooty black, antennae, palpi, legs, pleura dark yellowish brown to dark brown or nearly black, halteres smoky brown, sides and venter of abdomen smoky yellow, becoming sooty apically; wings slightly infuscated, veins brown. *Head*: Frons about twice as broad as long; antiales over twice as close to supra-antennals as to eyes; lower frontals and precellars nearly in line; clypeus with a dark basal band. *Thorax*: Scutum with rather sparse brownish pubescence; scutellar bristles longer than scutellum and bending inward; hindmost pair of lateral scutal bristles about as long as distance from humeral cross vein to apex of the radius; propleura with one slender seta on posterior angles, two or three small hairs near the posterior margins, and three small setae near the ventroposterior corners. *Legs*: Hind tibiae and tarsi together about four-fifths as long as wings, the tibiae four-ninths as long as tarsi; subbasal bristle on hind tibiae about as long as tibial width at that level; posterior metatarsi one-fourth as broad as long; dorsal margins of midtibiae mostly smoky yellow but with broad dark band in region of subbasal pair of bristles; subbasal bristle on inner dorsal margins of foretibiae shorter than tibiae width. *Wings*: Setae fringe of costa short, dense, and regular; prehumeral portion of costa with two long bristles; bristle on base of Rs about as long as lateral bristles on frons; placement of veins as in figure 46. *Abdomen*: First tergite about half, third about two-thirds as long as second; tergites 1 to 5 practically bare except for tiny apical fringes; sides and venter of abdomen with scattered setae, which become longer and more numerous toward apical segments and have black pigmentation at their bases; processes at tip of ovipositor with a few long hairs; seventh and eighth abdominal segments (forming "tube" of ovipositor) finely striated with black, the latter with a pair of dorsal longitudinal chitinous rods.

Holotype (U. S. N. M. No. 57993) and 15 female paratypes: Point Oca, Agaña, Guam, June 1945, reared from decaying mollusks buried in ant colonies just beneath the ground surface (G. E. Bohart and J. L. Gressitt).

Remarks.—This fly is so distinctive that a new genus was erected for it. Other species, if found, may show that some of the characters used in the generic description are of specific value only.

Although over 30 specimens were reared, no males were obtained.

KEY TO THE PHORIDAE OF GUAM

- | | |
|---|----|
| 1. Wingless ----- | 2 |
| Winged ----- | 5 |
| 2. Head strongly flattened dorsoventrally and with front produced beyond antennae; dorsum of thorax without strong bristles; eye smaller than antenna. (<i>Chonocephalus</i>) ----- | 3 |
| Head neither flattened nor conspicuously produced; dorsum of thorax with several pairs of strong bristles; eye larger than third antennal segment. (<i>Puliciphora</i>) ----- | 4 |
| 3. Abdomen, view from side, with tergites uniformly haired and without distinct apical fringes; venter of abdomen light brown, almost as dark as dorsum. ----- <i>Chonocephalus hirsutus</i> | |
| Abdomen with very fine sparse hairs except for apical fringes of tergites; blackish dorsum of abdomen contrasting strongly with creamy white venter. ----- <i>Chonocephalus subglaber</i> | |
| 4. Frons, mesonotum, and first 5 abdominal tergites uniformly blackish; thoracic pleuron strongly marked with dark gray along most sutures; hind tibia without noticeable fringe of bristles or stiff hairs; fifth abdominal segment not uniformly ringed with several rows of hairs or short bristles. ----- <i>Puliciphora nigriventris</i> | |
| Most of frons and much of mesonotum and abdominal tergites testaceous to brown, not strongly different from thoracic pleural color; fifth and sixth abdominal segments uniformly ringed with short bristles or hairs; hind tibia with distinct posterior fringe of strong hairs or bristles. ----- <i>Puliciphora wymani</i> | |
| 5. Frons covered with long, strong bristles and not produced forward between antennal bases. ----- | 7 |
| Frons with at most 2 or 3 pairs of strong bristles and produced forward between antennal bases. (<i>Chonoccephalus</i>) ----- | 6 |
| 6. Frons broadly impressed medially, from above appearing like a pair of ridges between antennal bases, and with anterior border near eyes having a series of 3 or 4 moderate bristles; mesopleuron with several setae ----- <i>Chonocephalus subglaber</i> | |
| Frons narrowly impressed along midline and with bristles along anterior border scattered and weak; mesopleuron with a single seta. ----- <i>Chonocephalus hirsutus</i> | |
| 7. Radial sector unbranched. ----- | 8 |
| Radial sector branched near apex. ----- | 10 |
| 8. Clypeus strongly produced forward at oral margin; hind tibia with a spine on outer surface toward the base; midtibia with a pair of bristles toward base. ----- <i>Parafannia molluscovora</i> | |
| Clypeus not produced at oral margin; tibiae without basal or sub-basal bristles. (<i>Puliciphora</i>) ----- | 9 |

9. Propleuron with about 5 small setae in addition to the dorsal bristle; genitalia with long anteroventral extension-----*Puliciphora wymani*
 Propleuron with dorsal bristle only; genitalia without conspicuous anteroventral extension-----*Puliciphora nigriventris*
10. Preantennal bristles (on anteromedian margin of frons) directed backward; midtibia with a pair of subbasal bristles-----*Diploneura cornuta*
 Preantennal bristles directed forward; midtibia without bristles before middle. (*Megaselia*) ----- 11
11. Abdomen with extensive yellow areas anteromedially on most tergites---- 12
 Abdomen black or dark brown above----- 13
12. Fourth and fifth abdominal tergites entirely pale; frons with inner preapical bristles much shorter than outer ones-----*Megaselia suis*
 Fourth and fifth abdominal tergites partially dark; frons with inner preapical bristles nearly as long as outer ones-----*Megaselia scalaris*
13. Posterdorsal corner of mesopleuron with a patch of small setae----- 14
 Posterdorsal corner of mesopleuron without setae; basal half of ventral margin of hind femur with 4 or 5 long hairs-----*Megaselia setifemur*
14. Posteroventral corner of mesopleuron with a small bristle in addition to setae; costal margin of wing with about 11 bristles, which are longer than distance between costa and radius-----*Megaselia parabisseta*
 Posteroventral corner of mesopleuron with uniform setae only; costal margin with about 15 short bristles-----*Megaselia stuntzi*

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