

## Two Sarcophagid Flies New to Hawaii

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The following two species have recently been received in material submitted by Drs. D. E. Hardy and C. R. Joyce. The first is apparently undescribed and obviously an immigrant, thus suggesting its specific name.

### *Pachyophthalmus alienus*, new species (figs. 1-4)

**Diagnosis.** Length 7-8.6 mm. (males average larger than females). This, the first milto-grammine fly known from Hawaii, is easily distinguished from the other sarcophagids of the region by the bare arista, concave occiput, hind coxae bare posteriorly, infra-squamal setulae absent, and the presence of two rows of hairs on each parafrontal in addition to the usual row of bristles.

**Male.** Front .20 of head width; outer vertical bristle more than half as long as the inner; ocellars very weak; frontal row of about 13, ending before the antennae; on each parafrontal outside the frontal row, two more rows of much shorter hairs; antennae black, short, segment 3 one-fourth longer than 2; arista bare, the basal 2 segments together twice as long as their diameter, segment 2 thrice as long as 1, segment 3 with basal thickening less than one-third length of segment; vibrissal axis seven-eighths as long as antennal axis; parafacials yellow, bare; palpus dark, slender, with sparse hairs ventrally; genae and back of head entirely black-haired; occiput concave.

Thorax large in proportion to abdomen, grey, with 3 black stripes; chaetotaxy: acrostichals 0:1; dorsocentral 1:2, the posterior in a row spaced for four, the anterior a small presutural; intraalars 1:1; supraalars 1:2; humerals 2; posterior callus 2; scutellars 3 strong marginals, no apical, 1 weak discal; notopleurals 2, with numerous coarse setules; sternopleurals 2, or with a weak third; prosternum, propleuron, hind coxa posteriorly, infrascutellum, and postalar walls bare; posterior spiracle open, rounded, fringed with whitish hairs.

Wing with costal spine absent, base of vein 3 with 1-4 setules, costal sections 1-6 respectively, 2.5/4.1/1.3/6.2/1.8/.7.

Legs dark, small, the tarsi not modified; chaetotaxy: fore tibia with 2 posterior; mid tibia with an antero-dorsal and antero-ventral at middle and 2 posterior; hind tibia with an antero-dorsal entire row of about 14, of which the apical 5 or 6 are slightly smaller and more recumbent.

Abdomen dark, with greyish pollinose pattern, small; chaetotaxy: median marginals on tergites 1 and 2 (no exceptions in type series); median row on tergites 3-4; genital aperture slit-like, fifth sternite V-shaped, the lateral arms sparsely setulose; genital tergites dark, sparsely haired, the first with a pair of large setae near base; spiracles 6-7 close to each other, in membrane just behind the ventral angles of first genital tergite. Genitalia as figured; penis largely membranous with darkened, paired internal structure apically, the apex laterally barbed; anterior clasper bare, connected externally by a broad thin sclerotized band; posterior clasper with a single large seta; sperm pump sclerite with a thickened basal section and poorly developed distal section.

**Female.** Similar to the male but with parafacials grey, front narrower (.17 of head in allotype), and wings slightly shorter (average of four, male wing .56 longer than thorax, female wing .47 longer than thorax).

**Puparium.** Anterior spiracle 4-lobed; posterior spiracles not in a concavity, peritreme complete, button ventral, slits 3 as usual, the inner pair nearly vertical, their axes slightly convergent ventrally.

Holotype male and allotype female, Oahu Country Club, Honolulu, T. H. March, 1952, ex *Eumenes* nest (C. B. Keck), Type No. 61733, U. S. National Museum, by courtesy of Dr. Hardy.

Paratypes 3 males, 11 females with data identical to holotype; 1 male Honolulu, Oahu June, 1952 (D. T. Fullaway). Six specimens retained in Communicable Disease Center collection; the remainder, returned to Drs. Hardy and Joyce, will be deposited in collections of the University of Hawaii, B. P. Bishop Museum, and Hawaiian Sugar Planters' Association.

**Other material examined:** about 12 immature specimens reared from nests of *Eumenes pyriformis petiolaris* (Schulz), Honolulu, T. H., and Waipio, Oahu, September, 1951 (D. E. Hardy); 1 male, 1 female Honolulu, October 2, 1950, ex *Eumenes* nest (O. H. Swezey) in Hawaiian Sugar Planters' Association collection.<sup>1</sup>

*P. alienus*, a parasite in the nests of *Eumenes pyriformis petiolaris*, was probably introduced with its host on war material from the New Guinea region according to Dr. Hardy.

This species is distinct from typical European and North American species by the absence of the anterior acrostichal bristles and by the presence of numerous, coarse hairs on the notopleura, in addition to the usual two notopleural bristles. It differs also in genital features, but most closely resembles *P. floridensis* Townsend in this respect. Its relationship to species of the oriental and south Pacific faunas is not known at present. An Australian relative, *Austrometopia burnsi* Malloch, is also a parasite of *Eumenes* and has numerous hairs on the notopleura, but is distinguished by the setulose propleuron.

### **Sarcophaga gressitti** Hall and Bohart (figs. 5-12)

1947 Hall and Bohart, Proc. Ent. Soc. Wash., 50:131, fig.

1951 Bohart and Gressitt, B. P. Bishop Museum Bull., 204:135-6, figs.

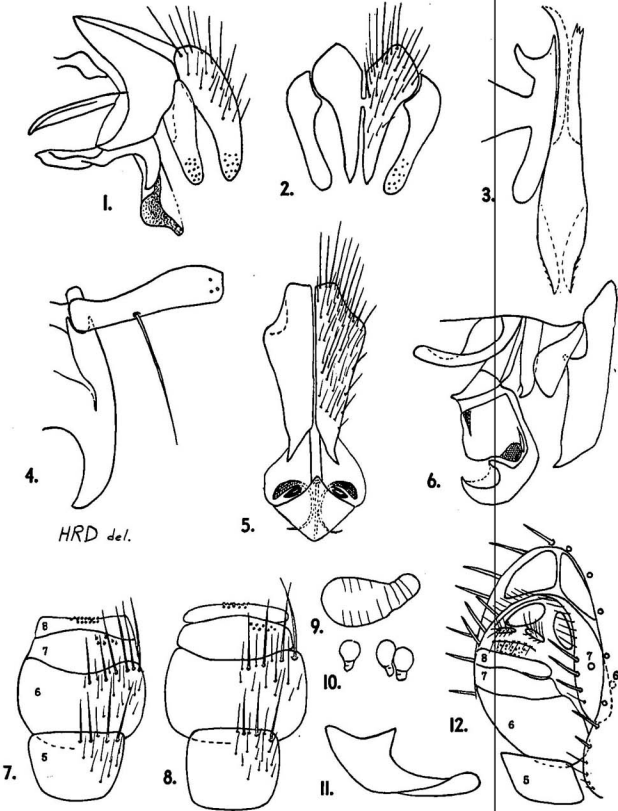
**Diagnosis.** Distinguished from other Hawaiian species by pilose propleuron and setulose vein 1. Length 7-8 mm. A greyish sarcophagid of ordinary appearance; genital segments black; male hind tibiae villous; chaetotaxy: acrostichals 0.1; dorsocentrals 3:4; intraalars 1:2, supraalars 1:3; humerals 3; posterior callus 2; scutellum with 2 strong marginals, a weak discal, and in male only a small apical; notopleurals 4; sternopleurals 3; median marginals on third abdominal segment.

<sup>1</sup> Dr. Swezey's specimens were the first of this species taken in Hawaii, and are recorded as *Amobia* sp. in these "PROCEEDINGS," (14:221, 1951).

**Figs 1-4** *Pachyophthalmus alienus* sp. n., holotype male genitalia; **fig. 1** composite, lateral view, 72x; **fig. 2** forceps, posterior view, 72x; **fig. 3** penis and left anterior clasper, 96x; **fig. 4** claspers, lateral view (setigerous posterior clasper concealed in fig. 1) 96x.

**Figs. 5-12** *Sarcophaga gressitti* Hall and Bohart, male and female genitalia: **Fig. 5** forceps and penis, posterior view, paratype, 54x; **fig. 6** male genitalia, lateral view, Honolulu, 54x; **fig. 7** female sternites 5-8, ventral view, paratype, 36x; **fig. 8** female sternites 5-8, ventral view, Waimanalo, 36x; **figs. 9 and 10** spermathecae, Waimanalo, 36x (fig. 10) and 96x (fig. 9); **fig. 11** anterior clasper, lateral view, paratype, 54x; **fig. 12** female genitalia, postero-lateral view, Waimanalo, 36x, sternites 5-8 and spiracles 6-7 are numbered.

**Note:** The numbers indicating the amount of magnification apply only to the drawings as originally made, not to the reduced reproductions as they appear on page 133. The numbers are retained at the suggestion of the author, to give an indication of the relative sizes of the structures illustrated.



Male genital segments (figs. 4-6, 11) black, first segment grey pollinose, the second shining, both with soft erect hairs only; forceps straight, contiguous on basal .8, the apices divergent and slightly curved inwards; accessory plate triangular, setulose; claspers as illustrated, the anterior clasper flattened; penis 2-segmented, the basal stalk membranous laterally, the distal segment enlarged, largely membranous, a sclerotized strap posteriorly connects with a plate, diamond-shaped in posterior view, which forms the apex of the penis, its lateral arms bent inwards, the apical arm elongated forming a curved claw which encloses a slender internal process, a pair of similar curved processes also arising internally from sclerotized bases and in repose nearly touch each other midway of their length (see fig. 5). Fifth sternite deeply cleft, the lateral arms thickly clad with coarse, short bristles.

Female genital segments (figs. 7-10, 12) black, the genital aperture inverted U-shaped; first genital tergite short, also inverted U-shaped, shortened but not divided or weakened mid-dorsally, fringed with setae of which only three opposite spiracle 7 are stout, spiracle 7 at middle and 6 attached to anterior margin of tergite; 2 pairs of dorsal sclerotized plates separated by first genital tergite; sternites 6-8 fused, 6 larger than 7-8, concave on posterior margin, bristled, pollinose; sternite 7 shining, surface slightly concave, apico-laterally with a few minute setae arising from prominent pores; sternite 8 very narrow, apico-medially with 2 rows of tubercles; sternite 10 a non-sclerotized subtriangular patch of setigerous tubercles; spermathecae 3, each with a constricted base which is more strongly ringed than the oval body.

**Variation.** The Hawaiian specimens were first thought distinct from typical *gressitti* (Guam) by a difference in the base of the anterior clasper (compare figs. 6 and 11); however, a second Hawaiian male specimen is indistinguishable from *gressitti* in this respect. The female sternites are slightly different (compare shape of fifth sternite and number of strong setae on sixth sternite, figures 7 and 8). In view of the limited material available for study, the significance of these variations cannot be determined.

**Specimens examined.** Four paratypes, male and female, from Guam, deposited in Communicable Disease Center collection (courtesy of U. S. National Museum through C. W. Sabrosky); 1 male, 1 female, Waimanalo, Oahu, August, 1951, *Scaevola frutescens* (M. Adachi), the female returned to Dr. Hardy; 1 male Honolulu, January 6, 1948, (C. R. Joyce), returned to Dr. Joyce.

*S. gressitti* is said to be a species most abundant on the open beaches, where it is a scavenger, having been reared from excrement and animal matter.