STUDIES ON MEDICALLY IMPORTANT FLIES IN THAILAND VI. REPORT ON 48 SPECIES OF SARCOPHAGID FLIES, INCLUDING THE TAXONOMIC KEYS (DIPTERA: SARCOPHAGIDAE) *

BY

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ABSTRACT

Flies from different geographical parts of Thailand were collected to study their medical importance as well as to make a zoogeographical study. After examination, 48 species of 19 genera, Kanomyia, Hosarcophaga, Blaesoxipha, Berceu, Boettcherica, Fengia, Lioprocia, Parasarcophaga, Phallophora, Rosellia, Sarcoroidendorfia, Sarcosolomon, Sinonippomia, Pierretia, Thyrsocneus, Phytosarcophaga, Harpagophallia, Seniorwhitea, and Leuconymia belonging to Sarcophagidae were identified and those are reported in this paper. This study is based on the specimens available in the authors' collection.

INTRODUCTION

Sarcophagidae is another family which contains hundreds of species, some of them are particularly dominant in tropical Asia. The members of this family were reported as causing human and domestic animal tissue myiasis and some of them parasitize the vertebrates, including man (Senior-White, et al., 1940; Faust, et al., 1974; James, 1947; James and Harwood, 1969). Because of their medical and veterinary importance, the authors studied each synanthropic species of the sarcophagid flies in Thailand in detail. In order to complete the taxonomic studies, the species which are not medically important are included. This paper is also the first paper of the taxonomic studies on the sarcophagid flies of medical importance in Thailand.

Abbreviation. Head: a, antennae; \( a_2 \) and \( a_3 \), 2nd and 3rd antennal segments; arista; \( f_v \), frontal vitta; \( g \), gena; \( ori \), frontal bristles; \( pa \), parafacialia; \( pal \), palpi; \( pf \), parafacialia; \( ps \), postocular setae. Thorax: \( ac \), acrostichal bristles; \( dc \), dorsocentral bristles; \( hb \), humeral bristles; \( ia \), inracoalar bristles; \( np \), notopleural bristles; \( pa \), postalar bristles; \( ph \), posthumeral bristles; \( pp \), propleuron; \( prs \), proternum; \( presb \), presutural bristles; \( sa \), supra-alar bristles; \( scut \), scutellar bristles; \( sq \), squamae; \( st \), sterno-pleural bristles. Wings: \( ha \), halter; \( r_1 \), 1st radial vein; \( r_{4+5} \), 4th and 5th radial vein; \( r-m \), radio-medial cross-vein. Legs: \( f_{1-2} \), fore, mid- and hind femora; \( t_{1-3} \), fore, mid-

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and hind tibiae. **Abdomen:** *mb*, median marginal bristles; *S*₁₋₅, 1st to 5th sternites; *T*₁₋₅, 1st to 5th tergites; *GT*₁₋₂, 1st and 2nd genital tergites.

**Family Sarcophagidae**

Sarcophagid flies vary greatly in size according to the specific differences, the larval environment and nutritional factors affecting the life of the larvae (Kano et al., 1967). The flies are usually grayish, with three dark longitudinal stripes on the thorax and checkered pattern on the abdomen. The eyes are separated in both sexes but wider in the female. The arista is usually plumose along the basal half, but sometimes is pubescent. Hypopleuron has a vertical row of bristles. The inner forceps are usually much longer than the outer forceps and the phallosome is very large. Females are larviparous. These flies usually breed in the human excrement, animal carcasses and animal feces.

Only nine species of the sarcophagid flies were reported from Thailand, namely *Parasarcophaga brevicornis*, *P. yunnanesis*, *P. orchidea*, *Phallosphaera gravelyi*, *Saracosolomonia shiononagai*, *S. harinasutai*, *Harpgophalla kempi*, *Seniorwhitea krameri* and *Leucomyia cinerea* (Delfinado and Hardy, 1977).

Only the male flies are reported in this paper.

**Key to the Genera**

1. Arista pubescent; 2 notopleural bristles ............................... *Leucomyia*
   Arista plumose; usually 4 notopleural bristles .......................... 2
2. Acrostichal bristles absent .... *Bercaea*
   Acrostichal bristles present .......... 3
3. 3 postsutural dorsocentral bristles .......... 4
   4 to 5 postsutural dorsocentral bristles .......................... 5
4. Inner forceps usually bent backward and spinose dorsally; acrostichal bristles regular or irregular ............
   .................................. *Blaesoxipha*
   Inner forceps slightly curved; acrostichal bristles always regular ......
   .................................. *Pierretia*
5. 4 postsutural dorsocentral bristles .. 6
   5 postsutural dorsocentral bristles .. 10
6. Propleuron hairy; anterior paramere large and stout, bifid anteriorly; 4th abdominal sternite usually with a patch of spine-like bristles posteriorly ............ *Saracorohdendorfia*
   Propleuron bare; 4th abdominal sternite without such bristles .... 7
7. 5th abdominal sternite with protuberance in the middle part; styli large ..
   .................................. *Phallosphaera*
   5th abdominal sternite without any protuberance; styli slender .... 8
8. Styli very long, thread-like, about 2 times longer than the apical plate of paraphallus ............ *Fengia*
   Styli about same length or slightly longer than apical plate of paraphallus .......................... 9
9. Apical plate of paraphallus composed of a median apophysis and lateral projections (tri-falcated) ............ *Sinonipponia*
   Apical plate of paraphallus without any median apophysis and lateral projections .... *Saracosolomonia*
10. Propleuron bare .................... 11
    Propleuron hairy .................. 16
11. Styli large, covered with microscopic hair .................. *Lioprotzia*
    Styli slender, never covered with microscopic hair .................. 12
12. 4th sternite with mat of hair .. 13
    4th sternite without any mat of hair ..
    .................................. 14
13. Phallosome very large; theca long;
apical plate of paraphallus rounded and wholly membranous ............ Seniorwhitea
Phallosome normal size; theca short; apical plate of paraphallus long and slender and slightly sclerotized ....
...................... Harpagophallla
14. 4th sternite sparsely haired; mid-femur with comb-like posteroventral bristles in apical part; hind tibia usually fringed ............ Parasarcophaga
4th sternite conspicuously haired; mid-femur without comb-like posteroventral bristles; hind tibia never fringed ..................... 15
15. Apical plate united to paraphallus without suture, slightly sclerotized .......... Thyrsocnema
Apical plate well differentiated to paraphallus, mostly membranous ........ Kanomyia
............................... Punomesa
5th sternite with a prominent conical protuberance in the middle part .... Rosellea
5th sternite without protuberance in the middle part ..................... 17
17. Hind tibia without fringe; ventralia globose, large and with numerous spines .......... Boettcheritica
Hind tibia with fringe; ventralia not globose and without spines ..... 18
18. Without membranous region between theca and paraphallus; the lower half of ventralia highly sclerotized and serrated ............. Hosarcophaga
With membranous region between theca and paraphallus; ventralia not serrated ................. 19
19. Usually small size; 1st radial vein setulose; paraphallus poorly sclerotized; apical plate largely rounded apically; ventralia reduced to a small lobe .... Phytosarcophaga
Usually large size; 1st radial vein bare; paraphallus highly sclerotized; slightly curved apically; ventralia well developed .................. Lioproctia

Genus Kanomyia Shinonaga et Tumrasvin, 1979
Small to medium flies; arista long-plumose along the basal 1/2; 5 post dc; st 1:1:1; propleuron bare; r1 bare; hind tibia without fringe; 1st to 4th sternites with numerous, relatively long hair; inner forceps slightly curved in apical part; theca short; ventralia well developed; styli long and slender; apical plate well differentiated and mostly membranous.

1. K. bangkokensis Shinonaga et Tumrasvin, 1979
MALE. Body length 6.0 to 8.0 mm. Head: Frons at vertex 0.26 of head width; f4 dark brown; pf and pa brown with silvery pollinosity; a dark brown but slightly orange at base, length of a2 about 1.5× that of a2; g dark brown with thick silvery pollinosity and with black hair; ori 8–9 pairs, lower 2 or 3 pairs divergent; 3 rows of black ps regular; pal dark brown. Thorax: Ashy-gray; ac 0+1; dc 5–6+5; ia 1+3; prsb 1; hb 3–4; ph 2; np 4; sa 3; pa 2; scut 3+1; st 1:1:1; prs hairy posteriorly. Wings: Hyaline; wing-veins light yellowish-brown; r4,5 with a row of setae located dorsally extending more than half way from basal node to r-m and with some setae on ventral surface of basai node; sq creamy white; ha light brown. Legs: Dark brown; f1 with 2 pd rows, 1 pv row; t1 with 3 ad, 1 pd, 1 pl; f2 with 5–6 al, 3 long av, a pv row in basal half, 1 pd, 1 pl; t2 with 4 ad, 3–4 pd, 1 pl, 1 v; f3 with 2 ad rows, 1 av row, 3 pv, 1 pd,
1 pl: t₈ with 4 long and a small ad row, 1–2 av, 2–3 pd. Abdomen: Same color as thorax; T₃ without mb, but mb well developed on T₄ and T₅; GT₁ and GT₂ brown. Forceps and genitalia as shown in Fig. 2.


Distribution: Thailand

Remarks: This species is commonly found in Bangkok.

Genus Hosarcophaga Shinonaga et Tumrasvin, 1979


Medium to large flies; arista long-plumose along basal 2/3; propleuron hairy posteriorly; ac 0+1; post dc 5; r₁ bare; mid- and hind femora and hind tibia fringed on posterior margins of ventral surfaces; 5th sternite of male V-shaped; theca normal; no membranous region between the theca and parapodium; the lower half of ventralia highly sclerotized and serrated; lateral plate of parapodium membranous; styli long; apical plate of parapodium membranous; styli long; apical plate of parapodium well differentiated, long and slender, without lateral processes.

2. H. serrata (Ho, 1938)


MALE. Body length 10.0 to 13.0 mm. Head: Frons at vertex 0.20–0.22 of head width; fu black; pd and pa dark brown with thin silvery pollinosisity; a dark brown, length of a₃ 3× that of a₂; g dark brown with thin silvery pollinosisity and with black hair; ori 9–11 pairs, lower 1–2 pairs divergent; 3 rows of black ps regular; pal blackish-brown. Thorax: Dark gray; ac 0+1; dc 5+5; ia 1+2; prsb 1; kb 3–4; ph 3; np 4; sa 4; pa 2; scut 3+1; st 1:1:1; ps hairy posteriorly. Wings: Sub-hyaline; wing-veins brown; r₁ with a row of setae located dorsally extending more than half way from basal node to r-m and with some setae on ventral surface of basal node; sq creamy white; ha brown. Legs: Black; f₁ with 2 pd rows, 1 pv row, long pv hair; t₁ with 2 ad, 1 pl; f₂ with 3–4 al, 1 av row, comb-like pv in apical part, short av fringe, long pv fringe, 2 pd, 1 pl; t₂ with 1 av, 1 v, 3–4 long pd, 1 pl; f₃ with 2 ad rows, 1 av row, long av hair, pv fringe, 1 pd, 1 pl; t₃ with 1 ad row, 1 strong and a row of hair-like av, 2 pd, pv fringe. Abdomen: Same color as thorax; T₃ without mb but mb well developed on T₄ and T₅; S₈ with short hair; S₄ sparsely haired; GT₁ and GT₂ dark brown. Forceps and genitalia as shown in Fig. 1.


Distribution: Borneo, Indonesia, Thailand, Taiwan

Genus Parasarcophaga Johnston et Tiegts, 1921

Parasarcophaga Johnston et Tiegts, Proc. R. Soc. Qd. 33: 86 (1921)

Frons moderately broad, rarely narrow; antennae moderately long, arista long-plumose along basal 2/3; genae broad; propleuron bare; ac usually 0+1; post dc 5; r₁ bare; hind tibia usually fringed; 1st and 2nd sternites with long dense pile but 3rd and
4th ones with short sparse hair; 5th sternite of male V-shaped; apical part of paraphallus well distinguishable; ventralia present; styli curved; apical plate of paraphallus with or without lateral processes.

**Key to the Subgenus and Species**

1. Antennae, palpi and genital tergites: bright orange, ventralia reduced to tubercles ............................................. Subg. *Lioptygia*: *P. ruficornis* Genital tergites light to dark brown, orange-brown or black .......... 2

2. Ventralia pedunculated .................
   Subg. *Parasarcophaga* .... 3 Ventralia not pedunculated ....... 5

3. Palpi orange ............... *P. orchidea* Palpi dark brown ................. 4

4. ac 1+1; 1 row of black postocular setae; genae with only few black hair at foremost anterior part; hind femur without fringe; hind tibia without av ................. *P. knabi* ac 0–1+1; 3 rows of black postocular setae, only 1st row regular; genae with numerous black hair anteriorly; hind femur with fringe; hind tibia with 1 av ................. *P. albiceps*

5. Apical plate of paraphallus composed of a small or slender median apophysis and a pair of long and straight or curved arms; ventralia commonly sheet-like .................................
   Subg. *Liosarcophaga* ... 6 Apical plate of paraphallus composed of a large and broad median process and a pair of long and curved arms; ventralia mostly filamentous ......
   Sub. *Pandelleisea* .... *P. spinipennis*

6. 2nd and 3rd sternites with dense long hair, length of which longer than the length of each sternite ................. *P. doleschalli* Hair on 2nd and 3rd sternites shorter than length of each sternite ...... 7

7. Hind tibia without fringe ............ 8 Hind tibia with fringe ............ 10

8. Apical plate of paraphallus small with lateral processes, bifid at apex .......... *P. scopariiformis* Apical plate of paraphallus elongated and with a median apophysis .......... 9

9. Membranous lobe of paraphallus rod-like, blunt at apex; mid-tibia with 2
   ad ............................ *P. iwuenis* Membranous lobe of paraphallus divergent and curled at apex; mid-tibia with 1 ad ............ *P. yunnanensis*

10. 1 row of black postocular setae .... 11 More than 1 row of black postocular setae .......................... 12

11. Inner forceps enlarged dorsally and with small spines along the anterior margin of dorsal surface; ventralia composed of 2 lobes, lower one serrated; lateral arm of apical plate pointed at apex ............................. *P. amplicipes* Inner forceps normal, not enlarged dorsally and without spines; ventralia composed of 1 lobe; lateral arm of apical plate bifid at apex ........................ *P. misera*

12. Black genal hair located only in the anterior part of the genae; inner forceps beak-shape at apex ............................. *P. brevicornis* Black genal hair extending beyond anterior half of the genae; inner forceps pointed at apex ........................ *P. idmais*

**General Characters of the Species**

*Head:* *fv* dark brown to black; *pf* and *pa* dark brown with silvery to golden pollinosity; a mostly dark brown to black, but rarely orange. Length of *a* of about 2 to 3× that of *a*; *pal* mostly dark brown to black, but rarely orange. *Thorax:* *ac* usually 0+1; *dc* 5+5–6; *ia* 1+3; *prs* 1; *h* 3; *ph* 3; *np* 4; *pa* 2; *scut* usually 3+1; *st* 1:1:1; *pp* bare; *pss* hairy posteriorly. *Wings:* Hyaline; wing-
veins light brown; r1 bare; r4+5 with a row of setae located dorsally extending more than half way from basal node to r-m and with some setae on ventral surface of basal node; sq creamy white; ha brown. Legs: Dark brown to black; f1 with 2 pd rows, 1 pv row, numerous, moderately long pv hair; arrangements of bristles on t1, f2 and f3 vary among species but 1 av row, 1 row of comb-like pv on apical part, 2 pd and 1 pl always present on f2 and 1 v always present on t2: f3 usually with 2 ad rows, 1 av row, 1 pd, 1 pl; t3 always with 1 ad row and 2 pd. Abdomen: Mostly same color as thorax; T3 without mb but mb well developed on T4 and T5; GT1 and GT2 mostly dark brown to black.

Only the different characters among the species are cited individually in the text.

3. P. knabi (Parker, 1917)

MALE. Body length 7.0 to 12.0 mm. Head: Frons at vertex 0.27 to 0.30 of head width; or 10-12 pairs, lower 1-2 pairs divergent; g with wholly yellowish-white hair and 1 row of black hair on the anterior margin; pal dark brown and slightly yellowish-orange at tips. Thorax: Pale ashy-gray. Legs: t1 with 5 ad, 1 pl, 1 long and a short pd row; f2 with 2-5 al, short pv fringe; t2 with 2 ad, 1 pl, 1 pd row; f3 with numerous long pv hair; t3 with av and pv fringe. Abdomen: T3 with weak mb or absent. Forceps and genitalia as shown in Fig. 3.

Specimens examined: This species is also distributed throughout Thailand.

Distribution: Widespread from Southeast Asia to New Guinea and Australia

Remarks: It is found on human feces and dead animals and breeds in such media in nature.

4. P. orchidea (Böttcher, 1913)
Sarcophaga orchidea Bött., Ann. hist.-nat. Mus. natn. hung., 11: 375 (1913)

MALE. Body length 9.0 to 12.0 mm. Head: Frons at vertex 0.28-0.30 of head width; or 10-12 pairs, lower 1-2 pairs divergent; g with only few black hairs on foremost anterior part but sometimes with wholly yellowish-hair; usually 1 row of black ps; pal orange. Thorax: Pale ashy-gray. Legs: t1 with 2-3 ad, a short pd row, 1 pl; f2 with 3-5 al, 1 pd, 1 pl; t2 with 2 ad, 1 long and a row of short pd, 1 pl; f3 with 2 ad rows, without fringe, only numerous hair and hair-like pv; t3 with pv fringe. Abdomen: T3 with weak mb or absent. GT1 light brown; GT2 dark brown. Forceps and genitalia as shown in Fig. 4.

Specimens examined: This species is also distributed throughout Thailand.

Distribution: Widespread from Southeast Asia to New Guinea and Australia

Remarks: It is found on human feces and dead animals and breeds in such media in nature.

5. P. albiceps (Meigen, 1826)
Sarcophaga albiceps Meigen, Syst. Beschr. europ. zweifl. Insekten. 5: 22 (1826)

MALE. Body length 8.0 to 12.0 mm. Head: Frons at vertex about 0.28 of head width; or 11-12 pairs, lower 2-3 pairs divergent; black genal hair not extending beyond anterior half; 2-3 rows of black ps irregular. Thorax: Slightly dark gray. Legs: t1 with 2-3 ad, 1 long and a short pd row, 1 pl; f2 with 3-4 pl, long pv fringe; t2 with 1 ad, 2 pl, 1 long and a conspicuous pd row;...
6. **P. doleschalli**
(Johnston et Tiegs, 1921)

*Sarcophaga doleschalli* Johnston et Tiegs, Proc. R. Soc. Qd. 33(4): 73 (1921)

**P. doleschalli**: Delfinado, Catalog Dipt. Oriental Region, 3: 568 (1977)

**MALE.** Body length 7.0 to 14.0 mm. **Head:** Frons at vertex about 0.22 of head width; **ori** 11–13 pairs, lower 2–3 pairs divergent; **g** with black hair extending beyond anterior half; 3 rows of black **ps** irregular. **Thorax:** Dark gray; **ae** 1+1. **Wings:** Darkened on anterior half; wing-veins dark brown. **Legs:** **t1** with 3–4 **ad**, without **pd**; **f2** with 4–6 **al**, 1 **pd**, thin **av** fringe, dense and long **pv** fringe; **t2** with 1 **ad**, 1 **pd**, 4 **pl**; **f3** with **av** fringe, **pv** fringe; **t3** with 1 **av**, **av** fringe, **pv** fringe. **Abdomen:** **S1** and **S2** with dense and very long hair. Forceps and genitalia as shown in Fig. 6.

**Specimens examined:** 18♂ 8♂, Khao Yai, 800 m., 60 km. S. Pak Chong, 3, 6 X 1975, R. Kano & H. Kurahashi; 5♂ 5♂, Khao Yai, 30 km. S. Pak Chong, 24–26 XII, 1975, S. Shinonaga & H. Shima; 2♂ 8♂, Ban Yang, 1400 m., Doi Inthanon, Chiang Mai, 19 XII 1975, H. Shima.

**Distribution:** China, Indonesia, Thailand, Viet Nam, Moluccas

7. **P. scopariiformis**
(Senior-White, 1927)

*Sarcophaga dux scopariiformis* S.-W., Spolia zeylan., 14: 82 (1927)

**P. scopariiformis**: Fan, Synan. Flies China: 276 (1965)

**MALE.** Body length 10.0 mm. **Head:** Frons at vertex 0.26 of head width; **ori** 9–11 pairs, lower 2–3 pairs divergent; **g** with black hair extending over anterior half; 3 rows of black **ps** irregular. **Thorax:** Ash-gray. **Legs:** **t1** with 2–3 **ad**, 1 **pl**, 0–1 short **pd**; **f2** with 4 **al**, 1 **pd**; **t2** with 2 **ad**, 1 **pd**, 1 long and a row of short and strong **pl**; **f3** with a **pv** row; **t3** with 1 long and 2–3 small **av**, without fringe. Forceps and genitalia as shown in Fig. 8.

**Specimen examined:** 1♂, Ban Pong Din, 10 km. N.E. Doi Saket, 20 IX 1975, R. Kano.

**Distribution:** China, Laos, Sri Lanka, Thailand

8. **P. iwuensis** (Ho, 1934)


**P. iwuensis**: Fan, Synan. Flies China: 276 (1965)

**MALE.** Body length 10 mm. **Head:** Frons at vertex 0.24 of head width; **ori** 11–12 pairs, lower 2–3 pairs divergent; **g** with black hair extending beyond anterior half; 3 rows of black **ps** irregular. **Thorax:** Pale brownish-gray. **Wings:** Darkened anteriorly; wing-veins brown. **Legs:** **t1** with 2 **ad**, 1 **pl**, without **pd**; **f2** with 3 **al**, 1 **pd**, thin **pv** fringe; **t2** with 2 **ad**, 1 **pl**, 1 long and a conspicuous **pd** row; **f3** with a **pv** row; **t3** with 1 long and a several **av** row, a hair-like **pv** row. Forceps and genitalia as shown in Fig. 7.

**Specimens examined:** 1♂, Doi Inthanon, Chiang Mai, 19 IX 1975, H. Kurahashi; 1♂, Ban Yang, 1400 m., Doi Inthanon, 23 IX 1975, R. Kano.

**Distribution:** China, Thailand
9. *P. yunnanensis* Fan, 1965

*P. yunnanensis* Fan, Sysan. Flies Chiwa: 276 (1965)

MALE. Body length 7.0 to 11.0 mm.

**Head:** Frons at vertex 0.22–0.24 of head width; *ori* 12–15 pairs, lower 3 pairs divergent; *g* with black hair beyond anterior half; 3 rows of black *ps* irregular. **Thorax:** Slightly dark ashy-gray. **Wings:** Wing-veins dark brown. **Legs:** *t*₁ with 1 *pl*, 2–3 *ad*, without *pd*; *f*₂ with 4–6 *al*, long hair-like *pv* on basal half; *t*₂ with 1 *pd*, 3 *pl*, 1 *ad*; *f*₃ with a *pv* row, no fringe; *t*₃ with 1 long and a conspicuous *av* row. **Abdomen:** *T₃* with weak mb. Forceps and genitalia as shown in Fig. 10.

**Specimens examined:** 29 δ, Erawan w.f., 500 m., Kanchana Buri, 7, 10 IX 1975, R. Kano & H. Kurahashi; 29 δ, Sai Yok, 500 m., Kanchana Buri, 9–13 XII 1975, S. Shinonaga & H. Shima; 1 δ, Ban Yang, 1400 m., Doi Inthanon, 23 IX 1975, R. Kano; 1 δ, Hill, C. 300 m., Sa Kaeo, 30 km. S.E., 3 IX 1975, H. Kurahashi.

**Distribution:** China, Thailand

10. *P. amplificerus* Shinonaga et Tumrasvin, 1979


MALE. Body length 13.0 to 14.0 mm.

**Head:** Frons at vertex about 0.22 of head width; *ori* 9–11 pairs, lower 1 pair divergent; *g* with wholly yellowish-white hair; 1 row of black *ps*. **Thorax:** Pale ashy-gray. **Wings:** *r₁*,ₙ with a row of setae located dorsally about half way from basal node to *r*-m. **Legs:** *t*₁ with 2–3 *ad*, 1 *pl*, without *pd*; *f*₂ with 3–5 *al*, 1 *pd*, relatively long *av* and *pv* hair; *t*₂ with 1 long and several conspicuous *ad*, a *pd* row, a *pl* row; *f*₃ with some long *pv* at distal end; *t*₃ with 1 long and a hair-like *pv* row, *pv* fringe. Forceps and genitalia as shown in Fig. 9.

**Specimens examined:** 1 δ, nr. Sai Yok, 500 m., Kanchana Buri, 9 IX 1975, W. Tumrasvin; 1 δ, Ban Pong Ein, 10 km. N.E. Doi Saket, 20 IX 1975, H. Kurahashi.

**Distribution:** Thailand

11. *P. spinipes* Shinonaga et Tumrasvin, 1979


MALE. Body length 13.0 to 15.0 mm.

**Head:** Frons at vertex about 0.22 of head width; *ori* 12–14 pairs, lower 2 pairs divergent; *g* with wholly yellowish-white hair; 1 row of black *ps*. **Thorax:** Ashy-gray; ac 1+1. **Legs:** *t*₁ with 2 *ad*, 1 *pl*, a short *pd* row; *f*₂ with 2–4 *al*, 1 *pd*, *av* fringe; *t*₂ with 1 *ad*, 1 *pl*, 1 long and a short *pd* row, *av* fringe, *pv* fringe; *f*₃ with hair-like *pv*, 1–2 *pd*; *t*₃ with *av* and *pv* fringe, without *av*. **Abdomen:** *GT₁* brown but *GT₂* orange to dark orange. Forceps and genitalia as shown in Fig. 12.

**Specimens examined:** 3 δ, nr. Sai Yok, 500 m., Kanchana Buri, 8, 9 X 1975, R. Kano; 1 δ, Chiang Mai, 6 II 1972, RAB.

**Distribution:** Thailand

**Remarks:** This species is easily differentiated from other species in the same genus by the shape and structure of the phallosome.

12. *P. miseru* (Walker, 1849)


MALE. Body length 7.0 to 11.0 mm.

**Head:** Frons at vertex 0.26–0.28 of head width; *ori* 10–12 pairs, lower 2–3 pairs divergent; *g* with several black hair in foremost anterior part; 1 row of black *ps*. **Thorax:** Pale ashy-gray. **Legs:** *t*₁ with 2–3 *ad*, 1 *pl*, without *pd*; *f*₂ with 3–5 *al*, *av* fringe, *pv*
fringe, \( t_2 \) with \( 2ad \), 1 long and a row of short \( pd \), 1 long \( pl \); \( f_3 \) with a row of long hair-like \( pv \) in apical part, without fringe; \( t_5 \) with long hair-like \( av \), \( pv \) fringe. **Abdomen:** \( GT_1 \) and \( GT_2 \) orange-brown to brown. Forceps and genitalia as shown in Fig. 13.

**Specimens examined:** This species is commonly found throughout Thailand.

**Distribution:** Borneo, China, Indonesia, Japan, Korea, Sri Lanka, Thailand; widespread in south pacific area including Australia, Hawaii and New Guinea

13. **P. brevicornis** (Ho, 1934)  

**P. brevicornis:** Robb., Faune 1’ U.R.S.S., 19(1): 222 (1934)

**MALE.** Body length 7.6 to 14.0 mm.  
**Head:** Frons at vertex 0.26–0.28 of head width; \( ori \) 10–11 pairs, lower 2–3 pairs divergent; \( g \) with black hair not extending beyond anterior half; 2 rows of black \( ps \) regular. **Thorax:** Pale brownish-gray. **Legs:** \( t_1 \) with \( 8ad \), usually without \( pd \); \( f_2 \) with 4–6 \( al \), \( pv \) fringe; \( t_2 \) with 1–2 \( ad \), 1 \( pd \), 1 \( long \) \( pl \); \( f_3 \) with numerous long hair-like \( pv \) and thin \( pv \) fringe; \( t_3 \) with 1 \( av \) and numerous long hair-like \( av \), \( pv \) fringe. Forceps and genitalia as shown in Fig. 11.

**Specimens examined:** This species is distributed throughout Thailand and seems to be commonly found in low land areas.

**Distribution:** Borneo, China, Japan, Malaysia, Thailand

**Remarks:** It breeds on dead animals and garbage in nature.

14. **P. idmais** (Séguy, 1934)  
*Sarcophaga idmais* Séguy, Encycl. Ent. (B) II, Dipt., 7: 24 (1934)  

**P. idmais:** Fan, Synan. Flies China: 289 (1965)

**MALE.** Body length 8.0 to 11.0 mm.  
**Head:** Frons at vertex about 0.24 of head width; \( ori \) 10–11 pairs, lower 1–2 pairs divergent; \( g \) with black hair extending beyond anterior half; 3 rows of black \( ps \) irregular. **Thorax:** Ashy-gray. **Legs:** \( t_1 \) with 3–4 \( ad \), 1 \( pl \), without \( pd \); \( f_2 \) with 4–6 \( al \), \( pv \) fringe; \( t_2 \) with 4 \( pl \), 1 long and a short \( pd \) row; \( f_3 \) with \( av \) and \( pv \) fringe, a moderately long hair-like \( pv \) row; \( t_3 \) with 1 \( av \) numerous long hair-like \( av \), \( pv \) fringe. **Abdomen:** \( T_3 \) with weak \( mb \). Forceps and genitalia as shown in Fig. 16.

**Specimens examined:** 28 \( \delta \), nr. Sai Yok, 500 m., Kanchana Buri, 7, 9 IX 1975, R. Kano & H. Kurahashi; 28 \( \delta \), Sai Yok, 500 m., Kanchana Buri, 9–13, 27–29 XII 1975, S. Shinonaga & H. Shima.

**Distribution:** China, Nepal, Thailand

15. **P. ruficornis** (Fabricius, 1794)  
*Musca ruficornis* Fab., Ent. Syst.: 314 (1794)

**P. ruficornis:** Lopes, Insects Micronesia, 13(2): 48 (1958)

**MALE.** Body length 10.0 to 14.0 mm.  
**Head:** Frons at vertex 0.24–0.26 of head width; \( ori \) 11–13 pairs, lower 2–3 divergent; \( g \) with yellowish-white hair; 1 row of black \( ps \); \( a \) and \( pal \) orange. **Thorax:** Light brownish-gray. **Legs:** \( t_1 \) with 2–3 \( ad \), 1 \( pl \), without \( pd \); \( f_2 \) with 3–4 \( al \), 4–5 long and flat \( pv \) in middle portion (which is subequal to or slightly longer than the diameter of \( f_3 \) intermixed with numerous long hair, without fringe; \( t_2 \) with 1 \( ad \), 1 long \( pl \), \( i \) \( pd \); \( f_3 \) with a complete \( ad \) row and 1 to a row of \( 5ad \) on inner side; \( pv \) row; \( t_3 \) with 1 \( av \), \( pv \) fringe poorly developed or almost bare. **Abdomen:** \( GT_1 \) and \( GT_2 \) orange. Forceps and genitalia as shown in Fig. 14.

**Specimens examined:** 8 \( \delta \), Mahidol Univ., Bangkok, 4 IX 1975, H. Kurahashi; 38 \( \delta \), Bangna Nai, Bangkok, 28 VIII 1975, R. Kano & H. Kurahashi; 18, Sam Sane,

**Distribution:** China, India, Indonesia, Japan, Malaysia, Philippines, Sri Lanka, Thailand: Africa; Brasil: Hawaii, Madagascar, Mariana Islands, Moluccas, Samoa, Socotra

**Remarks:** This species is commonly found in Bangkok.

**Genus Boettcherisca** Rohdendorf, 1937


Fröss broad; arista long-plumose along basal 2/3; propodeum hairy; ac 0+1; post dc 5; r₁ bare; hind tibiae of male without fringe; theca shorter than paraphallus; apical part of paraphallus distinguishable; ventralia large, globose and with numerous minute spines.

**Key to the Species**

1. Black genal hair not extending beyond anterior half; spines on the apical part of inner forceps not extending to the dorsal side ....... *B. peregrina*

Black genal hair extending beyond anterior half; spines on the apical part of inner forceps extending to the dorsal side ..................... 2

2. Ventralia reduced to small rounded shape ............... *B. javanica*

Ventralia largely produced .................................. *B. nathani*

**General Characters of the Species**

*fv* dark brown to black; *pf* and *pa* with golden to silvery pollinosis; *ori* 10–13 pairs, lower 2–3 pairs divergent; *a₁* dark reddish-brown to dark brown and its length about 2× that of *a₂*; 5 rows of black *ps* irregular; *pal* black. *Thorax:* ac 0+1; dc 5+5–7; *ia* 1+2; *prsb* 1; *hb* 3; *ph* 2; *np* 4; *sfc* 3; *pa* 2; *scut* 3+1; *st* 1:1:1; *pp* hairy; *prs* hairy posteriorly. Wings: Hyaline, darkened anteriorly: *r₁* with a row of setae located dorsally extending more than half way from basal node to *r₂* and with several setae on ventral surface of basal node; *sq* creamy white; *ha* brown. *Legs:* Black *f₁* with 2 *pd* rows, a *pv* row; *t₁* with 2–3 *ad*, 1 *pl*; *f₂* with 3–4 *al*, a *av* row, 1 *pd*, 1 *pl*, comb-like *pv* on anterior part, thin *pv* fringe; *t₂* with 1 *ad*, 1 *v*, 1 long and a short *pd* row, 3 *pl*; *f₃* with 2 *ad* rows, 1 *av* row, 1 *pd*, 1 *pl*; *t₃* with a *ad* row, 1 *v*, 2 *pd*, a row of hair-like *pv* on apical 2/3. *Abdomen:* Same color as thorax; *T₃* without *mb* but *mb* well developed on *T₄* and *T₅*.

Only the different characters among the species are cited individually in the text.

16. *B. peregrina*

(Robineau-Desvoidy, 1830)


**MALE.** Body length 7.0 to 11.0 mm. *Head:* Fröss at vertex 0.22–0.24 of head width. *Thorax:* Pale brownish-gray. *Legs:* Hair-like *pv* on *₃₃* moderately long. *Abdomen:* Genital tergites orange-brown to brown; anterior paramere much longer than posterior paramere. Forceps and genitalia as shown in Fig. 19.

**Specimens examined:** This species is commonly found in Bangkok and seems to be distributed in the lowland areas.

**Distribution:** Asia, Australia; Hawaii, New Britain, New Guinea, Samoa, Society Islands.

**Remarks:** This species is commonly found on garbage, animal dung, human feces, especially in privies. It could be of considerable importance as a mechanical vector of etiologic agents of diseases in areas where it is particularly abundant (Kano et
17. *B. nathani* Lopes, 1961


**MALE.** Body length 7.0 to 13.0 mm. **Head:** Frons at vertex 0.22–0.24 of head width. **Thorax:** Dark gray. **Legs:** Hair-like *pw* on *t₃* moderately long. **Abdomen:** Genital tergites orange-brown to brown; anterior paramere almost equal to posterior paramere in length. Forceps and genitalia as shown in Fig. 20.

**Specimens examined:** It is distributed throughout Thailand, but is never observed in the towns.

**Distribution:** India, Nepal, Thailand

18. *B. javanica* Lopes, 1961


**MALE.** Body length 8.0 to 11.0 mm. **Head:** Frons at vertex 0.24 of head width. **Thorax:** Pale brownish-gray. **Legs:** Hair-like *pw* on *t₃* short. **Abdomen:** Genital tergites slightly orange-brown; anterior paramere little longer than posterior paramere in length. Forceps and genitalia as shown in Fig. 17.

**Specimens examined:** 21♂♂♂, Mahidol Univ., Bangkok, 2, 4, 14 IX 1975, R. Kano & H. Kurahashi; 21♂♂♂, Salt pond, 6 km. N. Chon Buri, 2 IX 1975, H. Kurahashi.

**Distribution:** Borneo, Indonesia, Thailand

**Genus Sarcorohdendorfia** Baranov, 1938

*Sarcorohdendorfia* Baranov, Vet. Arch. Zagreb, 8: 173 (1938)

Antennae long; arista long-plumose along the basal 2/3; propodeum hairy; *post ac* 1; *post dc* 4; *r₃* bare; 4th sternite of male usually with a patch of spine-like bristles posteriorly; 5th sternite of male V-shaped; 1st genital tergite of male without marginal bristles; paraphallus long and its apical part well differentiated; apical plate of paraphallus without lateral processes; ventralia well developed; anterior paramere bifid.

**Key to the Species**

1. 4th sternite without patch of spine-like bristles posteriorly; only few black genal hair most anteriorly ............

   ........................................... *S. montana*

2. Inner forceps rather slightly curved and with groove basally; apical plate with basal apophyses ........ *S. flavinervis*

   Inner forceps strongly bent and without groove basally; apical plate without apophyses .......... 3

3. Hair on 4th sternite very long and equal in length to those of 3rd sternite; inner ridge of posterior surface of inner forceps with some fine long hair and outer ridge with spines; ventralia two-wave-like shaped and its apical portion hook-like ........

   ........................................... *S. multiwilla*

   Hair on 4th sternite much shorter than those of 3rd sternite; inner ridge of posterior surface of inner forceps bare, only with spines at outer ridge; ventralia well developed .... 4

4. Margin of ventralia serrated on apical half .......... *S. inextricata*

   Ventralia lobe-like and without serration .......... *S. antilope*

**General Characters of the Species**

**Head:** *fv* black; *pf* and *pa* with bright golden to silvery pollinosity; a dark brown to black, length of *a₂* about 2.5 to 3× that of *a₅*; black genal hair usually extending more than anterior half; usually many rows
of black ps, only 1st row regular; pal blackish-brown. Thorax: ac 5–6+1; dc 4–5+4; ia 1+2–5 (usually 3); prsb 1; hb 4; ph 2–3; np 4; sa 4; pa 2; scut 3+1; st 1:1:1; pp hairy; prs hairy posteriorly. Wings: Hyaline, slightly darkened anteriorly; wing-veins usually brown; r 4+5 with a row of setae located dorsally extending about half way from basal node to r-m, and with some setae on ventral surface of basal node; sq usually creamy white; ha brown. Legs: Black; f 1 with 2 pd rows, 1 pv row and numerous long pv hair; t 1 with 1 pl, a short pd row; f 2 with 3–6 al, a av row, 1 pl, comb-like pv on apical 1/3 and pv fringe on basal 2/3; t 2 with 1 al, 1 v, 2–3 long and a row of short to conspicuous pd, 1 pd; f 3 with 2 ad rows, a av row, a hair-like pv row, 1 pl, numerous long av and pv hair; t 3 with a ad row, 1 strong and several hair-like av, pv fringe. Abdomen: Same color as thorax; T 3 usually without mb but mb well developed on T 4 and T 5.

Only the different characters among the species are cited individually in the text.

19. S. inextricata (Walker, 1860)

MALE. Body length 8.0 to 12.0 mm. Head: Frons at vertex 0.22–0.24 of head width; ori 11–15 pairs, lower 2–3 pairs divergent. Thorax: Slightly brownish-gray. Legs: t 1 with 3–4 ad; f 2 with 2 pd, without pv fringe, only moderately long hair present; f 3 with 3 pd; t 3 with 2 long pd. Abdomen: Genital tergites orange to orange-brown. Forceps and genitalia as shown in Fig. 15.

Specimens examined: This species is usually found in the mountainous areas.

Distribution: Indonesia, Thailand

20. S. antilope (Böttcher, 1913)

Mus. natn. hung., 11: 374 (1913)

MALE. Body length 11.0 to 13.0 mm. Head: Frons at vertex about 0.25 of head width; ori 11–15 pairs, lower 2–3 pairs divergent. Thorax: Gray. Legs: t 1 with 2–3 ad; f 2 with 2–3 pd; f 3 with a row of few av on apical half, 2–4 pd; t 3 with 2 long and a conspicuous pd row. Abdomen: T 3 darker than the anterior 4 tergites or sometimes reddish-brown; G T 1 and G T 2 orange-brown. Forceps and genitalia as shown in Fig. 18.

Specimens examined: 1♀, Ban Yang, 1400 m., Doi Inthanon, 23 IX 1975, H. Kurahashi; 2♂♀, Fang Exp. St., 500 m., Fang, 25 IX 1975, R. Kano & H. Kurahashi; 1♂, Doi Huai Hwer, 1231 m., Fang, 27 IX 1975, R. Kano; 2♂♀, nr. Sai Yok, 500 m., Kanchana Buri, 9 IX 1975, R. Kano & H. Kurahashi; 1♂, Hill, C. 300 m., Sa Kao, 30 km. S.E., 3 IX 1975, H. Kurahashi.

Distribution: China, India, Indonesia, Japan, Korea, Nepal, Sri Lanka, Thailand; New Britain, New Ireland, Solomon islands

21. S. flavinervis (Senior-White, 1924)
Sarcophaga flavinervis S.-W., Rec. Ind. Mus., 26: 222 (1924)

MALE. Body length 18.0 to 20.0 mm. Head: Frons at vertex about 0.24 of head width; pf and pa with golden pollinosity; ori 11–15 pairs, lower 3–4 pairs divergent. Thorax: Brownish-gray. Wings: Yellowish basally and anteriorly; wing-veins anc. sq yellowish; ha pale yellowish-brown. Legs: t 1 with 2–3 ad; f 2 with 2 pd; f 3 with 2–4 pd; t 3 with 2 long and a conspicuous pd row. Abdomen: G T 1 and G T 2 dark brown. Forceps and genitalia as shown in Fig. 22.

Specimens examined: This species is found in the mountainous areas.

Distribution: India, Japan, Korea, Moluccas, Thailand
22. *S. montana* Shinonaga et Tumrasvin, 1979


**MALE.** Body length 11.0 to 12.0 mm. **Head:** Frons at vertex about 0.23 of head width; or 9–11 pairs, lower 2 pairs divergent. **Thorax:** Gray; ac 6–7+1; ia 1+2. **Legs:** t₁ with 3 ad; f₂ with 1 pd; f₃ with 1 pd; t₂ with 2 long pd. **Abdomen:** Slightly more reddish-brown than thorax, especially last segment reddish; T₃ with a pair of mb; S₄ without any patch of spine-like bristles posteriorly; GT₁ and GT₂ reddish-orange. Forceps and genitalia as shown in Fig. 21.

**Specimens examined:** 1♂, Erawan w.f., 500 m., Kanchana Buri, 7 IX 1975, W. Tumrasvin; 1♂, nr. Sai Yok, 500 m., Kanchana Buri, H. Kurahashi; 1♂, Sai Yok, 500 m., Kanchana Buri, 27–29 XII 1975, S. Shinonaga.

**Distribution:** Thailand

**Remarks:** The hair on the sternites of male are very characteristic of this species.

**Genus Sarcosolomonia** Baranov, 1938

*Sarcosolomonia* Baranov, Vet. Arch. Zagreb, 8: 73 (1938)

Arista long-plumose along the basal 1/2; propyIRON bare; post ac 1; dc 4; r₁ setulose or bare; 3rd tergite with or without a pair of median marginal bristles; inner forceps with or without subapical spines; apical part of paraphallus distinguishable; ventralia well developed, membranous or sclerotized; apical plate of paraphallus without lateral processes; styli long and curved forward.

**Key to the Species**

1. 3rd tergite always with median marginal bristles; inner forceps with subapical spines .................. 2
2. 3rd tergite without median marginal bristles; inner forceps without subapical spines .................. 3

2. Mid-tibia with 1 al; inner forceps pointed at apex and with conspicuous subapical spines; paraphallus long; ventralia pointed at apex ............... *S. shinonagai* Mid-tibia with 2 al; inner forceps beak-like at apex and with inconspicuous subapical spines; paraphallus circled; ventralia round at apex ............... S. sp.

3. Vein r₁ setose .................. 4
Vein r₁ bare .................. 5

4. Anterior paramere with flange; ventralia bifid at apex ............... *S. harinasutai* Anterior paramere without flange; ventralia pointed at apex ............... *S. trifurcata*

5. Middle of anterior part of inner forceps

6 X 1975, H. Kurahashi; 1♂, Khao Yai, 30 km. S. Pak Chong, 25–26 XII 1975, S. Shinonaga.
with free part bent upward; inner forceps pointed at apex; apical plate of paraphallus small. 

.................. S. aureomarginata

Anterior part of inner forceps normal, forked at apex; apical plate of paraphallus large. 

............... S. crinita

General Characters of the Species

Head: $fv$ black; $pf$ and $pa$ dark brown with golden to silvery pollinosity; $a$ dark brown, length of $a_2$ about 2 to 2.5 times that of $a_2$; $g$ black, black genal hair extending beyond anterior half; 3 rows of black $ps$; $pal$ dark brown to black. Thorax: $dc$ usually 4+4: $i a$ 1+3; $prsb$ 1; $hb$ 3; $ph$ 2; $np$ 4; $sa$ 3; $pa$ 2; $scut$ 3+1; $st$ 1+1; $pp$ bare; $prs$ hairy posteriorly. Wings: Hyaline; wing-veins light brown to brown: $r_4+$ with a row of setae located dorsally extending more than half way from basal node to $r$-$m$ and with some setae on ventral surface of basal node; $sq$ creamy white; $ha$ brown. Legs: Dark brown to black; $f_1$ with 2 $pd$ rows, a $pv$ row; $t_1$ with 2 $ad$, 1 $pl$; $f_2$ with an $av$ row, 1 $pd$, 1 $pl$; $t_2$ usually with 1 $al$, 1 $v$, 1 $pl$; $t_3$ with an $ad$ row, 2 $av$, 2 $pd$. Abdomen: Usually same color as thorax; $mb$ well developed on $T_4$ and $T_5$; GT$_1$ and GT$_2$ dark brown.

Only the different characters among the species are cited individually in the text.

24. S. shionogai Kano et Sooskri, 1977


MALE. Body length 7.0 to 10.0 mm. Head: Frons at vertex 0.24 to 0.26 of head width; $ori$ 9–10 pairs, lower 2–3 pairs divergent; black $ps$ regular. Thorax: Gray; $ac$ 4+1. Wings: $r_1$ bare. Legs: $t_1$ with 2 $ad$, 2 long $pd$; $f_2$ with 4 $al$, a $pv$ row, thin $pv$ fringe in basal half; $t_2$ with 3–4 long $pd$; $f_3$ with a $pv$ row, several long $pv$ hair, 1 $pd$, 1 $pl$. Forceps and genitalia as shown in Fig. 29.

Specimens examined: 3 δ δ, Sai Yok, 500 m., Kanchana Buri, 9–13 XII 1975, S. Shionogai; 6 δ δ, nr. Sai Yok, 500 m., Kanchana Buri, 6, 9 IX 1975, R. Kano & H. Kurahashi.

Distribution: Thailand

25. S. harinasutai Kano et Sooskri, 1977


MALE. Body length 5.0 to 9.0 mm. Head: Frons at vertex about 0.24 of head width; $ori$ 8–10 pairs, lower 2–3 pairs divergent; black $ps$ regular to subirregular. Thorax: Gray; $ac$ 4+1. Wings: $r_1$ setose. Legs: $t_1$ with 2 $ad$, 2 long $pd$; $f_2$ with 2–4 $al$, a $pv$ row, thin $pv$ fringe on basal half; $t_2$ with 2 long and a conspicuous $pd$ row; $f_8$ with a $pv$ row, several long $pv$ hair, 1 $pd$, 1 $pl$. Forceps and genitalia as shown in Fig. 24.

Specimens examined: This species is distributed only in the mountainous areas.

Distribution: Thailand.

26. S. crinita (Parker, 1917)


MALE. Body length 6.0 to 9.0 mm. Head: Frons at vertex 0.24–0.26 of head width; $ori$ 9–12 pairs, lower 2–3 pairs divergent; black $ps$ regular. Thorax: Gray; $ac$ 4+1. Wings: $r_1$ bare. Legs: $t_1$ with 2 $ad$, a short $pd$ row; $f_2$ with a $al$, a $pv$ row, several long $pv$ hair in basal part (but in some specimens with slightly thin fringe); $t_2$ with 1–3 long $pd$; $f_3$ with 1 $pd$, 1 $pl$, a $pv$ row, without several long $pv$ hair. Forceps and genitalia as shown in Fig. 25.

Specimens examined: 4 δ δ, Sai Yok, 500 m., Kanchana Buri, 9–13 XII 1975, S. Shionogai; 5 δ δ, nr. Sai Yok, 500 m., Kan-

Distribution: China, Philippines, Thailand Taiwan; Admiralty islands, Australia, New Britain, New Guinea, Solomon islands.

27. S. aureomarginata Shinonaga et Tumrasvin, 1979


MALE. Body length 10.0 mm. Head: Frons at vertex 0.22 of head width; orl 12–14 pairs, lower pairs not divergent; length of orl about 5X that of orl 2; black ps irregular. Thorax: Ashy-gray; ac 6+1; dc 5+4; ia 1+2. Wings: r 1 bare; sq white but darkened anteriorly. Legs: t 1 with 2 ad, a short pd row; f 2 with 4–5 al, thin and short av and pv fringe, 3 pd, 3 pl; t 2 with 2 long and a conspicuous pd row; f 3 with 2–3 pd, 1 pl, short and thin av fringe, a row of hair-like pv; t 3 with av and pv fringe. Abdomen: T 1+2 and T 3 slightly golden ashly; T 4 and T 5 slightly golden. Forceps and genitalia as shown in Fig. 26.

Specimen examined: 1 ♂, Erawan w.f., 500 m., Kanchana Buri, 10 IX 1975, H. Kurahashi.

Distribution: Thailand

28. S. trifurcata Shinonaga et Tumrasvin, 1979


MALE. Body length 10.0 mm. Head: Frons at vertex 0.26 of head width; orl 10 pairs, lower 2 pairs divergent; black genal hair not extending beyond anterior hall: black ps regular. Thorax: Ashy-gray; ac 5+1. Wings: r 1 setulose. Legs: t 1 with 3 ad, ad, 1 relatively long and a row of short pd: f 2 with 3 al, a pv row, long pv hair; t 2 with 1 long and some short al, 3 long and a short pd row; f 3 with a pv row and a row of hair-like pv, 1 pd, 1 pl; t 3 with 2 long and a short pd row. Forceps and genitalia as shown in Fig. 27.

Specimen examined: 1 ♂, Sai Yok, 500 m., Kanchana Buri, 27–29 XII 1975, S. Shinonaga.

Distribution: Thailand

29. S. sp.

MALE. Body length 5.0 to 8.0 mm. Head: Frons at vertex 0.24–0.26 of head width; orl 8–10 pairs, lower 2 pairs divergent; black ps regular. Thorax: Brownish-gray, median longitudinal stripe with 2 narrow submedian stripes: ac 0+1; dc 5+4–5. Legs: t 1 with 2–3 ad, a short pd row; f 2 with 3–5 al, 1 pd, 1 pl, a pv row and several long pv hair; t 2 with 2 al, a long and a conspicuous pd; f 3 with a pv row, long av and pv hair. Abdomen: T 3 with a pair of mb. Forceps and genitalia as shown in Fig. 28.


Distribution: Singapore, Thailand

Remarks: The subapical spines on inner forceps are so small that we must look under the microscope (100X). Mr. Murphy has many specimens of this species collected in Singapore and he is describing them now. Therefore, we have not named this species in this paper at this time.

Genus Blaesoxipha Löw, 1861

Blaesoxipha Löw, Wien. ent. Mschr. 5: 384 (1861)

Small to medium size; arista plumose along basal 1/2; post dc 3; propleuron bare; hind tibia without fringe; 3rd tergite with
or without median marginal bristles; 3rd and 4th sternites with numerous, relatively long hair; 5th sternite V-shaped; phallosome small, long and slender; inner forceps usually bent posteriorly and spinose; ventralia with or without spines; apical plate of paraphallus long and membranous.

KEY TO THE SPECIES
1. 3rd tergite with a pair of strong median marginal bristles; st 2:1 ...... 2
   3rd tergite with inconspicuous or without median marginal bristles; st 1:1
   .................................................. 3

2. Palpi orange to dark brown (if dark brown, distinctly orange at apex); 2nd antennal segment orange .......... B. pachytyli
   Palpi and 2nd antennal segment blackish-brown ........... B. filipjevi

3. Middle part of inner forceps with free part bent backward; ventralia spinose; anterior paramere much enlarged and curved upright .......... B. thailandica
   Middle part of inner forceps without free part bent backward; ventralia without spines; anterior paramere slender .......... B. unicolor

General Characters of the Species
Head: $fv$ black; $pf$ and $pa$ dark brown to black with slightly silvery pollinosity; length of $a_3$ 2× that of $a_2$; $g$ black with slightly silvery pollinosity and with black hair; 3 black $ps$ rows irregular. Thorax: Median longitudinal stripe with 2 narrow submedian stripes: $ia$ 1+3; $prsb$ 1; $hb$ 3; $ph$ 2; $np$ 4; $sa$ 3–4; $pa$ 2; $scut$ 3+1; $pp$ bare; $prs$ hairy posteriorly. Wings: Hyaline; wing-veins yellowish-brown to brown; $r_1$ bare; $r_{4+5}$ with a row of setae located dorsally extending more than half way from basal node to $m$ and with some setae on ventral surface of basal node; $sq$ light brown in posterior half; $ha$ yellowish-brown. Legs: Brownish-black; $f_1$ with a $pv$ row, numerous, moderately long $pv$ hair; $t_1$ with 1 $pl$; $f_2$ with 2 long $av$, 2–3 long $pv$ in basal half, 3–4 strong but short $pv$ distally, 1 $pd$, 1 $pl$; $f_3$ with a $av$ row, 3 long $pv$, 1 $pd$, 1 $pl$; $t_3$ with 2 long and a row of some short $ad$. Abdomen: Same color as thorax; $mb$ on $T_4$ well developed.

Only the different characters among the species are cited individually in the text.

30. B. pachytyli (Skuse, 1891)

Masicera pachytyli Skuse, Agric. Gaz. N.S.W., 2: 251 (1891)


MALE. Body length 5.0 to 8.0 mm. Head: Frons at vertex 0.16–0.20 of head width; $a$ brown, $a_2$ and posterior part of $a_3$ orange to orange-brown; $ori$ 9–12 pairs, the lower 1 pair divergent. Thorax: Dark brownish-gray; $ac$ 3+3; $dc$ 3–4+3. Legs: $f_1$ with 2 $pd$ rows; $t_1$ with 2–3 $ad$; $f_2$ with 1–2 $ad$; $f_3$ with 2 $ad$ rows; $t_3$ with 2 $av$, 2–3 $pd$. Forceps and genitalia as shown in Fig. 30.


Distribution: Philippines, Thailand; Australia, Bismark Archipelago

31. B. filipjevi Rohdendorf, 1928

B. filipjevi Rohd., 1928: 26

MALE. Body length 10.0 mm. Head: Frons at vertex 0.18 of head width; $ori$ 12 pairs, lower 1–2 pairs divergent. Thorax: Brownish-gray; $ac$ 3+5; $dc$ 4–3. Wings: Subhyaline. Legs: $f_1$ with 2 $pd$ rows; $t_1$ with
2 ad; f₂ with 2 al; f₃ with 2 ad rows; t₉ with 1 av, 2 pd. Forceps and genitalia as shown in Fig. 34.

Specimens examined: 1 δ, Doi Huai Hwer, 1231 m, Fang, 27 IX 1975, R. Kano.

Distribution: Thailand; Central Asia; North Africa; Palearctic region

32. **B. thailandica** Shinonaga et Tumrasvin, 1979


MALE. Body length 7.0 mm. Head: Frons at vertex 0.16 of head width; a dark brown; ori 12 pairs, lower 1 pair divergent. Thorax: Dark gray; ac 2+4; dc 3+3. Wings: Hyaline. Legs: f₁ with a pd row; t₁ with 2 ad; f₂ with 1 al; f₃ with an ad row; t₂ with 2 av, 2 pd. Forceps and genitalia as shown in Fig. 32.

Specimen examined: 1 δ, Sai Yok, 500 m, Kanchana Buri, 27–29 XII 1975, S. Shinonaga.

Distribution: Thailand

33. **B. unicolor** Villeneuve, 1912

*B. unicolor* Vill., 1912: 615

MALE. Body length 8.0 mm. Head: Frons at vertex 0.20 of head width; a₂ orange posteriorly; ori 10 pairs, lower 1 pair divergent; pal dark brown. Thorax: Gray; ac 2+4; dc 4+3. Wings: Slightly subhyaline. Legs: f₁ with 1 pd row; t₁ with 3–4 ad; f₂ with 2 al; f₃ with an ad row; t₉ with 1 av, 2 pd. Forceps and genitalia as shown in Fig. 31.

Specimens examined: 1 δ, Chiang Mai, Fang, 500 m., 4 XII 1958, T. C. Maa.

Distribution: Thailand; Palearctic region

Remarks: Most species of this genus were reported as the parasites of locust (Rohdendorf, 1937; Kano *et al.*, 1967). The members of this genus seem to be distributed mostly in the northern part of Thailand.

**Genus Lioproctia** Enderlein, 1928

*Lioproctia* Ender., Arch. klas. phyl. Ent., 1: 26 (1928)

Medium to large size; arista long-plumose along the basal 1/2; prst ac well developed; post dc 4; propleuron hairy or bare; phallo-some very large; styli large and stout, covered with microscopic hair; apical part of paraphallus without lateral processes.

**Key to the Species**

Propleuron bare; 3rd and 4th sternites with long hair, the length of each hair on each sternite being almost equal; genital tergite dark brown; inner forceps broad and pointed at apex, anterior margin without spines ............... *L. beesonii*

Propleuron hairy; 3rd sternite with short hair but 4th one with sparse hair; genital tergite brownish-orange; inner forceps broad and beak-like at apex, anterior margin with some strong spines along the middle portion ............... *L. pattoni*

**General Characters of the Species**

Head: f₁v black; pf and pa dark brown with golden silvery pollinosity; a dark brown, length of a₃ about 2.5 times that of a₂; g black; 3 rows of black ps irregular; pal black. Thorax: Median longitudinal stripe with 2 narrow submedian stripes; ac 5–6+1–2; dc 5+4; prsb 1; hb 4–6; ph 2; np 4; sa 3–5; pa 2; scut 3–5+1; st 1:1:1; prs hairy posteriorly. Wings: Hyaline, slightly darken anterior half; wing-veins brown; r₁ bare; r₄+₅ with a row of setae located dorsally extending more than half way from basal node to r-m, and with some setae on ventral surface of basal node; sq creamy white; ha brown. Legs: Black, f₁ with 2 pd rows, a pv row, numerous long pv hair, thin av and pv fringe on basal half; t₁ with a row of short pd; f₂ with 3–4 al, 1–2 pd, a av row, comb-like pv; t₂ with 1 ad, 1 v 1–3 pl, 2–3
long and a conspicuous pd row; f₃ with 2 ad rows, an av row, 1 pl, a hair-like pv row, long pv hair; tₛ with an ad row, 1 av, 2 pd, av and pv fringe. Abdomen: Same color as thorax; T₃ without mb but mb well developed on T₄ and T₅.

Only the different characters among the species are cited individually in the text.

34. L. beesoni (Senior-White, 1924)
Sarcophaga beesoni S.W., Rec. Indian Mus., 26: 243 (1924)
L. beesoni: Delfinado, Catalog Dipt.
Oriental Region, 3: 567 (1977)
MALE. Body length 10.0 to 12.0 mm. Head: Frons at vertex about 0.24 of head width; or₁ 12 pairs, lower 2–3 pairs divergent; g with only black hair. Thorax: Light brownish-gray; ia 1+2–3. Legs: t₁ with 2 ad, 1 pl; f₂ with 1 pl, numerous, relatively long av and pv hair forming weak fringe in basal half; f₃ with 3 pd, a hair-like pv row, numerous long pv hair, av fringe. Forceps and genitalia as shown in Fig. 35.

Specimens examined: 1 ♂, Doi Huai Hwer, 1231 m., Fang, 27 IX 1975, H. Kura-hashi; 1 ♂, nr. Burma Bord., 1200 m., Fang, 26 IX 1975, H. Kurahashi.

Distribution: Burma, China, Japan, Thailand

Specimens examined: This species is commonly found in the mountainous areas.

Distribution: China, India, Thailand, Taiwan, Viet Nam

Genus Pierretia Robineau-Desvoidy, 1863

Usually small size, rarely medium to large; arista long-plumose along basal 1/2; pleuron bare; post dc 3; r₁ bare or setose; 3rd tergite with or without median marginal bristles; 1st to 4th sternites with numerous long hair; 5th sternite V-shaped; theca short; apical part of paraphallus well developed, but usually fused with basal part; styli long; ventralia usually well developed.

Key to the Species

Vein r₁ setose: section V of costa with short spines along the anterior margin; 4th sternite covered with normal long hair...

......................... P. calicifera
Vein r₁ bare; section V of costa with short spines along about basal half of the anterior margin; 4th sternite almost wholly covered with mat of short hair and some long hair on lateral margin . . . P. melania

General Characters of the Species

Head: f₀ black; p₁ and pₐ dark brown with silvery to golden pollenosity; 3 rows of black pₛ; pₐl dark brown. Thorax: ac 0+1; prsb 1; h₃ 4; ph 2; scut 3+1; st 1:1:1; prs hairy posteriorly. Wings: Hyaline; wing veins brown; r₁,₂ with some setae on ventral surface of basal node; ha brown. Legs: Black; f₁ with 2 ad rows; t₁ with 2–3 ad, 1 pl; f₂ with 1 pl, av and pv fringe; f₃ with 2 pd, av and pv fringe. Forceps and genitalia as shown in Fig. 36.
36. **P. calicifera** (Böttcher, 1912)

*Sarcophaga calicifera* Bött., Ent. Mitt., 1: 169 (1912)

*P. calicifera*: Fan, Synan. Flies China: 233 (1965)

**MALE.** Body length 5.0 to 6.0 mm. Head: Frons at vertex 0.30–0.32 of head width; *ori* 7–8 pairs, lower 1 pair divergent; black *ps* regular. **Thorax:** Brownish-gray; *dc* 3–4+3; *ia* 0–1+2–3; *np* 3–4. **Wings:** *r*1+2, with setae located dorsally extending more than half way from basal node to *r–m*; *sq* creamy white but slightly bent at center. **Legs:** *f*1 with a *pv* row; *f*2 with 3–4 long *pl* in middle portion, 1 *pd*; *t*2 with 2 long and a short *ad* row, 2 *pd*, 1 *pl*; *f*3 with a row of complete and a row of incomplete *ad*, 1 *av* row, 3 extra long *pv* in the basal part, 1 *pd*; *t*3 with 1 strong and a fine *av* row, long *pv* hair. Forceps and genitalia as shown in Fig. 33.

**Specimens examined:** This species is commonly found in the towns.

**Distribution:** China, India, Japan, Philippines, Sri Lanka, Thailand, Taiwan

37. **P. melania** Shinonaga et Tumrasvin, 1979


**MALE.** Body length 7.0 to 8.0 mm. Head: Frons at vertex 0.22 of head width; *ori* 11–13 pairs, lower 2 pairs divergent; black *ps* irregular. **Thorax:** Median longitudinal stripe with 2 narrow submedian stripes; brownish-gray; *dc* 4+3; *ia* 1+2; *np* 4. **Wings:** *r*1+2, with setae located dorsally extending less than half way from basal node to *r–m*; *sq* creamy white. **Legs:** *f*1 with 1 row of hair-like *pv* and numerous long *pv* hair; *t*1 with 1 row of very short *pd*; *f*2 with 2–3 *pl*, 3 *pd*, *pv* fringe; *t*2 with 2–3 *ad*, 2–3 *pl*, 1 long and a conspicuous *pd* row; *f*3 with 2 complete *ad* rows, 1 *av*, 1–2 *pd*, *av* and *pv* fringe; *t*3 with 1 *av*, *av* and *pv* fringe. Forceps and genitalia as shown in Fig. 57.

**Specimens examined:** 2 δ, Doi Inthanon, Chiang Mai, 19 XII 1975, S. Shinonaga.

**Distribution:** Thailand

**Genus Phallosphaera** Rohdendorf, 1938


Medium to large size; antennae long; arista long-plumose along the basal 2/3; pleuron bare or hairy; post *ac* 1; post *dc* 4; *r*1 bare; 5th sternite V-shaped with a protrusion in the middle part of ventral surface; phallosome large and heavily sclerotized; theca short; apical plate of paraphallus without processes; styli stout.

**Key to the Species**

3 rows of black postocular setae regular; length of 3rd antennal segment 3× that of 2nd segment; inner forceps very large, widely broadened on dorsal surface and curved at apical half, without tuft of long hair near distal end. . . . . *P. kurahashii*

Only 1st row of black postocular setae regular; length of 3rd antennal segment 4× that of 2nd segment; inner forceps not so broad and stretched and with a tuft of long hair in subapical part . . . *P. grivelyi*

**General Characters of the Species**

**Head:** *fv* black; frons at vertex 0.22 of head width; *pf* and *pa* dark brown with golden-silvery pellinosity; *g* black with golden to silvery pollinosity and with black hair in anterior half; a dark brown. **Thorax:** *ac* 0+1; *dc* 5+4; *ia* 1+3; *prob* 1; *ph* 2 *np* 4; *sa* 3; *pa* 2; *scut* 3+1; *st* 1+1; *prs* hairy posteriorly. **Wings:** Hyaline, slightly darkened anteriorly; wing-veins brown; *r*1 bare; *r*1+2 with a row of setae located dorsally extend-
ing more than half way from basal node to r-m and with some setae on ventral surface of basal node: sq creamy white but darkened at center; ha light brown. Legs: Black; f₁ with 2 pd rows; a pv row; t₁ with 1 pl; f₂ with 3–4 al, an av row, comb-like pv, av and pv fringe; t₂ with 1 al, 1 pl; f₃ with 2 ad rows, an av row, a pv row, 1 pl; t₃ with an ad row, 1 av, 2 pd, av and pv fringe. Abdomen: Same color as thorax; genital tergite dark brown.

Only the different characters among the species are cited individually in the text.

38. **P. kurahashii** Shinonaga et Tumrasvin, 1979


MALE. Body length 13.0 mm. Head: ori 10 pairs, lower 1 pair divergent. Thorax: Ashy-gray. Legs: t₁ with a short pd row, 2 ad; f₂ with long av fringe; t₂ with 2 long and a conspicuous pd row; f₃ with 2 pd, without fringe. Abdomen: T₃ with weak mb. Forceps and genitalia as shown in Fig. 39.

Specimen examined: 1 ♂, nr. Sai Yok, 500 m., Kanchana Buri, 11 IX 1975, H. Kurahashi.

Distribution: Thailand

39. **P. gravelyi** (Senior-white, 1924)

*Sarcophaga gravelyi* S.-W., Rec. Indian Mus. 26: 229 (1924)

*P. gravelyi*: Kano et al., Fauna Japonica, Sarcophagidae: 91 (1967)

MALE. Body length 12.0 mm. Head: ori 13 pairs, lower 3 pairs divergent. Thorax: Dark gray. Legs: f₁ with numerous long pv hair; t₁ with 2–3 ad; f₂ with weak av fringe; t₂ with 1 long and a conspicuous pd row; f₃ with 4 pd, av fringe. Abdomen: T₃ without mb. Forceps and genitalia as shown in Fig. 44.

### Specimen examined:
1 ♂, Doi Pui, 1685 m., C. Chiang Mai, 16 IX 1975, W. Tumrasvin.

### Distribution:
China, India, Japan, Korea, Nepal, Thailand

**Genus Bercaea** Robineau-Desvoidy, 1863


Medium to large size; arista long-plumose along basal 3/5; ac absent; propleuron bare; r₁ bare; hind tibia fringed; 3rd and 4th sternites with short hair; 1st genital tergite with strong marginal bristles; inner forceps long and slender, claw-like at apex; theca very short; paraphallus very large and highly sclerotized, apical plate short with short lateral processes; ventralia claw-like; styli slender and bent forward.

40. **B. haemorrhoidalis** (Fallén, 1816)

*Musca haemorrhoidalis* Fallén, Vetensk. Akad. H andl., 237 (1816)


MALE. Body length 8.0 to 13.0 mm. Head: Frons at vertex 0.28 of head width; pv black; pf and pa dark brown with golden-silvery pollinosity; a dark brown, length of a₃ 3× that of a₂; g with golden-silvery pollinosity and with black hair anteriorly; ori 10–12 pairs, lower 2–3 pairs divergent; 3 rows of black ps irregular; pal dark brown. Thorax: Brownish-gray; median longitudinal stripe with 2 narrow submedian stripes; ac 0; dc 5–6+5–6; ia 1+2–3; prsb 1; hb 3; ph 2; np 4; sa 4; pa 2; scut 3+1; st 1:1; ph hairy posteriorly. Wings: Hyaline; wing-veins brown; r₀, with a row of setae located dorsally extending less than to about half way from basal node to r-m and with some setae on ventral surface of basal node; sq creamy white; ha brown. Legs: Black; f₁ with 2 pd rows, a pv row, numer-
ous long pv hair; t₁ with 2 long ad, 1 pl; f₂ with 3–6 al, an ad row, comb-like pv, 1–2 pd, 1 pl, thin av fringe, long pv fringe; t₂ with 1–2 al, 1 long and a short pd row, 1 pl, 1 v; f₃ with 2 ad rows, an av row, 1 pd, 1 pl, numerous relatively long av hair, some long pv hair and hair-like pv at distal end; t₃ with an ad row, 1 av, 2 pd, av and pv fringe. Abdomen: Same color as thorax; T₃ without mb but mb well developed on T₄ and T₅, GT₁ reddish-brown, GT₂ orange to orange-brown. Forceps and genitalia as shown in Fig. 40.

Specimens examined: 8 δ, Ban Yang, 1400 m., Doi Inthanon, 17, 19, 23 IX 1975, R. Kano & H. Kurahashi; 1 δ, Top, 2667 m., Doi Inthanon, 23 IX 1975, R. Kano; 6 δ, Doi Pui, 1685 m., C. Chiang Mai, 16 IX 1975, R. Kano & H. Kurahashi.

Distribution: India, Korea, Nepal, Thailand; Africa; Europe; Hawaii, N. & S. America.

Remarks: This species is distributed around the human dwellings in the high mountains, gathering on the human feces or animal carcasses. Many cases of myiasis caused by this species have been reported (James, 1947).

Genus Fengia Rohdendorf, 1964


Medium to large size; antennae long, arista long-plumose along the basal 2/3; post dc 4; propodeum bare; hind tibia fringed; 3rd tergite without median marginal bristles; 5th sternite V-shaped; outer forceps broad; theca short; apical plate of paraphallus united to paraphallus without suture; stylet thread-like and very long, much longer than apical plate.

41. F. ostindicae (Senior-White, 1924)

Sarcophaga ostindicae S.-W., Re. Indian. Mus., 26: 233 (1924)


MALE. Body length 10.0 to 12.0 mm. Head: Frons at vertex 0.22–0.24 of head width; pv black; pf and pa with golden to silvery pollinosity; a dark brown, length of a₃ 3× that of a₅; g with golden to silvery pollinosity and with black hair; ori 11–12 pairs, lower 2–3 pairs divergent; 4 rows of black ps regular; pal blackish-brown. Thorax: Pale brownish-gray; ac 4+1–2; dc 3+4; ia 1+3; prsb 1; hb 3; ph 2; np 4; sa 3–4; pa 2; scut 3+1; st 1:1:1; prs hairy posteriorly. Wings: Hyaline; wing-veins light-brown; r₁ bare; r₄+₅ with a row of setae located dorsally, extending more than half way from basal node to r-m and with some setae on ventral surface of basal node; sq creamy white; ha brown. Legs: Black; f₁ with 2 pd rows, a pv row, numerous long pv hair; t₁ with 2 ad, 1 pl; f₂ with 2–4 al, an av row, comb-like pv, 2 pd, 1 pl, av and pv fringe; t₂ with 1 al, 1 v, 3 long and a small pd row, 1 pl; f₃ with 2 ad rows, an av row, a pv row, 2 pd, 1 pl, av and pv fringe; t₃ with an ad row, 1 av, 2 pd, av and pv fringe. Abdomen: Same color as thorax; mb well developed on T₄ and T₅; genital tergites dark brown. Forceps and genitalia as shown in Fig. 38.

Specimens examined: 2 δ, Doi Huai Hwer, 1231 m., Fang, 27 IX 1975, R. Kano & H. Kurahashi; 1 δ, Fang Exp. St., 500 m., Fang, 25 IX 1975, H. Kurahashi; 1 δ, Doi Saket, 300 m., C. Chiang Mai, 15 IX 1975, W. Tumrasvin; 1 δ, Ban Pong Din, 10 km. N.E. Doi Saket, 20 IX 1975, W. Tumrasvin.

Distribution: China, India, Thailand, Taiwan.

Genus Rosellea Rohdendorf, 1937

Medium to large size; arista long-plumose along basal 1/2; post dc 5; propleuron hairy; r₁ bare; hind tibia fringe; 5th sternite with prominent conical protuberance in the middle part of the ventral surface; inner forceps broad and pointed at apex; theca normal length; ventralia well developed; apical plate of paraphallus large, poorly sclerotized.

42. **R. khasiensis** (Senior-White, 1924)

Sarcophaga khasiensis S.-W., Rec. Indian Mus., 26: 246 (1924)

*R. khasiensis*: Delfinado, Catalog Dipt. Oriental Region, 3: 574 (1977)

**MALE.** Body length 8.0 to 13.0 mm. 

**Head:** Frons at vertex 0.24 of head width; *fv* black; *pf* and *pa* dark brown with silvery to golden pollinosity; *a* dark brown, length of *a₂ 2.5× that of *a₁; g black with silvery pollinosity and with black hair; *ori* 13–14 pairs, lower 2–3 pairs divergent; 3 rows of black *ps* regular; *pal* blackish-brown.

**Thorax:** Dark brownish-gray; *ac* 0+1; *dc* 5–6+5; *ia* 1+2; *prsb* 1; *hb* 3–4; *ph* 2; *np* 4; *sa* 3; *pa* 2; *scut* 3+1; *st* 1:1:1; *prs* hairy posteriorly. 

**Wings:** Hyaline; wing-veins brown; *r₄₊₅* with a row of setae located dorsally extending more than half way from basal node to *r*-m and with some setae on ventral surface of basal node; *sq* creamy white; *ha* brown. 

**Legs:** Black; *f₁* with 2 *pd* rows; a *pv* row, numerous, relatively long *pv* hair; *t₁* with 3–4 *ad*, 1 *pl*; *f₂* with 3–4 *al*, an *av* row, comb-like *pv*, 2–3 *pd*, 1 *pl*, *av* and *pv* fringe; *t₂* with 2 *ad*, 1 *v*, 2–3 long and a short *pd* row, 1 *pl*; *f₃* with 2 *ad* rows, an *av* row, moderately long *av* hair, several long hair-like *pv* and thin *pv* fringe on apical 2/5, 1–5, 1–2 *pd*, 1 *pl*; *t₅* with a *ad* row, 1 *av*, 2 *pd*, *av* and *pv* fringe. 

**Abdomen:** Same color as thorax: *T₃* without *mb* but *mb* well developed on *T₄* and *T₅*; *GT₁* and *GT₂* dark brown. Forceps and genitalia as show in Fig. 42.

**Specimens examined:** 7♂ 8♀, Ban Yang, 1460 m., Doi Inthanon, 19 IX 1975, R. Kano & W. Tumrasvin; 1♂, Doi Inthanon, Chiang Mai, 19 IX 1975, S. Shizonaga.

**Distribution:** China, India, Nepal, Thailand

**Genus Sinonipponia** Rohdendorf, 1965


Arista long-plumose along basal 2/3; propleuron usually bare; post dc 4; r₁ bare; hind tibia fringed; sternites with numerous long hair; 5th sternite V-shaped; theca short; phallosome large; basal lobe pointed apically; styli long; apical plate of paraphallus composed of median apophysis and lateral projections.

43. **S. hainanensis** (Ho, 1936)


Sinonipponia hainanensis: Fan, Synan. 

Flies China, 247 (1965)

**MALE.** Body length about 8.0 mm. 

**Head:** Frons at vertex 0.22–0.24 of head width; *fv* black; *pf* and *pa* dark brown with silvery pollinosity; *a* brown, length of *a₂ 2.5× that of *a₁; g black with silvery pollinosity and with black hair; *ori* 10 pairs, lower 1–2 pairs divergent; 3 rows of black *ps* regular; *pal* black. 

**Thorax:** Dark gray; *ac* 0+1; *dc* 4–5+4; *ia* 1+2; *prsb* 1; *hb* 3; *ph* 2; *np* 4; *sa* 3; *pa* 2; *scut* 3+1; *st* 1:1:1; *prs* hairy posteriorly. 

**Wings:** Hyaline; wing-veins light brown; *r₄₊₅* with a row of setae located dorsally extending more than half way from basal node to *r*-m and with some setae on ventral surface of basal node; *sq* creamy white; *ha* light brown. 

**Legs:** Blackish-brown; *f₁* with 2 *pd* rows; a *pv* row; *t₁* with 2 *ad*, 1 *pl*; *f₂* with 5–7 *al*, 3–4 strong *ad* in basal 1/2, 1 *pd*, 1 *pl*, a *pv* row and numerous
long pv hair in basal 1/2; t₂ with 2 al, 2 v, 2–3 pd, 1 pl; f₁ with 2 ad rows, an av row, a pv row, several long av hair, 1–2 pd, 1 pl; t₃ with an ad row, 1 av, 1 pd, thin av and pv fringe. Abdomen: Same color as thorax: T₃ with weak or without mb but mb well developed on T₄ and T₅; GT₁ and GT₂ dark brown. Forceps and genitalia as shown in Fig. 43.


Distribution: China, Thailand, Taiwan

Remarks: This species is commonly found on the seashore and gather on decaying fish or other organic debris.

Genus Thyrsocnema Enderlein, 1928

Thyrsocnema Enderl., Arch. Klass. phyl. Ent., 1: 42 (1928)

Small size; arista long-plumose along basal 1/2; post dc 5; propleuron bare; r₁ bare; 3rd and 4th sternites with conspicuous hair; 5th sternite V-shaped; theca normal length; ventralia well developed; styli very long and bent; apical plate of paraphallus well developed, long and slender, largely rounded apically.

44. T. caudagalli (Böttcher, 1912)

Sarcophaga caudagalli Bött., Ent. Mitt., 1: 167 (1912)


MALE. Body length 7.0 mm. Head: Frons at vertex about 0.22 of head width; pf and pa dark brown with silvery pollinosis; a dark brown, length of a₂ 2× that of a₁; g black, slightly silvery pollinosis and with black hair; ori 10–12 pairs, lower 2 pairs divergent; 3 rows of black ps regular; pal dark brown. Thorax: Dark gray; ac 5–6+1; dc 4–5+5; ia 1+3; prsb 1; hb 3; ph 2; np 4; sa 3; pa 2; scut 3+1; st 1:1:1; prs hairy posteriorly. Wings: Hyaline; wing veins brown; r₄₅ with a row of setae located dorsally, extending more than half way from basal node to r-m and with some setae on ventral surface of basal node; sq creamy white; ha brown. Legs: Dark brown; f₁ with 2 pd rows, a pv row; t₁ with 3–4 ad, 1 long and a pd row, 1 pl; f₂ with 4 al, 1–2 pd, 1 pl, an av row, a pv row, without comb-like pv; t₂ with 3–4 al, 2–3 long and some short pd, 1 pl, 1 v; f₃ with 2 ad rows, an av row, a pv row, 1 pd, 1 pl; t₃ with an ad row, 2–3 av, 2 pd. Abdomen: Same color as thorax: T₃ with weak or without mb but mb well developed on T₄ and T₅; GT₁ and GT₂ dark brown. Forceps and genitalia as shown in Fig. 41.

Specimens examined: 1 ⁷, Ban Pong Din, 10 km. N.E. Doi Saket, 20 IX 1975, R. Kano; 2 ⁷ ⁷, Sam Sane, Bangkok, 29 VIII 1975, R. Kano & H. Kurahashi.

Distribution: China, Taiwan, Thailand

Genus Phytosarcophaga Rohdendorf, 1937

Phytosarcophaga Rohd., Fauna 1' U.R.S.S. Dipt., 19: 301 (1937)

Usually small size; antennae short, arista plumose along basal 1/2; post dc 5; propleuron hairy; costal bristles strong; r₁ setulose; hind tibia fringed; 1st to 4th sternites with numerous short black hair; 5th sternite V-shaped; inner forceps pointed at apex; theca long; paraphallus poorly sclerotized; apical plate of paraphallus largely rounded apically; ventralia reduced to a small lobe.

45. P. gressitti (Hall & Bohart, 1948)


P. gressitti: Lopes, Insects Micronesia, 13: 21 (1948)

MALE. Body length 6.0 to 8.0 mm.
Head: Frongs at vertex 0.28 of head width; $fv$ black; $pf$ and $pa$ dark brown with silvery pollinosity; a dark brown, base of $a_3$ and tip of $a_2$ orange, length of $a_3$ 1.5× that of $a_2$; $g$ black with silvery pollinosity and with black hair; $ori$ 8–10 pairs, lower 2 pairs divergent; 3 rows of black $ps$ regular; $pal$ dark brown. Thorax: Ashy-gray; a median stripe with 2 narrow submedian stripes; $ac$ 0+1; $dc$ 4–5+5; $ia$ 1+2; $psrb$ 1; $hb$ 3; $ph$ 2; $np$ 4; $sa$ 3; $pa$ 2; $scut$ 3+1–2; $st$ 1:1:1; $prs$ hairy posteriorly. Wings: Hylaine; wing-veins brown; $r_{4+5}$ with a row of setae located dorsally extending more than half way from basal node to $r$- $m$ and with some setae on ventral surface of basal node; $sq$ creamy white; $ha$ light brown. Legs: Black; $f_1$ with 2 $pd$ rows, a $pv$ row; $t_1$ with 2 $ad$, 1 $pl$; $f_2$ with 2–4 $al$, an $ad$ row, a $pv$ row, 1 $pd$, 1 $pl$; $t_2$ with 2 $ad$, 2 $pd$, 1 $pl$, 1 $v$; $f_3$ with an $ad$ row, 1 $av$, 2 $pd$, $av$ and $pv$ fringe. Abdomen: Same color as thorax; $T_5$ without $mb$ but $mb$ well developed on $T_4$ and $T_5$; $GT_1$ and $GT_2$ dark brown. Forceps and genitalia as shown in Fig. 47.

Specimens examined: 61 $\delta$, Beach, C. 30 km. S. Chon Buri, 30 VIII & 11 X 1975, R. Kano, H. Kurahashi & W. Tumrasvin.

Distribution: Philippines, Thailand; Hawai, Micronesia, Ogasawara Isds.

Remarks: This species is also commonly found on the seashore gathering on the decaying fish or other organic debris.

Genus Harpagophalla Rohdendorf, 1937

Harpagophalla Rohd., Faune I’ U.R.S.S. Dipt., 19, 276 (1937)

Usually medium size; arista long-plumose along basal 2/3; $post$ $dc$ 5; propleuron bare; $r_1$ bare; hind tibia fringed; sternites with very long hair; 5th sternite V-shaped; inner forceps curved at apex and with tuft of long hair near apex; outer forceps broad, triangle-shaped; theca very short; ventralia small; apical plate of paraphallus long and slender.

46. H. kemp (Senior-White, 1924)

Sarcophaga kemp, Rec. Indian Mus., 26: 247 (1924)


MALE. Body length 6.0 to 11.0 mm. Head: Frongs at vertex 0.24 of head width; $fv$ black; $pf$ and $pa$ black, with silver-gray pollinosity; a dark brown, length of $a_3$ 2× that of $a_2$; $g$ black with silver-gray pollinosity and with black hair; $ori$ 9–10 pairs, lower 1–2 pairs divergent; 3 rows of black $ps$ regular; $pal$ black. Thorax: Brownishgray; $ac$ 0+1; $dc$ 5+5; $ia$ 1+2; $psrb$ 1; $hb$ 3; $ph$ 2; $np$ 4; $sa$ 3; $pa$ 2; $scut$ 3+1; $st$ 1:1:1; $prs$ hairy posteriorly. Wings: Hylaine; wing-veins light brown $r_{4+5}$ with a row of setae located dorsally extending more than half way from basal node to $r$- $m$ and with some setae on ventral surface of basal node; $sq$ creamy white; $ha$ brown. Legs: Black; $f_1$ with 2 $pd$ rows, a $pv$ row, numerous, moderately long $pv$ hair; $t_1$ with 2 $ad$, 1 long and a short $pd$ row, 1 $pl$; $f_2$ with 3–6 $al$, an $ad$ row, a comb-like $pv$, 1–2 $pd$, 1 $pl$, $pv$ fringe; $t_2$ with 2 $ad$, 1 $v$, 2–3 long $pd$, 1 $pl$; $f_3$ with 2 $ad$ rows, 1–2 $pd$, 1 $pl$, $av$ and $pv$ fringe; $t_3$ with an $ad$ row, 1 $av$, 2 $pd$, $av$ and $pv$ fringe. Abdomen: Same color as thorax; $T_5$ without $mb$ but $mb$ well developed on $T_4$ and $T_5$; $S_4$ with mat of hair posteriorly and with long hair laterally; $GT_1$ and $GT_2$ dark brown. Forceps and genitalia as shown in Fig. 45.

Specimens examined: 2 $\delta$, Hill, C. 300 m., Sa Kaeo 30 km. S. E., 3 IX 1975, R. Kano; 1 $\delta$, nr. Ban Sap Bon, 30 km. E. Sara Buri, 4 X 1975, H. Kurahashi.

Distribution: China, India, Indonesia, Laos, Sri Lanka, Thailand; New Guinea
Genus Seniorwhitea Rohdendorf, 1937

Seniorwhitea Rohd., Fauna 1' U.R.S.S.
Dipt., 19: 297 (1937)

Medium to large size; antennae long, arista long-plumose along basal 2/3; post dc 5; propleuron bare; r₁ bare; mid-and hind tibiae with fringe; 3rd and 4th sternites almost wholly covered with thick mat of hair; 5th sternite V-shaped; phallosome large; theca very long; apical plate of paraphallus large, rounded and wholly membranous; styli long; ventralia small, curved at apex.

47. S. krameri (Böttcher, 1912)

Sarcophaga krameri Bött., Ent. Mitt., 1: 165 (1912)

Seniorwhitea krameri: Lopes, Mem. Inst. Oswaldo Cruz, 62: 162 (1964)

MALE. Body length 9.0 to 13.0 mm. Head: Frons at vertex about 0.24 of head width; fv black; pf and pa dark brown with golden pollinosity; a dark brown, length of a₂ 2.5× that of a₁; ori 8–11 pairs, lower 1–2 pairs divergent; g black with silver-gray pollinosity and with black hair; 3 rows of black ps regular;пал dark brown. Thorax: Dark gray; a median stripe with 2 narrow submedian stripes; ac 0+1; dc 5+5–6; ia 1+2; prsb 1; hb 3; ph 2; np 4; sa 3–4; pa 2; scut 3+1; st 1:1:1; prs hairy posteriorly. Wings: Hyaline, darkened anteriorly; wingveins brown; r₁+₃ with a row of setae located dorsally exceeding more than half way from basal node to r-m and with some setae on ventral surface of basal node; sq creamy white; ha brown. Legs: Black; f₁ with 2 pd rows, a pv row, numerous, long pv hair; t₁ with 2–3 ad, 1–2 long and a short pd row, 1 pl; f₂ with 3–5 al, an av row, comb-like pv, av and pv fringe; t₂ with 1–2 long pd, 4–5 long pl, av and pv fringe; f₃ with 2 ad rows, 2–3 pd, 1 pl, av and pv fringe; t₃ with an ad row, 2 pd, av and pv fringe. Abdomen: Same color as thorax; T₃ without mb but mb well developed on T₄ and T₅; GT₁ and GT₂ dark brown. Forceps and genitalia as shown in Fig. 46.

Specimens examined: This species is found in the mountains throughout Thailand.

Distribution: Burma, China, India, Laos, Malaysia, Nepal, Singapore, Sri Lanka, Thailand, Taiwan; Hawaii

Genus Leucomyia Brauer et Bergenstamm, 1891

Leucomyia Bra. et Berg., Denksch. Akad. Wiss., Wien, 58: 64 (1891)

Small size; covered with thick whitish pollinosity; frons very broad; antennae short; arista pubescent along basal 1/2; frontal profile little sloped; haustellum little longer than labella; propleuron bare; r₁ bare; 3rd and 4th sternites with short black hair; 5th sternite V-shaped; anterior paramere divergent at tip; theca long; ventralia small; styli long and curved forward; apical plate of paraphallus curved, without lateral processes.

48. L. cinerea (Fabricius, 1794)

Musca cinerea Fab., Ent. Syst., 4: 311 (1794)


MALE. Body length 6.0 to 7.0 mm. Head: Frons at vertex about 0.44 of head width; fv, pf, pa and g covered with grayish-white pollen; a brown, length of a₂ 1.5× that of a₁, a₂ orange anteriorly; ori 7–8 pairs, lower 1 pair divergent; g with white hair only; outer vertical bristles well developed; 1 row of black ps; pal orange to orange-brown. Thorax: Grayish-white; a median longitudinal stripe with 2 narrow submedian stripes; ac 0+1; dc 3–4+3; ia
$1 + 2$; $prsb$ 1; $hb$ 2; $ph$ 2; $np$ 2; $sa$ 3; $pa$ 2; $sct$ 2+1; $st$ 1+1; $prs$ hairy posteriorly. 
Wings: Hyaline; wing-veins light brownish-yellow; $r_{4+5}$ with a row of setae located dor-sally extending more than half way from basal node to $r$-$m$ with some setae on ventral surface of basal node; $sq$ creamy white; $ha$ light yellowish-brown. 
Legs: 
Black $f_1$ with 2 $pd$ rows; a $pv$ row; $t_1$ with 2–5 $ad$, a $pl$; $f_2$ with 3–5 $al$, an $av$ row, a $pv$ row, 1 $pd$, 1 $pl$; $t_2$ with 2 $al$, 2–3 $pd$, 1 $pl$, 1 $v$; $f_3$ with an $ad$ row, an $av$ row, a $pv$ row 1 $pd$, 1 $pl$; $t_3$ with 2–3 long $ad$, 2 $av$, 2 $pd$. Abdomen: Same color as thorax: $T_5$ without $mb$ but $mb$ well developed on $T_3$ and $T_5$; $S_1$ and $S_2$ covered with long yellowish-white hair; $GT_1$ and $GT_2$ dark brown, covered with grayish-white pollen. Forceps and genitalia as shown in Fig. 48.

Specimens examined: 25 $\delta$ $\delta$, Beach, C. 30 km. S. Chon Buri, 30 VIII 1975, R. Kano, H. Kurahashi & W. Tumrasvin; 7 $\delta$ $\delta$, Seashore, Chon Buri, 23 XII 1975, S. Shinonaga; 3 $\delta$ $\delta$, Salt pond, Chon Buri; 23 XII 1975, W. Tumrasvin.

Distribution: China, India, Japan, Laos, Sri Lanka, Thailand

Remarks: This species is commonly found on the seashore gathering on the dead or decaying fish or other organic debris.

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References

EXPLANATION OF FIGURES

Forceps and genitalia

Fig. 1. Hosarcophaga seriata
Fig. 2. Konomyia bangkokensis
Fig. 3. Parasarcophaga knabi
Fig. 4. Parasarcophaga orchidea
Fig. 5. Parasarcophaga albiceps
Fig. 6. Parasarcophaga doleschalli
Fig. 7. Parasarcophaga iuvensis
Fig. 8. Parasarcophaga scopariiformis
Fig. 9. Parasarcophaga amnicercus
Fig. 10. Parasarcophaga yuanensis
Fig. 11. Parasarcophaga brevicornis
Fig. 12. Parasarcophaga spinipenis
Fig. 13. Parasarcophaga minera
Fig. 14. Parasarcophaga ruficornis
Fig. 15. Sarcorhodendorfia inextricata
Fig. 16. Parasarcophaga idmiae
Fig. 17. Boettcherisca javonica
Fig. 18. Sarcorhodendorfia antiope
Fig. 19. Boettcherisca peregina
Fig. 20. Boettcherisca nathoni
Fig. 21. Sarcorhodendorfia montana
Fig. 22. Sarcorhodendorfia flavimervis
Fig. 23. Sarcorhodendorfia multivillosa
Fig. 24. Sarcosolomonia harinasutai

Fig. 25. Sarcosolomonia crinita
Fig. 26. Sarcosolomonia amaculata
Fig. 27. Sarcosolomonia trilinata
Fig. 28. Sarcosolomonia sp.
Fig. 29. Sarcosolomonia shinonagai
Fig. 30. Blaesoxipha pachytyli
Fig. 31. Blaesoxipha unicolor
Fig. 32. Blaesoxipha thailandica
Fig. 33. Pierretia calicifera
Fig. 34. Blaesoxipha filipjevi
Fig. 35. Lioproctia beisoni
Fig. 36. Lioproctia pattoni
Fig. 37. Pierretia melania
Fig. 38. Fungia osindicae
Fig. 39. Phallosphaera kurahashii
Fig. 40. Beraca haemorrhoidalis
Fig. 41. Thyrsocnema caudogalli
Fig. 42. Rosellea khasiensis
Fig. 43. Sinonipponia hainanensis
Fig. 44. Phallosphaera gravelyi
Fig. 45. Harpogophalla kempi
Fig. 46. Seniorohilea krameri
Fig. 47. Phtiosarcophaga gressitti
Fig. 48. Leucomyia cinerea
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Plate 3

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