

## Hawaiian Sarcophagidae (Diptera)

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Among the sarcophagid flies I received for study from the University of Hawaii I found two female specimens of *Chaetoravinia anandra* Dodge. This species was described from the USA and Canada and not previously reported from the Hawaiian Islands. A key for identification of the 14 species now known from Hawaii is given here, based mainly on external characters:

1. Arista bare; abdominal sternites 3 and 4 covered by tergites.....2  
 Arista plumose; abdominal sternites exposed.....3
2. Head hemispherical, eyes very large; male genital segments reduced . . .  
 ..... **Pachyophthalmus alienus** Dodge  
 Head sub-quadrata, eyes normal; male genital segments well developed,  
 the first with two transverse rows of bristles . **Goniophyto bryani** Lopes
3. Wing vein R<sub>1</sub> with setae.....4  
 Wing vein R<sub>1</sub> bare.....6
4. With three strong postsutural dorsocentral bristles, equidistant from  
 each other; female tergite 6 plus 7 composed of two separate plates . .  
 ..... **Helicobia morionella** Aldrich  
 With four postsutural dorsocentral bristles, only the posterior two  
 strongly developed; female tergite 6 plus 7 entire .....5
5. Presutural dorsocentral bristles all strongly developed; female 8th tergite  
 represented by two lateral crescent-shaped plates  
 ..... **Chaetoravinia anandra** Dodge  
 Presutural dorsocentral bristles not differentiated; female 8th tergite  
 represented by dorsal plates . **Phytosarcophaga gressitti** (Hall & Bohart)
6. Propleura with setae, sometimes very scarce.....  
 ..... **Boettcherisca peregrina** (Robineau-Desvoidy)  
 Propleura bare.....7
7. Male genital segments very large; male hind femur spined on ventral  
 side; female genital sternites almost as large as tergites.....  
 ..... **Hystricocnema plinthopyga** (Wiedemann)  
 Male genital segments and female genital tergites normal; male hind  
 femur not spined.....8

8. Presutural acrostichal bristles strong; female 8th tergite conspicuous, composed of two lateral crescent-shaped plates . . . . .  
 . . . . . *Ravinia lherminieri* (Robineau-Desvoidy)  
 Presutural acrostichal bristles small or absent . . . . . 9
9. Antennae and palpi red . . . *Parasarcophaga (Jantia) ruficornis* (Fabricius)  
 Antennae and palpi grey or black . . . . . 10
10. Second male genital segment and female genital segments pale . . . . . 11  
 Genital segments of both sexes black or reddish black . . . . . 12
11. Genae with black setae anteriorly; theca of penis much reduced; female genital tergite with hind margin excised at middle . . . . .  
 . . . . . *Bercaea haemorrhoidalis* (Fallen)  
 Genae with a few black setae near eyes only; theca of penis elongate; female genital tergite with margins entire . . . . .  
 . . . *Parasarcophaga (Thomsonia) argyrostoma* (Robineau-Desvoidy)
12. *Forcipes superiores* with conspicuous tuft of setae near apex, margins of tergite 6 plus 7 of female entire, folded, with sides of hind margins nearly parallel . . . . . *Seniorwhitea orientaloidea* (Senior-White)  
*Forcipes superiores* without tuft of setae near apex; female tergite 6 plus 7 with sides of hind margin divergent . . . . . 13
13. Ventralia of penis pedunculate; hind margin of female tergites 6 plus 7 interrupted at center; hind margin of sternite 8 straight . . . . .  
 . . . . . *Parasarcophaga (s. str.) albiceps* (Meigen)  
 Ventralia of penis not pedunculate; female tergites 6 plus 7 with hind margin entire, sternite 8 with concave margin . . . . .  
 . . . . . *Parasarcophaga (Liosarcophaga) misera* (Walker)

### *Pachyophthalmus alienus* Dodge

*Amobia (Pachyophthalmus)* sp.? Hardy, 1952:477.

*Pachyophthalmus alienus* Dodge, 1953:131, figs. 1-4.

Specimens examined; three males (paratypes), Oahu Country Club, Honolulu, III. 1952.

Geographical distribution: Hawaii.

### *Goniophyto bryani* Lopes

*Goniophyto bryani* Lopes, 1938:195, figs.

Specimens examined: male and female, Johnston I., Bryan 18. VII. 1923. two males, French Frigate, Bryan, 24. IV. 1923, all in the collection of "Instituto Oswaldo Cruz" (paratypes).

Geographical distribution: Johnston I., Leeward Hawaiian Islands. (Has been reported from Laysan and Midway in addition to French Frigate).

***Helicobia morionella* (Aldrich)**

*Helicobia surrubea* Aldrich, 1916:154, figs. 72 (nec Wulp).

*Helicobia morionella* Aldrich, 1930:31.

*Helicobia helicis* Williams, 1937:362 (nec Townsend).

Specimens examined: OAHU: male, Halemano, D. E. Hardy, 1953: male, three females, Waimanalo, D. E. Hardy, 21 to 31. I. 1951; male, Poamoho, D. E. Hardy, 9. XI. 1951; three males, three females, Ewa Coral Plain, J. W. Beardsley, X. 1955; male, female, Manoa Val. I. 1951; three females, Mt. Tantalus, M. Fujikawa, D. E. Hardy, 28. X. 1950, XII. 1958, V. 1949; male, Waipahu, M. J. Tangi; two females, Kailua, T. A. Jones, II. 1958, ex pupa *Spodoptera mauritia*; male, ten females, Honolulu, D. E. Hardy, XI. 1958, IV. 1951, V. 1952 (some specimens from dead snails), Waikiki, D. E. Hardy, VIII, 1949.

MOLOKAI: six males, seven females, Wailua Beach, D. E. Hardy, VII. 1952.

KAUAI: male, Kokee, 3,600 ft., D. E. Hardy, VII. 1952; male, Eleele, M. Fujikawa, 29. XII. 1950.

MAUI: female, Holua, Haleakala Crater, 6,500 ft., C. R. Joyce, VI. 1951; female, Hana, H. A. Bess, 23. IX. 1951.

HAWAII: male, Puu Kalopa, D. E. Hardy, X. 1952; female, Kaiholena, Kohala Mt., D. E. Hardy, VIII. 1952, 4,000 ft.; three males, female, Mauna Loa, 4,000 ft., W. C. Mitchell, VIII, 1952; five males, female, Bird Park, Kilauea, D. E. Hardy, VIII, 1952; male, female, Hualalai, 4,600 ft., D. E. Hardy, VII. 1953; male, Kamuela, D. E. Hardy, VIII. 1952; male, two females, Kaula Gulch, D. E. Hardy, VIII. 1952; two males, female, Hawaii Nat. Park, 4,000 ft., H. A. Bess, VIII. 1952.

Geographical distribution: North, Central, and South America, Hawaii.

***Phytosarcophaga gressitti* (Hall & Bohart)**

*Sarcophaga gressitti* Hall & Bohart, 1948:131, pl. 13.

Specimens examined: KAUAI: three males, five females, Haena, on beach, D. E. Hardy, VIII. 1953.

OAHU: male, Waimanalo, M. Adachi, XI. 1951.

Geographical distribution: Micronesia, Hawaii.

***Seniorwhitea orientaloides* (Senior-White)**

*Sarcophaga orientaloides* Senior-White, 1924:244, fig. 31.

*Sarcophaga simia* Rohdendorf, 1930:315, fig. 1.

Specimens examined: OAHU: three males, Honolulu, D. E. Hardy, IV. 1950, XV XII. 1950; female, Manoa Val., E. H. Bryan; female, sugarcane, VIII. 1950; male, Waianae, D. E. Hardy, II. 1952; male, Poamoho, D. E. Hardy, 19. XI. 1948.

KAUAI: male, Kalalau, D. E. Hardy, 19. VIII. 1953.

Geographical distribution: India, Ceylon, Siam, Burma, China, Hawaii.

**Boettcherisca peregrina** (Robineau-Desvoidy)*Myophora peregrina* Robineau-Desvoidy, 1830:356.*Sarcophaga fuscicauda* Boettcher, 1912:169, fig. 3.*Sarcophaga hutsoni* Parker, 1923:127, fig. 4.

Specimens examined: OAHU: three females, Mt. Kaala, D. E. Hardy, V. 1952; female, Mt. Kaala, M. Tamashiro, V. 1952; male, Mt. Tantalus, Y. Tanada, 29. IV. 1939; female, Honolulu, I. 1947.

MOLOKAI: male, Keopukoloa, D. E. Hardy, VII. 1952.

KAUAI: female, D. E. Hardy, VII. 1952; male, Kalalau, D. E. Hardy, VIII. 1953.

Geographical distribution: China, Japan, Volcano Is., Bonin Is., Mariana Is., Formosa, Hainan, India, Ceylon, Australia, New Guinea, New Britain, Samoa, Gilbert Is., Hawaii.

**Chaetoravinia anandra** Dodge, (fig. 1, A-D)*Chaetoravinia anandra* Dodge, 1956:187, fig. 15.

A very characteristic species because of the shape of the genital sternites of female, specially of the last which is trapezoidal, bearing internally, near the lateral margins, an elongate bar with hairs (fig. 1, A-D). The figured specimen is an anomalous one having the lateral production only on the left side. Only females are known.

Material examined: MOLOKAI: female, Puu O Kaeha, D. E. Hardy, VII. 1953.

MAUI: female, Paliku, Haleakala Crater, 6,500 ft., D. E. Hardy, VI. 1953.

Geographical distribution: U.S., Canada, Hawaii.

**Ravinia lherminieri** (Robineau-Desvoidy)*Myophora lherminieri* Robineau-Desvoidy, 1830:329.*Sarcophaga anxia* Walker, 1849:818.*Sarcophaga querula* Walker, 1849:821.*Sarcophaga avida* Walker, 1849:822.*Sarcophaga rediviva* Walker, 1849:823.*Sarcophaga rabida* Walker, 1849:823.*Sarcophaga acerba* Walker, 1849:824.*Sarcophaga aspera* Walker, 1849:825.*Sarcophaga comes* Walker, 1852:323.*Sarcophaga pallinervis* Thomson, 1869:535.*Sarcophaga communis* Parker, 1914:253, fig. 120.*Sarcophaga lherminieri* Aldrich, 1930:13 (types examined).

Material examined: OAHU: six males, female, Waimanalo, D. E. Hardy, 21. I. 1951, 17. VI. 1949, 31. I. 1951; male, three females, H. Severin, 10. I. 1912, 28. III. 1912; male, Makalapa, D. E. Hardy, VI. 1952; four males, two females,

Honolulu, D. E. Hardy, III. 1959; female, Waipio, D. E. Hardy, XII. 1952; female, Manoa Val., D. E. Hardy, IX. 1951; male, female, Poamoho, W. C. Mitchell, III. 1952; male, Waipahu, M. J. Tanji, IV. 1952; male, female, Waikiki, D. E. Hardy, VIII. 1949.

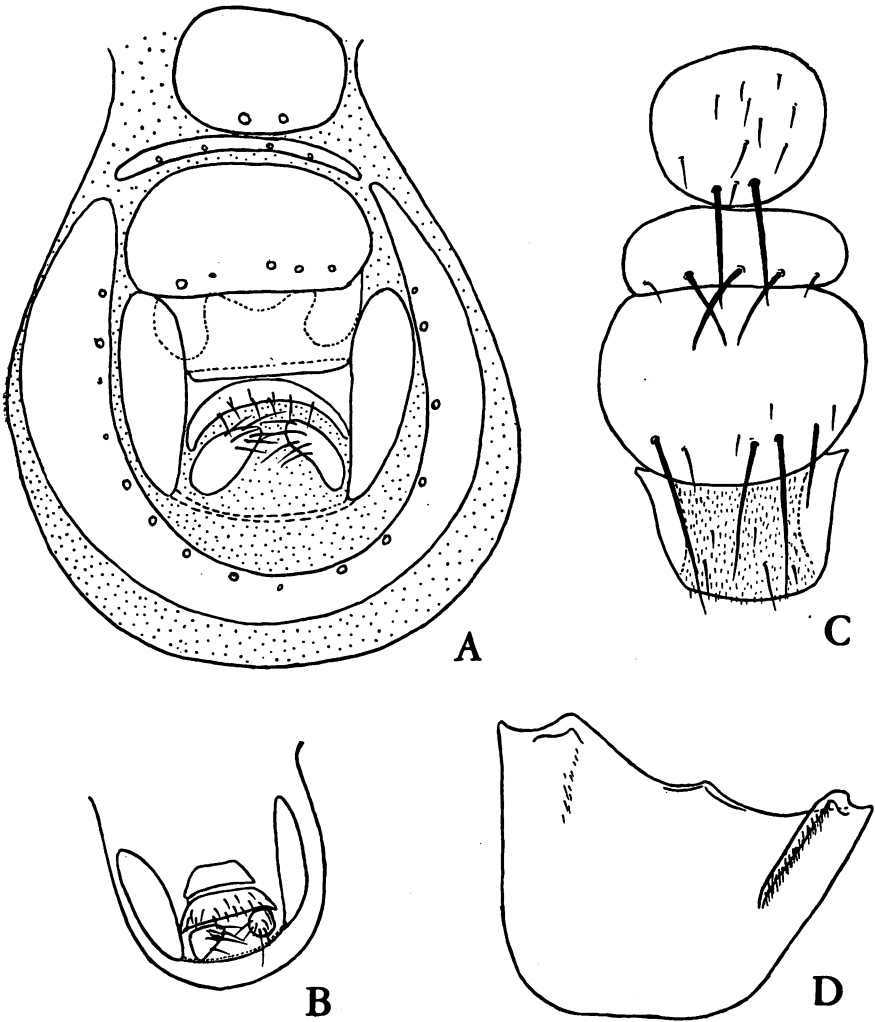


FIG. 1. *Chaetoravinia anandra* Dodge, female: a, genitalia; b, eighth tergite and anal segment; c, genital sternites; d, last genital sternite.

KAUAI: four males, female, Kokee, 3,600 ft., D. E. Hardy, VII. 1952; male, Hanalei, D. E. Hardy, VII. 1952; two females, Haena, D. E. Hardy, VIII. 1953; two males, Kalalau, D. E. Hardy, VII. 1953, Swezey, 20. VIII. 1921.

MOLOKAI: two males, female, Wailua Beach, D. E. Hardy & M. Tamashiro, VII. 1952; three males, two females, Maunahui, D. E. Hardy, VII. 1952; female, Maunawainui Val., D. E. Hardy, VII. 1952; two females, Keopukaloa, M. Tamashiro, VII. 1952; male, female, Puu Kaeo, D. E. Hardy, VII. 1952; ten males, Puu O Kaeha, D. E. Hardy, VII. 1953; three males, female, Puu Kolekole, D. E. Hardy, VII. 1952; male, female, Puu Niauniau, 6,500–7,000 ft., D. E. Hardy, VII. 1956; female, Mapulehu, Y. Tanada.

HAWAII: three males, two females, Kaiholena, Kohala Mt., 4,000 ft., D. E. Hardy, VIII. 1952; male, Pauahi, 4,200 ft., D. E. Hardy, VIII. 1956; male, female, Kilauea, Bird Park, D. E. Hardy, VII. 1953; male, Upper Oloo, D. E. Hardy, 1949; female, Captain Cook, D. E. Hardy, 1949; male, Waipoi Val., D. E. Hardy, VIII. 1952; male, three females, Hualalai, 4,600 ft., D. E. Hardy, VIII. 1952; male, two females, Kukaiau, D. E. Hardy & W. C. Mitchell, VIII. 1952; three males, three females, Parker Ranch, Kohala, H. A. Bess, III. 1952 (reared).

MAUI: male, two females, Makamakaole Val., D. E. Hardy; two males, female, Haleakala, W. C. Mitchell, VIII. 1951; seven males, female, Paliku, Haleakala crater, C. R. Joyce, VI. 1953; two males, Waikamoi, 4,000 ft., D. E. Hardy, VII. 1958; eight males, seven females, Paliku, Haleakala crater, D. E. Hardy & M. Tamashiro, VI. 1953.

Geographical distribution: North America, Hawaii.

### *Hystricocnema plinthopyga* (Wiedemann)

*Sarcophaga plinthopyga* Wiedemann, 1830:360.

*Sarcophaga tripartita* Wulp, 1896:284.

*Sarcophaga robusta* Aldrich, 1916:269, fig. 128.

*Sarcophaga plinthopyga* Aldrich, 1924:210 (type examined).

*Sarcophaga quadriforceps* Curran, 1932:365, fig.

*Sarcophaga khalili* Salen, 1936:234, fig. 1.

OAHU: male, Honolulu, J. F. Illingworth; male, Poamoho, W. C. Mitchell, I. 1952.

KAUAI: male, female, Kawaikoi Stream, 3,700 ft., D. E. Hardy, VIII. 1953; female, Kokee, Swezey, 23. VIII, 1921; female, Kokee Val., D. E. Hardy, VIII. 1953; male, female, Kalalau, D. E. Hardy, VIII. 1953; female, Waipoo Falls, D. E. Hardy, VIII. 1953.

MAUI: three males, Haleakala Crater, C. R. Joyce, VI. 1953.

LANAI: male, Puunene, 2,500 ft., D. Wilton, VI. 1953.

Geographical distribution: Central and South America, Galapagos, Is., Hawaii.

**Bercaea haemorrhoidalis** (Fallen, 1816)*Musca haemorrhoidalis* Fallen, 1816:236.*Sarcophaga cruentata* Meigen, 1826:28.*Sarcophaga georgina* Wiedemann, 1830:357.*Sarcophaga nurus* Rondani, 1860:392 (p. part.)*Sarcophaga haemorrhoidalis* Boettcher, 1913:10, fig. 37.

Specimens examined: OAHU: two males, female, Honolulu, J. F. Illingworth; two males, Honolulu, D. E. Hardy, III. 1950; two females, Poamoho, W. C. Mitchell, I. 1952; male, H. Severin, 2. I. 1912; female, 28. XII. 1953.

LANAI: male, 2,500 ft., D. E. Hardy, VI. 1953.

MOLOKAI: female, Maunawainui, M. Tamashiro, VII. 1952.

Geographical distribution: Europe, Asia, Africa, North and South America, Hawaii.

**Parasarcophaga (s. str.) albiceps** (Meigen)*Sarcophaga albiceps* Meigen, 1826:22.*Sarcophaga albiceps* Boettcher, 1912:729, fig. 24.*Sarcophaga knabi* Tanada, 1950:31 (nec Parker).

Species examined: OAHU: two males, four females, Honolulu, I. 1950, IV. 1950, I. 1952, I. 1957; three females, Honolulu, B. Hanaoka, 4. IV, 26. V., 2. VI. 1936; female, Honolulu, R. T. Fujio, 29. V. 1936; five males, four females, Maunawili, P. L. Gow, XII. 1960; male, two females, Poamoho, W. C. Mitchell; female, Waimanalo, D. E. Hardy, 22. I. 1951; female, Koko Head, 11. I. 1960.

MAUI: male, Hana, C. R. Joyce, VI. 1959.

HAWAII: male, Hilo, II. 1950.

Geographical distribution: Europe, Egypt, Algeria, Palestine, Siberia, China, Formosa, Japan, India, Burma, Java, Sumatra, Philippine Islands, New Guinea, Hawaii.

**Parasarcophaga (Liosarcophaga) misera** (Walker, 1849)*Sarcophaga misera* Walker, 1849:829.*Sarcophaga dux* Thomson, 1868:534.*Sarcophaga subtuberosa* Parker, 1917:89, fig. 1.*Sarcophaga ceylonensis* Curran, 1929:10.

Specimens examined: OAHU: two males, Honolulu (ex *Achatina fulica*), M. S. Adachi, II. 1952; five males, four females, Mt. Tantalus, XII. 1958.

MOLOKAI: male, female, Wailua Beach, M. Tamashiro, VII. 1952.

KAUAI: four males, four females, Wailua Ranch, 12. II. 1940 (reared); male Haena, D. E. Hardy, VIII. 1953.

Geographical distribution: Australia, India, Ceylon, Java, Philippine Is., Formosa, Samoa, Mariana Is., Caroline Is., Wake, Marshall Is., Gilbert Is., Hawaii.

**Parasarcophaga ( Jantia ) ruficornis (Fabricius)***Musca ruficornis* Fabricius, 1794:314.*Sarcophaga ruficornis* Boettcher, 1913:370.*Sarcophaga ruficornis* Parker, 1917:97, fig. 5.

Specimens examined: OAHU: female, Honolulu, D. E. Hardy, VI. 1950.

KAUAI: two males, female, Wailua, D. E. Hardy, 11. XII. 1940 (reared); female, Kapaa, F. G. Holdaway, 21. XII. 1940.

Geographical distribution: East Indies, India, Formosa, Philippine Is., Molucas, Brasil, Mariana Islands., Hawaii.

**Parasarcophaga (Thomsonia) argyrostoma (Robineau-Desvoidy, 1830)***Myophora argyrostoma* Robineau-Desvoidy, 1830:340.*Sarcophaga georgina* Wiedemann, 1830: (p. part.)*Sarcophaga nurus* Rondani, 1860:392 (p. part.)*Sarcophaga barbata* Thomson, 1869:533.*Sarcophaga falculata* Pandelle, 1896:185.*Sarcophaga argentina* Brethes, 1916:142.*Sarcophaga argyrostoma* Seguy, 1941:77, figs. 65-70 (type examined).

Specimens examined: OAHU: male, D. E. Hardy, VIII. 1950 (sugar cane); three males, J. F. Illingworth, XII. 1914; male, J. F. Illingworth (on dead Roach), IX. 1915; male, H. H. Severin, 8. IV. 1911; male, female, Honolulu, J. F. Illingworth; female, Honolulu, D. E. Hardy, 4. IX. 1950; male, Honolulu, C. Schmidt, 24. II. 1932; female, Honolulu, J. F. Illingworth, (ex dead cockroach), 30. I. 1916; male, Koko Head, H. Look, 11. I. 1950; female, Waipio, D. E. Hardy.

LANAI: two males, Puunene, 2,500 ft., D. E. Hardy &amp; D. Wilton, VI. 1953.

Geographical distribution: North America, Argentine, Chile, Europe Africa, India, Marshall Is., Hawaii.

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