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THE SARCOPHAGINÆ AND THEIR RELATIVES IN NEW YORK. II[1]

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Sarcophaga barbata Thomson

1869. Thomson, Eugenies Resa, p. 533.
1896. Pandelle (*S. falculata*), Rev. Ent., vol. 15, p. 185.
1913. Böttcher (*S. faculata* P.), Deutsche Ent. Zeitschr., p. 13 and 370 (syn.).
1916. Aldrich (*S. faculata* P.), *Sarcophaga* and Allies, p. 205.
1930. Aldrich (*S. barbata*), Proc. U. S. Nat. Mus., vol. 78, p. 27 (syn.).

The large hump on the caudal side of the anal forceps and the characteristic enlarged apex of the ædeagus (Figs. 137, 139) separate this species from *securifera*.

Length.—10 to 15 mm.

Records.—Ithaca; Nyack; *L. I.*: Babylon. June to September. Figures 137, 138, and 139.

[1] As the work reported in this paper was completed while the writer was at Cornell University, this is a contribution from the Department of Entomology, Cornell University, Ithaca, N. Y. The first two installments of this paper were published in the JOURNAL OF THE NEW YORK ENTOMOLOGICAL SOCIETY, volume 48, pages 127–153 and 201–231 (1940).

Aldrich (1916)[2] and Davis (1919) recorded this species as parasitic on *Phyllophaga* sp. Illingworth (1922) found it breeding in carrion in Hawaii. Baranoff and Ježic (1928) reared it in Serbia from sores on sheep but only when *Wohlfahrtia magnifica* was present. Marchionatto and Blanchard (1933) found this species in Argentina as a parasite of the large grasshopper *Schistocerca paranensis.* This sarcophagid is generally reared as a scavenger, and the parasitic records in the literature are questionable. Knipling (1936) found that larvæ of *barbata* would develop in meat.

Sarcophaga bullata Parker

1916. Parker, Canad. Ent., vol. 48, p. 359.
1916. Aldrich, *Sarcophaga* and Allies, p. 233.

The distinguishing characters of *bullata,* which are most important in separating the species from closely related species, are as follows: The anal forceps taper to a sharp point and the discal segment of the ædeagus is broad and extremely blunt. The third abdominal segment has two median marginal bristles. The characters given in the key, together with the large reddish-yellow genital segment having a vertical slit guarded by strong bristles above, will separate the females from closely related species.

Length.—7 to 16 mm.

Records.—Ithaca; Nassau; Nyack; *S. I.*: Arrochar; *L. I.*: Cold Spring Harbor; Babylon; Islip; Fire Island Beach. May to August. Figures 140, 141, and 142.

This is a very common scavenger species in New York. Greene (1925) and Graenicher (1931) recorded the rearing of larvæ of this species from decaying meat and dead insects. Four years later Graenicher (1935) reared this species in Florida from human excrement. The writer during August 1935 left a pint jar with Asiatic garden bettle adults on the bottom of a beetle trap for a few days at Springfield, N. J. The funnel of the trap prevented the female *bullata* from reaching the dying beetles. The fly larviposited in the funnel and the first-instar maggots dropped about 6 inches to the beetles and completed their development on the beetles. The latter part of August 1935 a pint

[2] All literature cited in connection with the genus *Sarcophaga* will be found at the end of the last installment of this article.

jar which contained about 2 inches of decomposing dead beetles was tightly covered with two thicknesses of cheesecloth and left outdoors near Hainesville, N. J., for 5 hours in the middle of the day. The cheesecloth was removed and it was found that sarcophagid females had larviposited through the cheesecloth. Approximately two hundred puparia developed and the flies, which emerged, were determined as *bullata*. Knipling (1936) reared this species from meat. Knipling and Rainwater (1937) recorded five cases of myiasis in domestic animals in the southeastern part of the United States in which *bullata* larvæ were present.

Holotype and allotype.—Male and female in the Massachusetts Agricultural College.

Sarcophaga cingarus Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 288.

Although this species may be confused with *ventricosa*, it can be distinguished by the absence of anterior acrostichals, black legs, and more deeply golden pollinose parafrontals and parafacials. The anal forceps when viewed from behind are not separated from each other at the tip. Other genitalic differences are given in the illustrations.

Length.—7 to 9 mm.

Records.—Ithaca; Greene County; Oneonta; Tuxedo; *L. I.*: Babylon. June to August. Figure 143.

Data are not available about the life history.

Holotype and allotype.—Male and female No. 20569, United States National Museum.

Sarcophaga cistudinis Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 278.

The front is approximately as wide as one eye in both sexes. On the front of the discal portion of the ædeagus are a pair of characteristic lobes which are curved toward the apex of the segment. These characters easily separate this species from all other *Sarcophaga* occurring in this region.

Length.—8 to 10 mm.

Records.—The only record of this fly in New York was in Sep-

tember 1934, when Mr. A. Miller collected at Wading River, L. I., a small box turtle (3 inches long) with an opening in each shoulder. The turtle was kept at room temperature. Upon its death in December an examination disclosed that the openings led into internal pouches harboring 11 larvæ on one side and 4 on the other. These larvæ pupated early in January 1935 and the adult flies emerged about a month later. Aldrich (1916) recorded that the type was reared "from larva bred in sore on side of box turtle, Plainfield, N. J., hatched June 1912. W. DeW. Miller, col.," figure 144.

Holotype and allotype.—Male and female, in collection of Wm. T. Davis.

Sarcophaga coloradensis Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 139.

This species has been recorded from Colorado and New Bedford, Mass. It has been included in the key, as there is a possibility that it will be found in New York.

Holotype and allotype.—Male and female in Hough collection.

Sarcophaga cooleyi Parker

1914. Parker, Canad. Ent., vol. 46, p. 417.
1916. Aldrich, *Sarcophaga* and Allies, p. 225.

This large species is rather easy to separate from other members of the genus found in New York by the lack of marginal bristles on the third abdominal segment. The genitalic characters are also very distinctive.

Length.—10 to 14 mm.

Records.—Ithaca, May. Figure 145.

Parker (1914c) reports rearing the species in numbers from decaying fish. He also stated that the adults were common in privies and around garbage. Twinn (1934), in Saskatchewan, found the larvæ of this species in the ear of a man. Stewart (1934) gave a fuller report as follows: "Four maggots syringed from the ear of a man at Indian Head, Saskatchewan, and reared in the laboratory on raw meat emerged as flies of the species *Sarcophaga cooleyi* Park. (det. G. S. Walley). The maggots were removed before permanent injury resulted to the ear, but the ear

drum was noticeably thickened and partially perforated in a number of places.''

Type.—Male in the Massachusetts Agricultural College.

Sarcophaga excisa Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 127.

This species has not been recorded in New York. As it occurs in Massachusetts and extensive collecting in New York will probably find the fly, it is included in this paper.

Information is not available on the biology of this species.

Holotype.—Male, No. 20514, United States National Museum.

Sarcophaga flavipalpis Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 256.

The dark-yellow palpi together with the keel-like caudal margin of the ædeagus make this species easily recognized. This fly has not been found in numbers in New York State, although several large collections from New York have been examined by the writer.

Length.—8 to 10 mm.

Records.—Ithaca; Rock City; Conquest. June to August. Figures 146, 147, and 148.

Aldrich (1916) recorded that the species was reared at Enola, Va., in 1915 from a myriapod (*Spirobolus* sp.).

Holotype and allotype.—Male and female, No. 20561, United States National Museum.

Sarcophaga fletcheri Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 96.

The majority of the specimens of *fletcheri*, that are to be found in collections, have been reared. The larvæ are aquatic and live in water in the cups of the pitcher plants (*Sarracenia* sp.) which grow in sphagnum swamps. Careful collecting in the immediate vicinity of pitcher plants, where it is breeding, during June, July, and August will secure many adult specimens. The fly was plentiful at McLean Bog during July 1936.

Length.—6½ to 11 mm.

Records.—Malloryville; McLean. July. Figures 149, 150, and 151.

Aldrich (1916) recorded this species breeding in pitcher plants. Dr. Fred Baker and the writer reared this fly from pitcher plants near Malloryville during July 1935 and 1936. As the larvæ are predaceous on living and dead insects and will attack one another, only a single sarcophagid can mature in each plant. The young first instars can live only in water from pitcher plants. The older larvæ (third instars and some nearly mature second instars) will complete their development in any water if there is sufficient food present.

Holotype and allotype.—Male and female, No. 20505, United States National Museum.

Sarcophaga hæmorrhoidalis (Fallen)

1816. Fallen, Vet. Akad. Handl., p. 236 (*Musca*).
1830. Wiedemann (*S. georgina* W.), Auss. Zweif., vol. 2, p. 363.
1913. Böttcher (*S. georgina* Wied.), Deutsch. Ent. Zeitschr., p. 10, 369.
1916. Aldrich, *Sarcophaga* and Allies, p. 189.
1927. Lundbeck, Dipt. Dan., pt. 7, p. 196.
1930. Aldrich (*S. georgina* W.), Proc. U. S. Nat. Mus., vol. 78, p. 4 (syn.).

The adult fly is distinguishable from all other *Sarcophaga* by the characteristic notch on the caudal margin of the straight anal forceps.

This species is cosmopolitan in its distribution, as it occurs on all the continents with the exception of Australia.

Length.—10 to 14 mm.

Records.—Albany; Buffalo; Ithaca; Lancaster; Potsdam; Tuxedo; *S. I.*: Watchogue; Wadsworth; *L. I.*: Cold Spring Harbor; Babylon; Sands Point. June to September. Figures 152, 153, and 154.

Parker (1914b) reported rearing the fly from human excrement. Aldrich (1916) gave an account of seven cases of human intestinal myiasis and stated that the larvæ of this species have the ability to develop almost or quite to full size within the alimentary tract of man. This has not been proved for any other

species. Haseman (1917), Keilin (1924), and Onorato (1922) gave further accounts of intestinal myiasis occurring in man. Moutia (1930) found it developing occasionally in sores or wounds on domestic animals. Hinds and Dew (1915) record the species as parasitic on the larvæ of the fall armyworm. Regnier (1931) gave an account of rearing the fly from adult *Schistocerca gregaria*. Webster (1907) records the parasite from *Caloptenus differentialis* in Wyoming. Although there are a few questionable published records of this species being reared as a parasite of insects, it seems best to limit the "parasitic habits" of the species to those cases of human myiasis. Knipling (1936) reared this fly from meat and excrement.

Type.—Presumably in the Academy of Sciences in Stockholm.

Sarcophaga houghi Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 170.

This parasitic sarcophagid is one of the rarer forms, and the adult male is easily recognized by the large, unusual hump on the caudal margin of the apex of the ædeagus. The female has not been seen.

Length.—8 to 9 mm.

Records.—Buffalo; Ithaca; New York City: *L. I.*: Babylon; Heckscher State Park. May to June. Figures 155, 156, and 157.

Glendenning (1914) records this species as a parasite of the larvæ of the satin moth in British Columbia. Knull (1932) reared the fly from pupæ of the fruit-tree leaf roller and pupæ of the elm spanworm in Pennsylvania under forest conditions.

Holotype.—Male, No. 20533, United States National Museum.

Sarcophaga hunteri Hough

1898. Hough, in paper by Hunter, Kans. Univ. Quar., vol. 7, p. 205–210.

1916. Aldrich, *Sarcophaga* and Allies, p. 102.

This species is close to *atlanis* but the yellow palpi and striking tuft of long hair on the anal forceps of *hunteri* distinguish the two species.

Length.—5 to 6 mm.

Records.—*S. I.*: Wadsworth; New Dorp; *L. I.*: Babylon. June and July. Figures 158, 159, and 160.

Aldrich (1916) lists 20 records of this species parasitizing grasshoppers (*Melanoplus differentialis* and *M. atlanis*) from widely distributed parts of the United States. Hunter (1898) stated that 12 per cent in 1897 and 20 per cent in 1898 of the grasshoppers were parasitized by *hunteri*, but it was later shown that his specimens were a mixture of several species. He also estimated that the dead grasshoppers on the ground were about equal to those moving around. Treherne and Buckell (1924) gave records of *hunteri* parasitizing grasshoppers in British Columbia.

Type.—In Hough collection.

Sarcophaga johnsoni Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 162.

This large sarcophagid has rarely been observed in the field in New York. The species has been taken only at points a short distance from the ocean. The more important characters of this species are the wide front, long, dense villosity on the discal half of the mid tibiæ, and the large black genitalia.

Length.—10 to 14 mm.

Records.—New York City (Pelham Park); Nyack; *L. I.*: Babylon; Oak Beach; Long Beach. June to September. Figures 161, 162, and 163.

Holotype and allotype.—Male and female, No. 20534, United States National Museum.

Sarcophaga montanensis Hallock

1938. Hallock, Proc. Ent. Soc. Wash., vol. 40, p. 98.

This species was described from one male specimen, received from Mr. D. G. Hall, which was collected July 4 at White Face Mountain, Adirondacks, N. Y., altitude 3,800 feet (J. M. Aldrich). Figure 164.

Holotype.—Male, Cat. No. 52085, United States National Museum.

Sarcophaga niagarana Parker

1918. Parker, JOUR. N. Y. ENT. SOC., vol. 26, p. 28.

This species is represented by a single specimen, the holotype, which is now in the collection of David G. Hall at Washington,

D. C. The characters given in the keys of this paper will separate this species from all other New York *Sarcophaga.*

Length.—10 mm.

Record.—Niagara Falls.

Holotype.—In collection of David G. Hall.

Sarcophaga nox Hall

1931. Hall, Ent. News, vol. 42, p. 217–219.

The characters of this rarely collected species are given in detail by Hall and will not be repeated here. The illustration and characters given in the key will distinguish this species.

Length.—10 to 11 mm.

Records.—*L. I.*: Babylon, June. The fly has been found in sandy areas along the Atlantic shore from Long Island, N. Y., to Florida. Figure 165.

Holotype and allotype.—Male and female, No. 43315, United States National Museum.

Sarcophaga parallela Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 123.

Aldrich (1916) indicated that this form is very closely related to *sima* and that it might even be a variety of *sima.* The chætotaxy and structural characters indicated in the key and the illustrations of genitalic structures clearly separate the two forms, and they appear more distinct than many other forms now indicated as distinct species.

Length.—7 to 9 mm.

Records.—Inwood; *L. I.*: West Hills. April to October. Figures 166, 167, and 168.

Leonard (1928) records a pupa in a dead *Helix thyroides.*

Holotype.—Male, No. 20512, United States National Museum.

Sarcophaga rapax Walker

1849. Walker, List of Diptera in Brit. Mus., vol. 4, p. 818.

1890. Townsend (*S. helicis*), Psyche, vol. 6, p. 220.

1895. Coquillett (*Helicobia helicis*), Proc. Acad. N. Sci. Phila., p. 317.

1916. Aldrich (*S. helicis* T.), *Sarcophaga* and Allies, p. 158.

1930. Aldrich (*S. rapax* W.), Proc. U. S. Nat. Mus., vol. 78, p. 15 (syn.).

Walker's species, *rapax,* is the most common species of Sarcophagidæ in New York State. Hall (1928) stated that it is the most common in the southern part of the United States but that it is not tropical in its distribution. It is the smallest sarcophagid found in New York and both sexes are very easily recognized by the characters given in the key.

Length.—3 to 8 mm.

Records.—Canajoharie; Rome; Oneonta; Troy; Hancock; Keen Valley; Buffalo; Syracuse; Ithaca; *L. I.*: Sea Cliff; Babylon. May to September. Figures 169, 170, and 171.

Aldrich (1916), Hayes (1917), Graenicher (1931), and Roberts (1934) have all pointed out that *rapax* will larviposit on dead insects or decaying meat and develop as a scavenger. Kelly (1914) determined that the species is a grasshopper parasite at times. Aldrich (1916) lists the following hosts for *rapax:* Adult *Corydalis cornuta,* adult *Cicada tibicen, Leucania unipuncta,* adult *Lachnosterna arcuata,* adult *Eleodes opaca,* and a myriapod (*Spirobolus* sp.). There may also be added the following parasitic records: Adult *Phyllophaga* sp. recorded by Davis (1919), larvæ of *Epiglaea apiata* by Beckwith and Driggers (1926–27), larvæ of *Diatraea saccharalis* by Plank (1929), larvæ of *Papaipema nebris* by Decker (1931), larvæ of *Macronoctua onusta* by Breakey (1931), adults of *Euetheola rugiceps* by Ingram and Bynum (1932), Mexican bean beetle by Friend and Turner (1931), and larvæ of *Anticarsia gemmatalis* by Hinds and Osterberger (1931). All indications lead to the conclusion that *rapax* is not an important parasite in the control of economic insects. Knipling (1936) found that larvæ of *rapax* would develop on meat. While investigating insects found in the upper air, Glick (1939) collected adult *rapax* at 20, 200, and 1,000 feet above the ground.

Sarcophaga reversa Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 135.

This species is characterized by a long projecting loop at the apex of the ædeagus which doubles back cephalad. There is a

large visible opening between the loop and the main portion of the ædeagus.

Length.—7 to 9 mm.

Records.—Ithaca; Greene County; *S. I.*: New Dorp; Fort Wadsworth. August to September. Figures 172, 173, and 174.

Holotype.—Male, No. 20519, United States National Museum.

Sarcophaga sarraceniæ Riley

1873. Riley, Trans. Acad. Sci. St. Louis, vol. 3, p. 238.
1916. Aldrich, *Sarcophaga* and Allies, p. 86.

A single specimen of this pitcher plant sarcophagid was taken July 1, 1936, near Treman Lake, Ithaca, N. Y., which is the only record for the State.

Length.—8 to 12 mm.

Record.—Ithaca. Figure 175.

Riley (1873) gave a description of the immature stages and adult which was accompanied by illustrations of the stages and notes on the feeding habits in the pitcher plant. Aldrich (1916) recorded additional rearings of *sarraceniæ* and separated the species from five closely related species which also breed in pitcher plants.

Holotype.—Male in United States National Museum.

Sarcophaga scoparia var. *nearctica* Parker

1916. Parker, Canad. Ent., vol. 48, p. 359.
1916. Aldrich (*S. scoparia* Pand.), *Sarcophaga* and Allies, p. 214.

Parker (1916a) pointed out that *nearctica* is extremely variable. The first segment of the genitalia tends to become brownish and there is some variation in the structure of the ædeagus. The true status of this species can be determined only by the study of a long series of reared material.

Length.—11 to 15 mm.

Records.—Tuxedo; Oneonta; Canandaigua; Keene; Hamburg; Cattaraugus; Ithaca; New York City; *S. I.*: Fort Wadsworth; *L. I.*: Cold Spring Harbor; Sea Cliff. May to September. Figures 176, 177, and 178.

Parker (1916a) recorded that this species larviposited on dung

and refuse. The writer found in 1935 that *nearctica* under cage condition would larviposit readily on fresh meat and the larvæ developed normally.

Type.—In the collection of the Massachusetts Agricultural College.

Sarcophaga securifera Vill.

1908. Villeneuve, Mitteilungen aus dem Zoolog. Mus. in Berlin, p. 123.
1913. Böttcher, Deutsch. Ent. Zeitschr., p. 15.
1916. Aldrich, *Sarcophaga* and Allies, p. 202.

The original description of this species was written by Villeneuve and published as a part of an article by Becker (1908) on the Diptera of the Canary Islands. Böttcher (1913) pointed out that part of Schiner's series of *dalmatina* were the same as *securifera*. This may account for the listing of *dalmatina* in the New York list (Leonard, 1928). The American specimens were probably misidentified, as it is doubtful if *dalmatina* occurs in North America.

Length.—9 to 14 mm.

Records.—Yonkers; Buffalo; Albany; *S. I.*: New Brighton; *L. I.*: Cold Spring Harbor; Flatbush; Brooklyn. June to September. Figures 179, 180, and 181.

This fly was reared by A. Miller from meat exposed at Brooklyn in early September 1934. The larvæ pupated during September but the adults did not emerge until May 1935. Greene (1925) and Smith (1933) also record this fly breeding in decaying liver and fresh meat. Baranoff and Ježic (1928) found *securifera* in Serbia breeding in sores upon sheep but only when *Wohlfahrtia magnifica* larvæ were present. Gee (1930) reported this species as a parasite of the larvæ of *Stilpnotia ochripes* M. in China.

Type.—In the collection of Dr. J. Villeneuve, Rambouillet, France.

Sarcophaga setigera Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 138.

The characters are similar to those of *excisa* but the two species can be separated by the structures mentioned in the keys.

Length.—9 mm.

Records.—*L. I.*: Richmond. June 16. This species is widely distributed but is never taken in numbers.

Sarcophaga setigera was reared by Branch (1920) as a parasite of the adult mantis *Stagmomantis carolina*. Branch recorded in her paper that the *setigera* larva wove a web around itself before pupating. This is the only known record of the web-spinning habit in the family Sarcophagidæ.

Holotype and allotype.—Male and female, No. 20522, United States National Museum.

Sarcophaga sima Aldrich

1916. Aldrich, *Sarcophaga* and Allies, p. 91.

This sarcophagid belongs to Aldrich's group B and can be separated from the other members of the group only by genitalic characters. This species is not closely related to *S. parallela*.

Length.—8 to 10 mm.

Records.—Ithaca; Thacker Park; Conquest; Trenton Falls. May to August. Figure 182.

Swingle (1931) recorded the rearing of *sima* from a larva of *Curculio caryæ* H. in Alabama.

Holotype and allotype.—Male and female, No. 20502, United States National Museum.

Sarcophaga sinuata Meig.

1828. Meigen, Syst. Beschr., vol. 5, p. 22.
1912. Böttcher, Deutsch. Ent. Zeitschr., p. 708.
1916. Aldrich, *Sarcophaga* and Allies, p. 67.

This species is very easily recognized in both sexes by a patch of silky-yellow hair on the outer third of the front side of each middle femur.

Length.—5 to 9 mm.

Records.—Freeville; Rome; Troy; Buffalo; Cattaraugus; Ithaca; White Plains; Kiamesha; Mosholu; *S. I.*: Richmond; Fort Wadsworth. May to October. Figures 183, 184, and 185.

Aldrich (1916) reported *sinuata* as a parasite of *Melanoplus differentialis* in Colorado. Kelly (1914) recorded this species as a grasshopper parasite in Pennsylvania.

Type.—In the Meigen Collection in Paris.

Sarcophaga fulvipes var. *triplasia* V. d. W.

1896. Van der Wulp (*S. triplasia*), Biol. Centr.-Amer., Diptera, vol. 2, p. 283.
1917. Parker (*S. fulvipes* var. *dissidia*), Canad. Ent., vol. 49, p. 157.
1930. Aldrich (*S. fulvipes* var. *triplasia* V. d. W.), Proc. U. S. Nat. Mus., vol. 78, p. 35 (syn.).

This species is represented by one male and three females in the type series from Mexico. Aldrich (1930) studied the type in Europe and pointed out that Parker's *dissidia* had previously been described as *triplasia.*

Records.—Niagara Falls.

Sarcophaga uncata V. d. W.

1896. Van der Wulp, Biol. Cent.-Amer., Diptera, vol. 2, p. 277.
1896. Van der Wulp (*S. tridens*), Biol. Cent.-Amer., Diptera, vol. 2, p. 281.
1916. Aldrich (*S. marginata*), *Sarcophaga* and Allies, p. 136.
1930. Aldrich (*S. uncata* V. d. W.), Proc. U. S. Nat. Mus., vol. 78, p. 33 (syn.).

The antennæ reach three-fourths of the way to the vibrissæ. The fourth abdominal segment is entirely black. The fifth sternum of the male is V-shaped with delicate hairs along the inner margin as shown in figure 187. The distal portion of the ædeagus has a fringe-like expansion and at the apex is deeply cut by a notch (fig. 186).

Length.—8 to 9 mm.

Records.—Ithaca; Troy; *L. I.*: Babylon. May to September. Figures 186, 187, and 188.

Aldrich (1916) recorded that this species was reared from dead grasshoppers which had been placed in cages.

Sarcophaga utilis Aldrich

1915. Aldrich, Jour. Econ. Ent., vol. 8, p. 151.
1916. Aldrich, *Sarcophaga* and Allies, p. 275.

The group of short bristly hairs on the front and back side of the anal forceps near the tip is very characteristic of this species.

Length.—7 to 14 mm.

Records.—Ithaca; McLean; Cattaraugus; *L. I.*: Cold Spring Harbor. Figure 189.

Aldrich (1915, 1916) reported rearings of this fly from *Allorhina nitida* and *Geotrupes splendidus*. Davis (1919) recorded *utilis* reared from *Phyllophaga* sp. adults in Illinois. Knipling (1936) reared larvæ of *utilis* by placing them on meat.

Type.—Male in the United States National Museum.

Sarcophaga ventricosa V. d. W.

1896. Van der Wulp, Biol. Cent.-Amer., Diptera, vol. 2, p. 274.
1896. Van der Wulp (*S. tenuiventris*), Biol. Cent.-Amer., Diptera, vol. 2, p. 282.
1916. Aldrich (determined as *S. assidua* Walk.), *Sarcophaga* and Allies, p. 285.
1930. Aldrich (*S. ventricosa* V. d. W.), Proc. U. S. Nat. Mus., vol. 78, p. 18, 31, 34.

Sarcophaga ventricosa is easily distinguished from the other sacrophagids of New York by the partially red legs and the shape of the anal forceps, which turn back at the apex to form a barbed-like appearance. The points of the forceps, when viewed from behind, are decidedly divergent.

Length.—6 to 8 mm.

Records.—Lake Erie; Lancaster; Hamburg; Tuxedo; Milford Center; *S. I.*: Fort Wadsworth; *L. I.*: Babylon. June to October. Figures 190, 191, and 192.

Aldrich (1916) and Wilson (1932) recorded long series of this species reared from cow manure, horse manure, and straw. Luginbill (1928) records *ventricosa* as a parasite of the larvæ of the fall armyworm, *Laphygma frugiperda*. Knipling (1936) was able to rear *ventricosa* by placing larvæ either on excrement or meat.

Sarcophaga yorki Parker

1919. Parker, Jour. N. Y. Ent. Soc., vol. 27, p. 265.

This species was described by Parker from two specimens which were collected at Niagara Falls, N. Y. This species has never been recorded since the original collection. The character of the apical end of the ædeagus, forming a semicircle when viewed

toward the tip, separates this species from other *Sarcophaga* recorded from New York.

Length.—11 mm.

Records.—Niagara Falls.

Holotype and paratype.—In the collection of David G. Hall.

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[3] As this paper is a continuation of "The Sarcophaginæ and Their Relatives in New York. II," JOUR. N. Y. ENT. SOC., vol. 48, p. 201–231, 1940, all literature citations in the 1940 paper and this paper are combined at the end of this paper.

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PLATE XV

Figure 137. Lateral view of external genitalia of *Sarcophaga barbata* Thomson.
Figure 138. Fifth sternum of *Sarcophaga barbata* Thomson.
Figure 139. Rear view of anal forceps of *Sarcophaga barbata* Thomson.
Figure 140. Lateral view of external genitalia of *Sarcophaga bullata* Parker.
Figure 141. Fifth sternum of *Sarcophaga bullata* Parker.
Figure 142. Rear view of anal forceps of *Sarcophaga bullata* Parker.
Figure 143. Lateral view of external genitalia of *Sarcophaga cingarus* Aldrich.
Figure 144. Lateral view of external genitalia of *Sarcophaga cistudinis* Aldrich.
Figure 145. Lateral view of external genitalia of *Sarcophaga cooleyi* Parker.
Figure 146. Lateral view of external genitalia of *Sarcophaga flavipalpis* Aldrich.
Figure 147. Fifth sternum of *Sarcophaga flavipalpis* Aldrich.

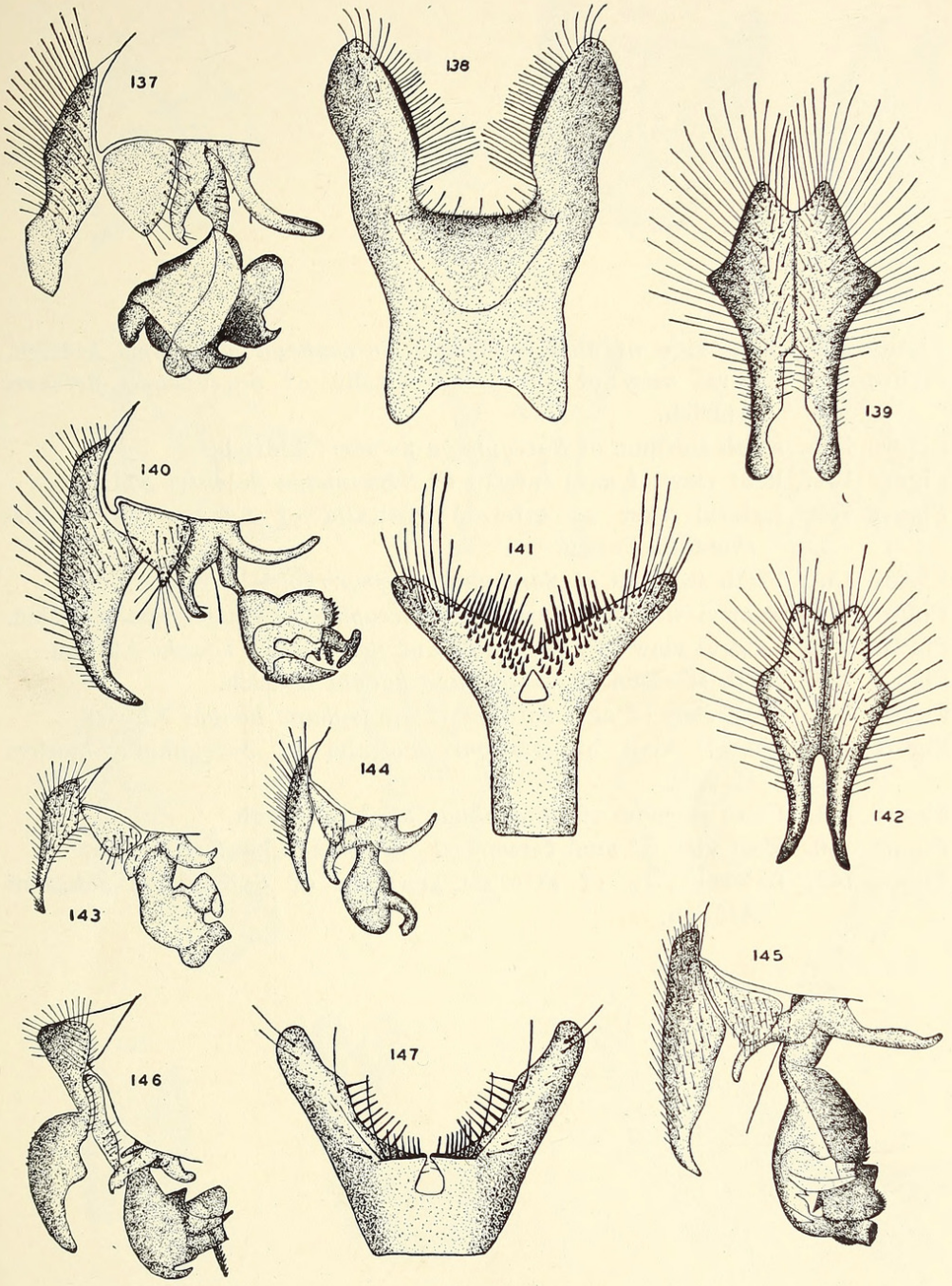
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PLATE XVI

Figure 148. Rear view of anal forceps of *Sarcophaga flavipalpis* Aldrich.
Figure 149. Lateral view of external genitalia of *Sarcophaga fletcheri* Aldrich.
Figure 150. Fifth sternum of *Sarcophaga fletcheri* Aldrich.
Figure 151. Rear view of anal forceps of *Sarcophaga fletcheri* Aldrich.
Figure 152. Lateral view of external genitalia of *Sarcophaga hæmorrhoidalis* Fallen.
Figure 153. Fifth sternum of *Sarcophaga hæmorrhoidalis* Fallen.
Figure 154. Rear view of anal forceps of *Sarcophaga hæmorrhoidalis* Fallen.
Figure 155. Lateral view of anal forceps of *Sarcophaga houghi* Aldrich.
Figure 156. Fifth sternum of *Sarcophaga houghi* Aldrich.
Figure 157. Rear view of anal forceps of *Sarcophaga houghi* Aldrich.
Figure 158. Lateral view of external genitalia of *Sarcophaga hunteri* Hough.
Figure 159. Fifth sternum of *Sarcophaga hunteri* Hough.
Figure 160. Rear view of anal forceps of *Sarcophaga hunteri* Hough.
Figure 161. Lateral view of external genitalia of *Sarcophaga johnsoni* Aldrich.

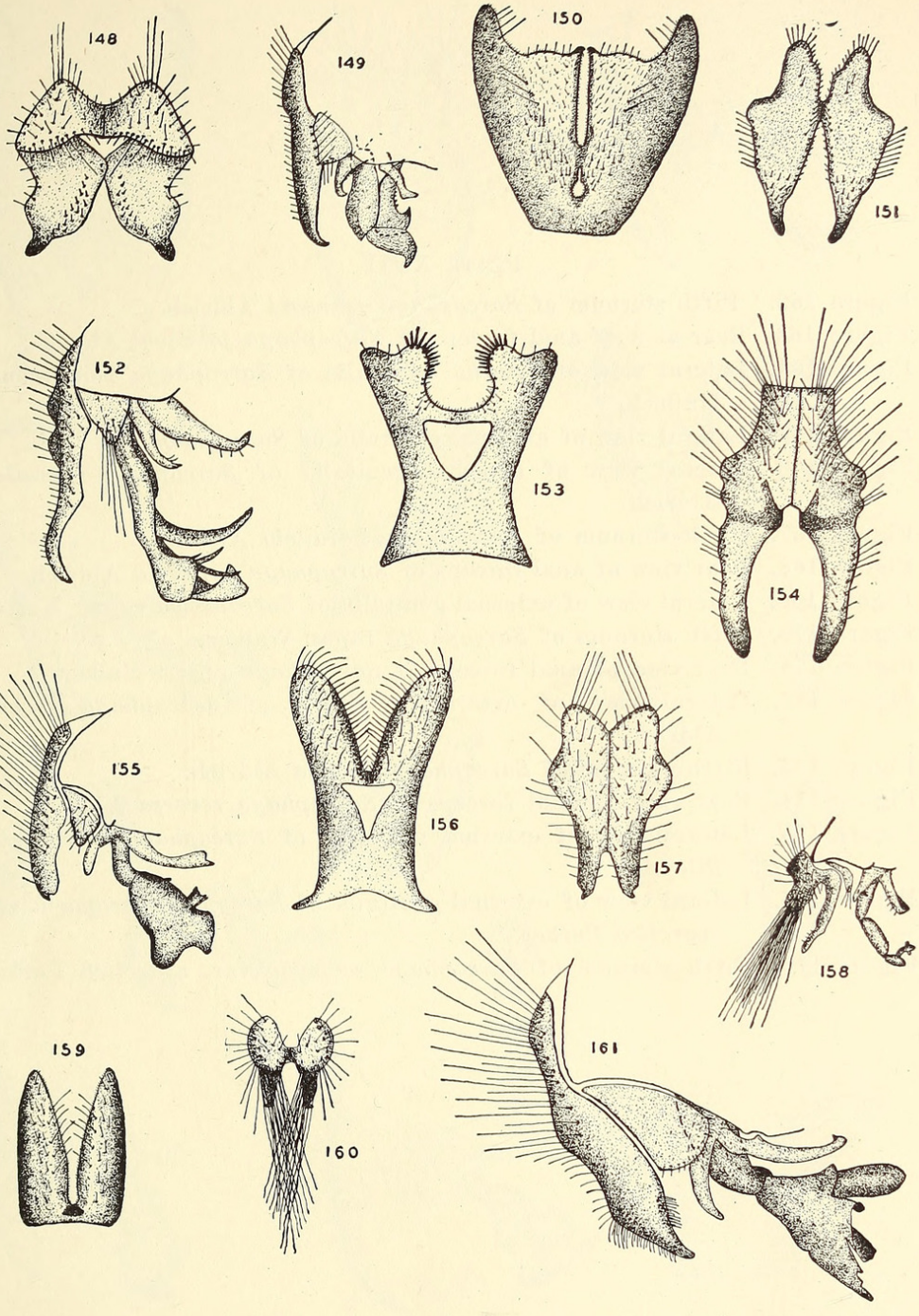
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PLATE XVII

Figure 162. Fifth sternum of *Sarcophaga johnsoni* Aldrich.
Figure 163. Rear view of anal forceps of *Sarcophaga johnsoni* Aldrich.
Figure 164. Lateral view of external genitalia of *Sarcophaga montanensis* Hallock.
Figure 165. Lateral view of external genitalia of *Sarcophaga nox* Hall.
Figure 166. Lateral view of external genitalia of *Sarcophaga parallela* Aldrich.
Figure 167. Fifth sternum of *Sarcophaga parallela* Aldrich.
Figure 168. Rear view of anal forceps of *Sarcophaga parallela* Aldrich.
Figure 169. Lateral view of external genitalia of *Sarcophaga rapax* Walker.
Figure 170. Fifth sternum of *Sarcophaga rapax* Walker.
Figure 171. Rear view of anal forceps of *Sarcophaga rapax* Walker.
Figure 172. Lateral view of external genitalia of *Sarcophaga reversa* Aldrich.
Figure 173. Fifth sternum of *Sarcophaga reversa* Aldrich.
Figure 174. Rear view of anal forceps of *Sarcophaga reversa* Aldrich.
Figure 175. Lateral view of external genitalia of *Sarcophaga sarraceniae* Riley.
Figure 176. Lateral view of external genitalia of *Sarcophaga scoparia* var. *nearctica* Parker.
Figure 177. Fifth sternum of *Sarcophaga scoparia* var. *nearctica* Parker.

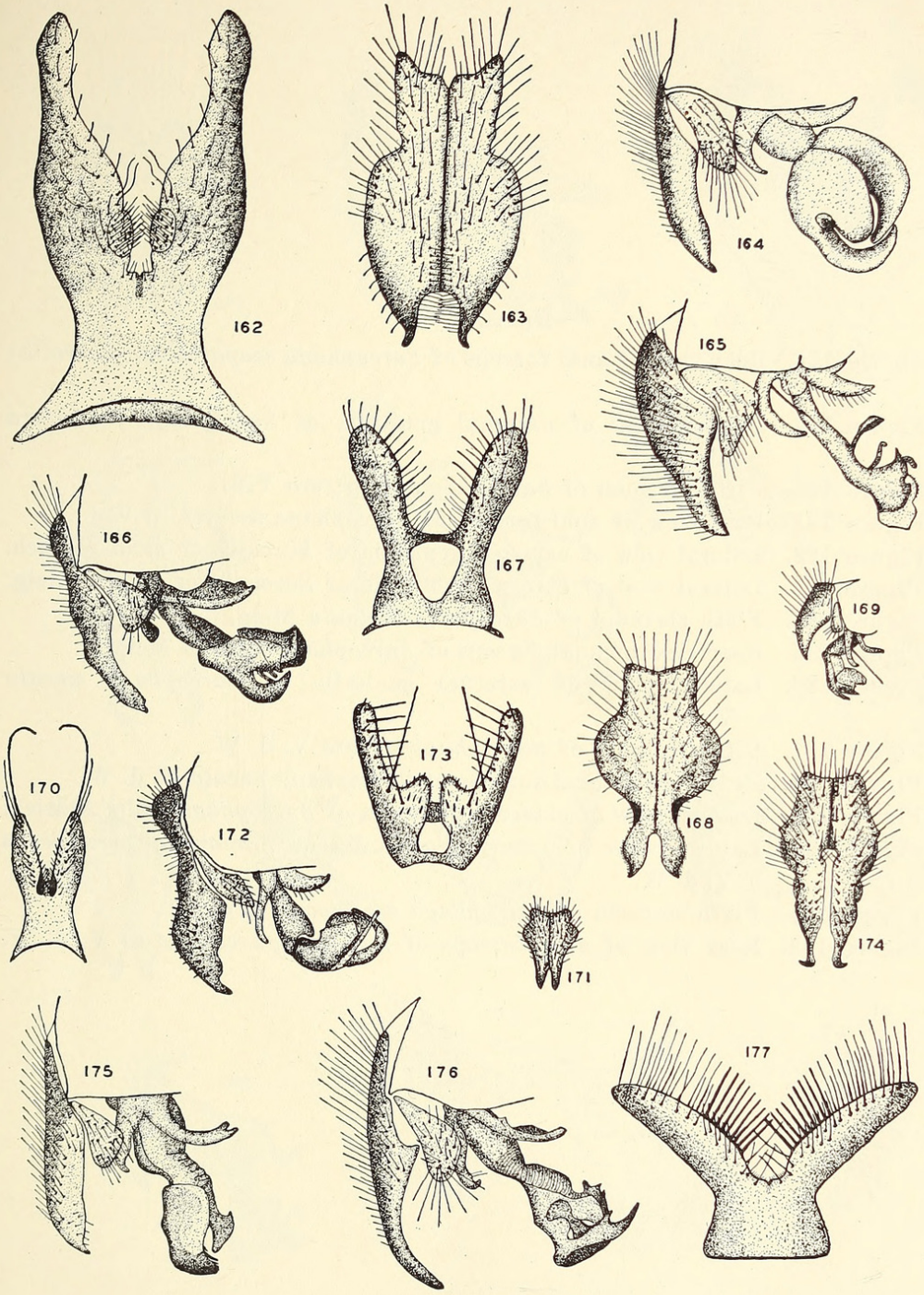
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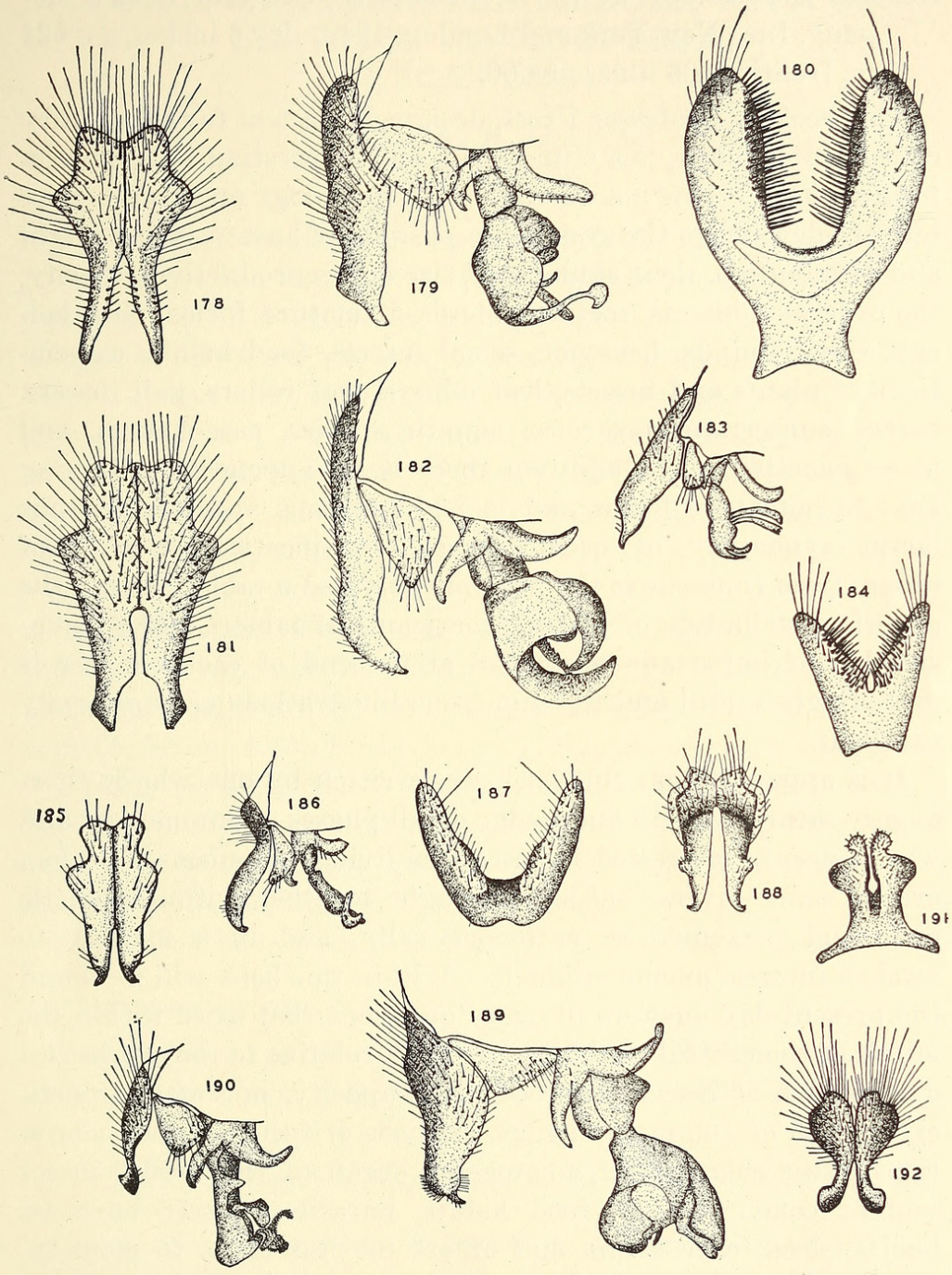
PLATE XVIII

Figure 178. Rear view of anal forceps of *Sarcophaga scoparia* var. *nearctica* Parker.
Figure 179. Lateral view of external genitalia of *Sarcophaga securifera* Vill.
Figure 180. Fifth sternum of *Sarcophaga securifera* Vill.
Figure 181. Rear view of anal forceps of *Sarcophaga securifera* Vill.
Figure 182. Lateral view of external genitalia of *Sarcophaga sima* Aldrich.
Figure 183. Lateral view of external genitalia of *Sarcophaga sinuata* Meig.
Figure 184. Fifth sternum of *Sarcophaga sinuata* Meig.
Figure 185. Rear view of anal forceps of *Sarcophaga sinuata* Meig.
Figure 186. Lateral view of external genitalia of *Sarcophaga uncata* V. d. W.
Figure 187. Fifth sternum of *Sarcophaga uncata* V. d. W.
Figure 188. Rear view of anal forceps of *Sarcophaga uncata* V. d. W.
Figure 189. Lateral view of external genitalia of *Sarcophaga utilis* Aldrich.
Figure 190. Lateral view of external genitalia of *Sarcophaga ventricosa* V. d. W.
Figure 191. Fifth sternum of *Sarcophaga ventricosa* V. d. W.
Figure 192. Rear view of anal forceps of *Sarcophaga ventricosa* V. d. W.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