[3.0037]

PRELIMINARY SURVEY OF SARCOPHAGIDAE (DIPTERA) OF KENTUCKY[1]

R. W. RUMMEL and F. W. KNAPP[2,3]

The family Sarcophagidae is a group within the Order Diptera comprising some 48 genera and 327 species in America north of Mexico (Stone *et al.*, 1965).

There is considerable diversity within this family, the adults of which are commonly called Flesh Flies. So far as known the females are ovoviviparous, depositing larvae rather than eggs. Various species of the family are associated with manure, while others are associated with decaying organic matter. Other species of the group are either facultative or obligate parasites. These species may produce certain types of intestinal or cutaneous myiasis. The family includes species which are parasitic on lower animals including other insects.

Little work has been done on this group in Kentucky. Dr. Lee H. Townsend, Department of Entomology, University of Kentucky, had previously (1939-1952) collected 5 Kentucky species which were not taken in this survey. His specimens are in the collections of the Kentucky Agricultural Experiment Station, Lexington.

MATERIALS AND METHODS

This survey was accomplished primarily by the use of fly bait traps. Ten modified USDA traps (Schoof, 1952) were constructed for this study. The basis of this trap was a metal cylinder 6 in. in diameter and 9 in. tall (Fig. 1). The cylinder itself consisted of a piece of galvanized stove pipe with a removable

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[2]Graduate Assistant (present address: Department of Entomology, Virginia Polytechnic Institute, Research Division, Blacksburg) and Associate Professor respectively.

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screen top. A cone made from a circular piece of screen wire 8.5 in. in diameter with a ¾ in. hole cut from the center was fitted into the bottom of the trap. A triangular section with a 6 in. base and a height of 4¼ in. was cut from one side of the screen. The straight sides of the screen were soldered together to form the cone which was fitted into the bottom of the trap and soldered there.

The base of the trap was extended 2 in. by the addition of a strip of ½ in. mesh hardware cloth. This prevented the cylinder of the trap from sitting flush against the ground, thereby preventing the flies from entering. The mesh hardware cloth also protected the bait from scavenging animals.

A metal stand 25 in. tall and having a metal cross-piece 15 in. from the base supported the trap. The metal cross-piece was used to push the stand into the ground. The trap was secured to the stand by a metal loop.

Traps baited with sheep or horse liver were used to do most of the collecting and to determine the seasonal occurrence of the species. Other baits tried included decaying fruits such as apples and bananas, beer, ammonia, and a malt mixture consisting of 1 part hop malt, 2 parts water, and 1/8 oz of Fleischman's active dry yeast.

All locations were baited with liver. In addition, the locations were irregularly baited with all other baits. In the collection notes for the individual species, the omission of a bait indicates that it was ineffective.

Collections of flies from the traps were made daily from April through August of 1966 and 1967 with irregular collections made through October primarily in Fayette County, Kentucky, however, some collections were made in other areas of the state. The captured flies were killed by placing them in a closed chamber containing carbon tetrachloride. The chamber was a durable, cylindrical, cardboard container large enough to hold the entire trap plus a small container of carbon tetrachloride in the bottom.

After collection the specimens were returned to the laboratory for sorting and identification. It was necessary to expose the genitalia of the males for them to be identified. This was sometimes difficult because of the tendency of the specimens to dry when several hours were required to return to the laboratory. This problem was overcome by Tindale's method for using chlorocresol in field collecting (Tindale, 1962). By employing this technique the specimens could be maintained in a relaxed condition for long periods of time.

Only the males were identified owing to the difficulty in identification of the females. The technique used in spreading the genitalia was that described by Aldrich (1916).

Larval specimens also were obtained from various types of breeding media. Infested dead animals, such as rabbits, squirrels, oppossums, snakes, and manure found in fields or along roadsides were brought to the laboratory and caged until

Table 1. Species of male Sarcophagidae collected and their relative abundance

Species	*Percent of Total Males Collected*
Oxysarcodexia ventricosa (Wulp)	62.62
Sarcophaga utilis Aldrich	10.59
Ravinia derelicta (Walker)	4.67
Ravinia lherminieri (Robineau-Desvoidy)	4.05
Sarcophaga sarracenioides Aldrich	3.12
Sarcophaga bullata Parker	2.49
Helicobia rapax (Walker)	2.49
Blaesoxipha impar (Aldrich)	2.49
Ravinia querla (Walker)	1.87
Sarcophaga haemorrhoidalis (Fallen)	1.87
Sarcophaga crassipalpis Macquart	1.25
Boettcheria cimbicis (Townsend)	1.25
Blaesoxipha basalis (Walker)	0.62
Oxysarcodexia galeata (Aldrich)	0.31
Ravinia latisetosa Parker	0.31

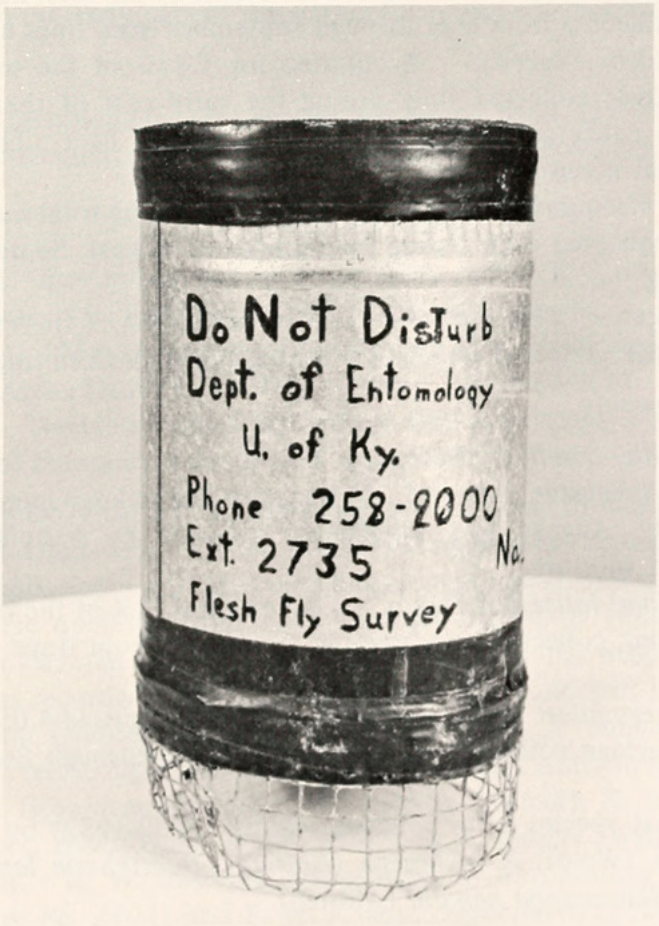

Figure 1. Fly bait trap.

the adult flies emerged. A sweep net was used on vegetation and in places where adult Sarcophagidae were suspected to occur.

RESULTS AND DISCUSSION

By the method of collection in the present survey a total of 37,393 Diptera specimens from four families were collected. Of this total number, Calliphoridae ranked first (20,728 specimens), Muscidae second (8,011 specimens), and Anthomyiidae third (4,461 specimens). Sarcophagidae ranked fourth (4,193 specimens), comprising 11.2% of the total number of Diptera collected, and males comprised 7.65% (321 specimens) of the Sarcophagidae collected. In the present survey 15 species[4] of the family Sarcophagidae as determined from males only were collected. Their relative abundance is shown in Table 1 and in the following list.

Sarcophaga Meigen

S. utilis Aldrich.– This species accounted for 10.59% of the total number of male Sarcophagidae collected. It was collected from May through September from traps baited either with liver, banana, or malt mixture.

S. sarracenioides Aldrich.– Accounted for 3.12% of the total number of male Sarcophagidae collected; collected from May through September from traps baited with liver.

S. haemorrhoidalis (Fallen).– Accounted for 1.87% of the total number of male Sarcophagidae collected; collected only during the early part of the summer before the middle of June; also collected only from traps baited with liver. This species is capable of producing intestinal myiasis in man.

S. crassipalpis Macquart.– Accounted for 1.25% of the total number of male Sarcophagidae collected; collected only during the months of August, September, and October, and only by sweeping.

S. bullata Parker.– This species accounted for 2.49% of the total number of male Sarcophagidae collected; collected early in the season and only from traps baited with liver.

Ravinia Robineau-Desvoidy

R. (Chaetoravinia) derelicta (Walker).– This species accounted for 4.67% of the total number of male Sarcophagidae collected. It was collected in large numbers throughout the months of June, July, August, and September; collected by trapping either with liver, banana, beer, or malt mixture.

R. (Chaetoravinia) latisetosa Parker.– Comprised 0.31% of the total number of male Sarcophagidae collected; collected only early in the season from traps utilizing liver as the bait.

R. (Ravinia) lherminieri (Robineau-Desvoidy).– Comprised 4.05% of the total number of male Sarcophagidae collected; collected from June through September from traps

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[4]Five additional species were collected earlier (1939-1952) by Dr. Lee H. Townsend: *Ravinia pusiola* (Wulp); *R. ochracea* (Aldrich); *Boettcheria latisterna* (Parker); *B. bisetosa* Parker, and *Blaesoxipha hamata* (Aldrich).

baited either with liver, banana, or malt mixture.

R. (Ravinia) querla (Walker).– Comprised 1.87% of the total number of male Sarcophagidae collected; collected from June through August in traps baited either with liver, banana, or malt mixture.

Oxysarcodexia Townsend

O. (Oxysarcodexia) ventricosa (Wulp).– This species accounted for 62.62% of the total number of male Sarcophagidae collected. It was collected throughout the summer from traps baited with either liver, banana, or malt mixture.

O. (Oxysarcodexia) galeata (Aldrich).– Comprised 0.31% of the total number of male Sarcophagidae collected; collected only early in the season from traps baited with liver.

Helicobia Coquillett

H. rapax (Walker).– This species accounted for 2.49% of the total number of male Sarcophagidae collected. It was collected throughout the summer from traps baited either with liver, banana, or malt mixture.

Blaesoxiphia Loew

B. (Kellymia) impar (Aldrich).– This species accounted for 2.49% of the total number of male Sarcophagidae collected. It was collected during the early part of the season from traps baited either with liver, banana, or malt mixture.

B. (Spirobolomyia) basalis (Walker).– Comprised 0.62% of the male Sarcophagidae collected; collected in the early part of the season from trap s baited with the malt mixture.

Boettcheria Parker

B. cimbicis (Townsend).– This species accounted for 1.25% of the total number of male Sarcophagidae collected; collected only during April and from traps baited with liver.

Literature Cited

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2.0037 **Preliminary survey of Sarcophagidae (Diptera) of Kentucky.** Abstract.– A survey based on collections from fly bait traps utilizing liver as the primary bait is reported. Banana, beer, ammonia, and a mixture consisting of malt, yeast, and water also were used as baits. The traps were operated from April through August of 1966 and 1967 and were located primarily in Fayette County, Kentucky. The seasonal occurrence of the various collected species was recorded also. Fifteen species were collected: *Oxysarcodexia ventricosa* Wulp, *O. galeata* (Aldrich), *Sarcophaga utilis* Aldrich, *S. bullata* Parker, *S. haemorrhoidalis* (Fallen), *S. crassipalpis* Macquart, *S. sarracenioides* Aldrich, *Ravinia derelicta* (Walker), *R. lherminieri* (Robineau-Desvoidy), *R. querula* (Walker), *R. latisetosa* Parker, *Helicobia rapax* (Walker), *Blaesoxipha impar* (Aldrich), *B. basalis* (Walker), and *Boettcheria cimbicis* (Townsend).– **R. W. Rummel,** *Department of Entomology, Virginia Polytechnic Institute, Blacksburg, Va. 24061* and **F. W. Knapp,** *Department of Entomology, University of Kentucky, Lexington, Ky. 40506.*

Descriptors: Diptera; Sarcophagidae; bait traps; Kentucky.