

The Anthophilous Insects of Indiana

2. A Preliminary List of the Diptera¹ Collected from Blossoms²

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Several thousand specimens of anthophilous insects have been collected in Indiana since 1950 in the course of a study of the ecology of bumble bees, including their relationships to flowers of all types and to the other insects which also visit flowers. A list of the Apoidea of the state (11) based upon specimens obtained in this study and all other available records was published last year. The second most numerous group of flower-visiting insects is the Diptera and a list of the species of this order included in the collections is presented here.

Some of the species listed are probably not true anthophilous insects in the sense that they visit flowers for nectar and/or pollen, or, even, that they effect pollination. Their presence upon blossoms may be for the purpose of predation, or, possibly, merely fortuitous resting upon a prominent or convenient portion of a plant. However, such presence of itself may have a certain competitive effect upon true pollinating forms.

No other published records of anthophilous Diptera of the state are known to the author. A number of papers by Say (12), Coquillett (6, 7), Webster (14), Cook (2-5), Smith (13), Montgomery (10) and Hart (9), give records of the species of certain families or ecological groups (gall-makers, other plant borers and miners, lepidopterous parasites), etc., and the bibliography of Indiana Arthropoda assembled by the author under assignment from the Academy's Biological Survey Committee about 1932 includes 100 entries for the Diptera (furnished by the late C. F. Adams).

In 1954 numerous reports were received from beekeepers that "swarms of flies were robbing sweet clover of nectar and driving honey bees 'away'" from this plant. The species responsible for such reports appears to be *Archytas apicifer* (Walker), a tachinid parasite of lepidopterous larvae, especially armyworms and cutworms. The author has notes and specimens of such an occurrence which he observed in Morgan County in 1937. Records from specimens in the University Collections, chiefly obtained in these studies, show that this species has been taken rather frequently from the flowers of sweet clover and a number of other plants. However, a concentration of flies sufficient for observa-

¹ Determinations of examples of all species and of most specimens, except of the more common species, have been made by specialists of the Insect Identification unit of the Entomology Research Division of the U. S. Department of Agriculture—P. H. Arnaud, W. L. Downes, Jr., R. H. Foote, C. W. Sabrosky, A. Stone, and W. W. Wirth. Valuable assistance in the determination of plants has been given by D. L. Schuder, A. T. Guard and George Cummins of the Departments of Entomology, Biology, and Botany and Plant Pathology, Purdue University.

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tions and tests has been found only in September, 1956, when a considerable population was noted in a clump of *Eupatorium altissimum* L., on a R.R. right-of-way in northern Montgomery County.

It is recognized that many differences exist between the complex of pollinating insects found in fields or extensive stands of sweet clover and the clump of *Eupatorium* studied:

1. The number of species involved is much greater on *Eupatorium*,
2. The area of *Eupatorium* under observation was infinitely less than any area of sweet clover of value for honey production (the area of the "clump" studied was probably between 200 and 300 square feet),
3. The form of the flower head is much different, the flowers of *Eupatorium* forming a more or less continuous surface area, those of sweet clover being scattered.

However, the observations may be of some value on the general subject of competition among anthophilous insects, in addition to the specific conditions on fall-flowering composites which are of considerable value as a source of the fall "honey-flow."

A very few honey bees were noted, and the competition from other insects, chiefly *A. apicifer*, may have been responsible, as honey bees were observed working *Eupatorium* industriously at other locations at this time. Although about 60 species and varieties of Diptera and Hymenoptera (a few of each order as well as a few specimens of Coleoptera, Hemiptera, Orthoptera and Lepidoptera have not been determined) were taken on the two days, September 9 and 12, when collections were made, only two were present in any considerable numbers. The number of each species collected on each day is indicated in the following table:

HYMENOPTERA

Braconidae: *Cardiochiles viator* (Say) -1-10.

Eurytomidae: *Bruchophagus gibbus* (Boh.) -0-2.

Tiphidae: *Myzium maculatum* (Fabr.) -1-5; *M. 5-cinctum* (Fabr.) -0-3.

Vespididae: *Polistes fuscatus fuscatus* Cress. -0-2; *P. f. pallipes* Lep. -1-1.

Pompilidae: *Priocnemoides fulvicornis* Cress. -0-2; *Paracyphononyx funereus* (Lep.) -0-1.

Sphécidae: *Tachytes aurulentus* (Fabr.) -1-4; *Larropsis distincta* Smith -1-0; *Chlorion pennsylvanicum* (Linn.) -1-0; *C. nudum* (Fern.) -1-0; *C. auripes* Fern. -1-0; *Sphex nigricans* (Dahl.) -0-1; *Stictia carolina* (Fabr.) -0-2; *Cerceris clypeata* Dahl. -0-1.

Apidae: *Xylocopa virginica* (Linn.) -0-1; *Bombus affinis* Cress. -1-0; *B. auricomus* (Robt.) -1-0; *B. fraternus* (F. Smith) -1-0; *B. griseocollis* (DeGeer) -2-3; *B. impatiens* Cress. -3-1; *Apis mellifera* Linn. -/-/.

DIPTERA

- Bombyliidae: *Sparnophilus fulvus* (Wied.) -1-0.
 Syrphidae: *Mesograpta marginata* (Say) -1-0; *Spilomyia longicornis* Loew -1-0; *Syrirta pipiens* (Linn.) -0-1; *Tubifera arbustorum* (Linn.) -2-0.
 Conopidae: *Physoconops brachyrhynchus* Macq. -2-0.
 Tachinidae: *Alophorella aenovenstris* (Will.) -3-0; *Archytas apicifer* (Walk.) -/-/-; *Bonnetia comta* (Fall.) -1-0; *Cylindromyia fumipennis* (Big.) -0-1; *Enclytia flava* (Tns.) -0-1; *Gonia sequax* (Will.) -0-1; *Gymnoclytia occidua* (Walk.) -2-1; *Hyalomyodes triangulifera* (Loew) -2-0; *Leucostoma simplex* (Fall.) -1-0; *Myiophasia nigrifrons* (Tns.) -2-0; *M. sp.* -1-0; *Phorocera claripennis* Macq. -1-0; *Trichopoda pennipes* (Fabr.) -0-1.
 Calliphoridae: *Callitroga macellaria* (Fabr.) -/-/-; *Phaenicia sericata* (Mg.) -3-3; *Pollenia rudis* (Fabr.) -3-0.
 Sarcophagidae: *Amobia erythrura* Wulp. -3-0; *Sarcophaga bulata* Pk. -0-1; *S. impar* Old. -1-1; *S. lherminieri* R.D. -6-1; *S. rapax* Walk. -0-3; *S. ventricosa* Wulp. -5-1; *Senotainia sp.* -1-0.
 Muscidae: *Musca domestica* Linn. -1-0; *Othellia caesarion* (Mg.) -1-0; *Paregle cinerella* (Fall.) -0-1; *Stomoxys calcitrans* (Linn.) -1-0.

Archytas apicifer and *Callitroga macellaria* were common, but *A. apicifer* was much more abundant. The actual populations were difficult to estimate but between 100 and 150 individuals of *A. apicifer* were collected for cage tests each day. After about 20 or 30 flies had been collected the population would appear to be exhausted, but within five to ten minutes it would be as great as before the collection. This appears to indicate a very dense and mobile population within the vicinity. Of course, an extensive area of bloom, such as a field of sweet clover, might show a different condition of population movement. The apparent heavy population, however, would seem to confirm the observations of beekeepers that sweet clover is sometimes invaded by swarms of flies. The flies were quite restless and continually darted from one flower to another; there was some indication that they tended to fly to flowers already occupied by another fly of this species, or by some other insect (by error?). It was not definitely determined if this action was a mating attempt; although two flies frequently left the flower together actual copulation was not observed. Such actions of other insects are very disturbing to honey bees, and the few bees observed were frequently driven from the individual flower heads, if not from the entire area by the darting flies. It is probable that this activity when sweet clover is visited by "swarms" of flies would drive away the bees even if the nectar supply is not exhausted by the feeding of the flies.

Several series of tests to determine the amounts of sugar syrup which might be consumed by these flies were attempted. Flies were observed to feed freely but the rapid evaporation from the solutions

in check cages and the short life of the flies in cages (one-half to two-thirds died within 10-12 hours) rendered the tests unreliable.

The records in the following list follow the plan of the first paper of the series (11)—for each species known distribution within the state is listed by counties, seasonal distribution by earliest and latest dates of collection and the plants from which flies have been taken are listed by genera following the nomenclature and sequence of Deam (8). Nomenclature and sequence of the families of Diptera follow Borror and DeLong (1); genera and species are arranged alphabetically.

List of Species

8. CERATOPOGONIDAE

1. *Dasyhelea* sp. Tippecanoe. May 24. Gypsophila.

15. SCATOPSIDAE

2. *Ectactis clavipes* (Loew). Tippecanoe. May 28. Paeonia.

17. SCIARIDAE

3. *Lycoria* sp. Tippecanoe. July 24. Curcubita.
4. *Eugnoriste occidentalis* Coq. Tippecanoe. June 24-Sept. 1. Leonurus; Taraxacum-2.
5. *Bradysia* sp. Gibson, Tippecanoe. July 7-Sept. 8. Sedum-2; Melilotus; Daucus-1,1; Ipomoea.

20. STRATIOMYIIDAE

6. *Eulalia cincta* (Oliv.) Tippecanoe. July 7. Eryngium.
7. *Eulalia mugo* (Wied.). Tippecanoe. July 7. Eryngium.
8. *Eulalia pilimana* (Lw.). Tippecanoe. July 7. Daucus; Asclepias.
9. *Eulalia* sp. Tippecanoe. July 19. Pastinaca-2.
10. *Nemotelus* sp. White. Aug. 9. Eryngium.
11. *Stratiomys discalis* Loew. Tippecanoe. June 3-8. Euonymus-1,2.
12. *Stratiomys norma* Wied. Tippecanoe. June 16. Euonymus.
13. *Stratiomys* spp. Tippecanoe. June 8-19. Euonymus; Pastinaca-3.

24. TABANIDAE

14. *Tabanus quinquevittatus* Wied. Jackson, White. July 23-Aug. 9. Trifolium-3; Eryngium.

26. SCENOPINIDAE

15. *Omphrale nubilipes* (Say). Spencer. Sept. 10. Ricinus.

27. NEMESTRINIDAE

16. *Neorhynchocephalus volaticus* (Will.) Allen. Aug. 6. Cirsium.

29. BOMBYLIIDAE

17. *Bombylius azaleae* Shannon. Tippecanoe. June 24. Agastache.
18. *Bombylius major* Linn. Tippecanoe. April 20-27. Claytonia; Taraxacum.
19. *Exprosopa fasciata* Macq. Tippecanoe, Warren, White. Aug. 2-11. Monarda-2; Mentha; Liatris; Cirsium-2.

20. *Sparnophilus fulvus* (Wied.) Jasper, Montgomery, Spencer, Tippecanoe. July 25-Sept. 16. Polygonum; Mentha-3; Eupatorium-5, 1,1; Solidago-1,3,1; Erigeron; Rudbeckia-2.
21. *Systoechus vulgaris* Lw. Marshall. Aug. 23. Medicago.
22. *Systoechus* sp. Marshall, Tippecanoe, Warren, White. July 27-Aug. 31. Medicago; Eryngium; Agastache-3; Liatris-2; Tagetes; Cirsium-2.
23. *Villa impiger* (Coq.). Marshall. Aug. 9. Euphorbia.
24. *Villa sinuosa* (Wied.). Tippecanoe. May 22. Paeonia.
25. *Villa* sp. Montgomery. Sept. 12. Solidago.

30. ASILIDAE

26. *Atomosia sayii* Johnson. Gibson. July 12. Cephalanthus.
27. *Diogmites neoternata* Brom. Tippecanoe. July 26-27. Agastache; Mentha.
28. *Leptogaster* sp. Tippecanoe. June 19. Trifolium.
29. *Proctacanthus* sp. Montgomery. Sept. 12. Eupatorium.

33. EMPIDIDAE

30. *Empis clausa* Coq. Tippecanoe. July 27-Aug. 16. Mentha-1,21; Citrullus.
31. *Empis* sp. Tippecanoe. Apr. 27. Salix.
32. *Hilara* sp. Tippecanoe. Apr. 27. Salix.

34. DOLICHOPODIDAE

33. *Condyllostylus* sp. Tippecanoe. Sept. 5. Ricinus.

39. SYRPHIDAE

34. *Allograpta obliqua* (Say). Grant, Tippecanoe, Tipton. Apr. 27-June 19. Salix, Euonymus; Paeonia; Pastinaca-1,2; Taraxacum.
35. *Brachypalpus oarus* (Wlk.). Tippecanoe. April 5. Salix.
36. *Chrysogaster nitida* Wied. Grant, Tippecanoe, White. April 5-Aug. 9. Salix-1,2,1; Prunus; Eryngium; Pastinaca-2; Agastache.
37. *Helophilus fasciata* Walker. Gibson, Grant, Tippecanoe. April 1-27. Salix-8,4,3,1; Prunus; Stellaria-2,1.
38. *Helophilus latifrons* Lw. Tippecanoe. April 14. Salix.
39. *Melanostoma mellinum* (Linn). Tippecanoe. June 19. Pastinaca.
40. *Melanostoma* sp. Tippecanoe. April 5. Salix.
41. *Mesograpta geminata* (Say). Carroll, Tippecanoe. June 9-July 23. Melilotus-3; Agastache. Cephalanthus-2, Nepeta.
42. *Mesograpta marginata* (Say). Carroll, Delaware, Gibson, Marshall, Montgomery, Spencer, Tippecanoe, Tipton. April 28-Sept. 16. Claytonia; Medicago-1,1; Trifolium; Ricinus; Euphorbia-2; Euonymus-2; Malva-2; Gypsophila; Pastinaca; Daucus; Agastache-1,1,3; Pycnanthemum; Mentha-1,1; Leonurus-2; Eupatorium; Solidago; Taraxacum-1,2,8.
43. *Mesograpta polita* (Say). Tippecanoe. April 19. Salix.
44. *Metasyrphus lapponicus* (Zett.). Grant, Tippecanoe. April 3-27. Salix; Prunus.
45. *Metasyrphus perplexus* (Osb.). Tippecanoe. April 19. Mertensia.

46. *Metasyrphus wiedemanni* (Johns.). Gibson, Grant, Tippecanoe. April 1-June 16. Salix-2; Prunus-1,2; Stellaria-1,3,2; Paeonia-15; Gypsophila; Lonicera-2; Pastinaca; Taraxacum-3.
47. *Metasyrphus* sp. Tippecanoe. April 20-June 3. Melilotus; Amygdalus-2.
48. *Paragus bicolor* (F.). Tippecanoe, Warren. July 13-Sept. 16. Brassica; Solidago.
49. *Pipiza* sp. Tippecanoe. July 15. Agastache.
50. *Platycheirus* sp. Grant. April 27. Prunus.
51. *Sphaerophoria cylindrica* (Say). Carroll, Grant, Montgomery, Tippecanoe. April 24-Sept. 12. Prunus-1,2; Leonorus; Pastinaca-2; Agastache-2; Eupatorium-1,1; Solidago; Taraxacum.
52. *Sphaerophoria menthastri* (Linn.). Tippecanoe. April 29. Taraxacum.
53. *Spilomyia longicornis* Loew. Montgomery. Sept. 9. Eupatorium.
54. *Syritta pipiens* (Linn.). Fulton, Montgomery, Spencer, Tippecanoe. July 7-Sept. 12. Raphanus; Brassica; Eryngium; Daucus-1,4; Asclepias; Mentha-1,2; Eupatorium-1,1.
55. *Syrphus rectus* O.S. Tippecanoe. April 21-July 7. Pyrus; Daucus.
56. *Syrphus ribesii* Linn. Tippecanoe. April 19-21. Pyrus-1,2.
57. *Syrphus torvus* O.S. Grant, Madison, Tippecanoe. April 6-28. Salix-3,4; Claytonia; Pyrus; Prunus; Taraxacum.
58. *Syrphus* spp. (sen.lat.). Gibson, Tipton, Stellaria; Taraxacum.
59. *Tubifera aenea* (Scop.). Carroll, Tippecanoe, Tipton. April 5-July 27. Salix; Stellaria-1,2; Asclepias; Mentha; Taraxacum-1,1.
60. *Tubifera arbustorum* (Linn.). Grant, Montgomery, Tippecanoe. April 5-Sept. 9. Salix-1,1,1; Stellaria-1,1; Brassica; Malus; Prunus-5; Trifolium; Gypsophila; Eryngium-4; Mentha-10 collections of 1 to 6 specimens; Agastache-2; Daucus-2; Pastinaca-2,3,17; Eupatorium-2.
61. *Tubifera dimidiata* (Wied.). Tippecanoe, Warren. April 1-Sept. 16. Salix-5,5,10,17,5,1; Stellaria-2; Prunus; Euonymus-4; Solidago-1,1.
62. *Tubifera latifrons* (Loew). Tippecanoe. April 5-July 25. Salix; Agastache-2; Mentha.
63. *Tubifera tenax* (Linn.). Carroll, Tippecanoe. June 26-Aug. 18. Cephalanthus; Agastache; Taraxacum-2.
64. *Tubifera transversa* (Wied.). Clark, Tippecanoe. April 5-July 30. Stellaria; Mentha; Daucus; Agastache; Chrysanthemum.
65. *Tubifera vinetorum* (Fab.). Tippecanoe. July 29. Mentha.

36. PHORIDAE

66. *Megaselia* sp. Tippecanoe. June 19. Trifolium.

40. CONOPIIDAE

67. *Myopa vesiculosa* Say. Tippecanoe. April 19-May 10. Salix-1,2; Malus-2.
68. *Oecemyia propinqua* (Aldrich). Tippecanoe. Aug. 16. Raphanus-2.
69. *Physocephala sagittaria* (Say). Tippecanoe. Aug. 31. Mentha.

- 70. *Physoconops brachyrhynchus* Macq. Marshall, Montgomery, Tippecanoe. Aug. 23-Sept. 9. Euphorbia; Mentha-1,1; Eupatorium-2.
- 71. *Physoconops* sp. Gibson. July 12. Pycnanthemum.
- 72. *Zodion perclongum* Coq. Carroll, Tippecanoe. June 16-July 23. Agastache; Sambucus.

42. OTITIDAE

- 73. *Chrysomyza demandata* (Fab.). Tippecanoe. July 7. Pastinaca.
- 74. *Delphinia picta* (Fab.). Tippecanoe. Sept. 5. Ricinus-2.
- 75. *Tetanops integra* Lw. Tippecanoe. May 21-June 16. Pastinaca; Gypsophila-1,1.
- 76. *Tetranops luridipennis* Lw. Tippecanoe. June 16-Aug. 25. Ricinus-2; Euonymus-2.

50. SEPSIDAE

- 77. *Saltella scutellaris* (Fall). Carroll, Clinton, Madison, Spencer, Tippecanoe. April 27-Sept. 10. Gypsophila-1,1; Eupatorium-3; Calendula; Taraxacum-1,2,4.
- 78. *Sepsis neocynipsea* M. & S. Tippecanoe. April 19. Salix; Pyrus.
- 79. *Sepsis biflexuosa curvitibia* M. & S. Madison. April 28. Taraxacum.
- 80. *Sepsis punctum* (Fab.). Tippecanoe. May 22-July 7. Paeonia; Pastinaca.
- 81. *Themira putris* (Linn.). Tippecanoe. April 5. Salix.
- 82. *Themira nigricornis* Meigen. Tippecanoe. April 5. Stellaria.

54. SCIOMYZIDAE

- 83. *Dictya* sp. Tippecanoe. April 5. Salix.
- 84. *Sepedon fuscipennis* Lw. Tippecanoe. Oct. 14. Aster.

64. OCHTHIPHILIDAE

- 85. *Leucopis* sp. Tippecanoe. May 22. Poconia.

65. AGROMYZIDAE

- 86. *Tylomyza madizina* (Hend.). Tippecanoe, Tipton. April 28-July 30. Taraxacum; Daucus.

66. PHYLLOMYZIDAE

- 87. *Desmometopa tarsalis* (Lw.) Spencer. Sept. 11. Solidago.
- 88. *Milichiella lacteipennis* (Lw.). Tippecanoe. Sept. 10. Ricinus.
- 89. *Leptometopa latipes* (Mg.). Tippecanoe. July 7. Daucus.

70. EPHYDRIDAE

- 90. *Lyogaster grvida excavata* (S. & W.). Tippecanoe. April 19. Salix.

71. CHLOROPIDAE

- 91. *Madiza setulosa* Mall. Tippecanoe. June 19. Trifolium.
- 92. *Madiza cinerea* (Lw.). Carroll. July 23. Asclepias-1.
- 93. *Elachiptera costata* (Lw.). Tippecanoe. April 1. Salix.

77. TACHINIDAE

94. *Allophorella aenovenstris* (Will.). Montgomery, Tippecanoe. June 3-Oct. 14. Euonymus; Eupatorium-1,3; Aster-3.
95. *Alophorellopsis purpurascens* (Tns.). Tippecanoe. May 21-Aug. 31. Mentha-2; Gypsophila.
96. *Archytas apicifer* (Walk.). Carroll, Cass, Marshall, Montgomery, Morgan, Tippecanoe. June 9-Sept. 18. Polygonum-3; Melilotus-4 collections of two to many each; Trifolium; Eryngium-1,1,1; Asclepias-1,2,29; Mentha-8 collections of 1 to 6 each; Eupatorium-+,+,1; Solidago; Taraxacum.
97. *Archytas basifulvus* Walk. Morgan. July 15. Melilotus.
98. *Archytas metallica* (R.D.). Montgomery. Sept. 12. Solidago.
99. *Blepharigenia spinosula* Big. Tippecanoe. July 7. Daucus.
100. *Bonnetia comta* (Fall). Montgomery, Tippecanoe. July 26-Oct. 14. Mentha; Daucus; Eupatorium; Aster.
101. *Chaetophagia atripennis* Coq. Tippecanoe. June 9. Lotus.
102. *Cylindromyia binotata* (Big.). Tippecanoe. Aug. 13. Mentha.
103. *Cylindromyia decora* Ald. Tippecanoe. Aug. 31. Mentha.
104. *Cylindromyia fumipennis* (Big.). Montgomery, Tippecanoe. Sept. 12-Aug. 13. Mentha; Eupatorium.
105. *Cylindromyia* sp. Marshall. Aug. 23. Euphorbia.
106. *Epalpus signifer* (Wlk.). Tippecanoe. April 5. Salix.
107. *Euclytia flava* Tns. Montgomery. Sept. 12. Eupatorium.
108. *Gonia frontosa* Say. Grant, Madison, Tippecanoe. April 1-28. Salix-6 collections of 1 to 11 each; Claytonia-2; Stellaria.
109. *Gonia sequax* Will. Montgomery. Sept. 12. Eupatorium.
110. *Gonia* sp. Tippecanoe. April 20-21. Claytonia; Taraxacum.
111. *Gymnoclytia occidua* (Walk.). Clark, Montgomery, Spencer, Tippecanoe. June 8-Sept. 12. Euonymus; Pastinaca-1,2; Mentha-1,1,2; Eupatorium-1,2,1; Chrysanthemum.
112. *Gymnosoma fuliginosa* R.D. Spencer. Sept. 11. Polygonum.
113. *Gymnosoma occidentae* Curr. Tippecanoe. July 30-Aug. 31. Mentha; Daucus.
114. *Gymnosoma* sp. Tippecanoe. May 23. Gypsophila.
115. *Hyalomyodes tranquilifera* (Lw.). Montgomery, Spencer, Tippecanoe. June 8-Sept. 10. Euonymus; Eupatorium-1,2.
116. *Leucostoma gravipes* (Wulp). Tippecanoe. May 21. Gypsophila.
117. *Leucostoma simplex* (Fall.). Montgomery. Sept. 9. Eupatorium.
118. *Myiophasia nigrifrons* (Tns.). Montgomery. Sept. 9. Eupatorium-2.
119. *Myiophasia* sp. Montgomery, Tippecanoe. July 7-Sept. 9. Asclepias; Eupatorium.
120. *Oedematopteryx fumosa* (Coq.). Tippecanoe. June 19-Aug. 2. Pastinaca; Mentha.
121. *Paraphasia fenestrata* (Big.). Tippecanoe. April 12. Salix.
122. *Phorocera claripennis* Macq. Montgomery, Tippecanoe. April 14-Sept. 9. Salix; Eupatorium.
123. *Tachinomyia apicata* Curr. Tippecanoe. April 6-21. Stellaria; Pyrus.

124. *Trichopoda pennipes* (Fabr.). Montgomery, Tippecanoe. Aug. 3-Sept. 12. Mentha-1,1; Eupatorium.
125. *Winthemia* sp. Marshall, Tippecanoe. June 16-Aug. 9. Trifolium; Eupatorium.

78. CALLIPHORIDAE

126. *Bufolucilia silvarum* (Mg.). Tippecanoe. June 3-July 7. Pastinaca; Daucus-2; Asclepias; Salvia.
127. *Calliphora vomitoria* (Linn.). Tippecanoe. April 5. Stellaria.
128. *Callitroga macellaria* (Fabr.). Carroll, Cass, Gibson, Montgomery, Spencer, Tippecanoe. July 12-Sept. 9. Melilotus; Ricinus; Daucus; Mentha-1,8; Eupatorium-+,+; Solidago.
129. *Cynomyopsis cadaverina* (R.D.). Grant, Tippecanoe. April 6-Oct. 19. Salix-1,2,4; Stellaria-3; Pyrus; Aster.
130. *Lucilia illustris* Mg. Tippecanoe. June 3-July 7. Euonymus; Daucus.
131. *Phaenicia caeruleiviridis* (Macq.). Spencer, Tippecanoe. June 19-Sept. 10. Pastinaca; Solidago.
132. *Phaenicia sericata* (Mg.). Cass, Fulton, Montgomery, Tippecanoe. May 22-Sept. 18. Ricinus; Euonymus; Eryngium; Pastinaca; Paeonia; Asclepias; Mentha; Eupatorium-3,3.
133. *Phormia regina* (Mg.). Grant, Tippecanoe. April 4-27. Stellaria; Pyrus; Prunus-2; Paeonia-2; Elaeagnas.
134. *Pollenia rudis* (Fabr.). Carroll, Grant, Montgomery, Tippecanoe, Tipton. April 5-Sept. 9. Salix-1,7,3; Prunus-7; Eryngium-3; Malva-6,1; Pastinaca; Daucus-5; Asclepias-7,3; Agastache-1,2,1,1; Nepeta-2; Mentha-1,1,2; Eupatorium-3; Taraxacum-1.
135. *Protocalliphora* sp. Grant. April 27. Prunus.

79. SARCOPHAGIDAE

136. *Amobia erythrura* Wulp. Montgomery. Sept. 9. Eupatorium-3.
137. *Oestrophilarella aristalis* (Coq.). Tippecanoe. June 8. Euonymus.
138. *Sarcophaga bullata* Pk. Montgomery. Sept. 12. Eupatorium.
139. *Sarcophaga derelicta* (Walk.). Montgomery, Tippecanoe. May 22-Sept. 12. Paeonia-2; Solidago.
140. *Sarcophaga hunteri* Hough. Spencer. Sept. 10. Ricinus.
141. *Sarcophaga impar* Old. Montgomery. Sept. 9-12. Eupatorium-1,1.
142. *Sarcophaga lherminieri* R.D. Montgomery. Sep. 9-12. Eupatorium-1,6.
143. *Sarcophaga querula* Walk. Carroll, Tippecanoe. May 9-Oct. 19. Aster; Taraxacum-1,1.
144. *Sarcophaga (Heliobia) rapax* Walk. Montgomery, Tippecanoe. June 3-Sept. 12. Lotus; Phaseolus; Euonymus-1,3; Pastinaca; Daucus-3; Mentha-2; Eupatorium-11,3; Solidago.
145. *Sarcophaga riversa* Ald. Jasper. Aug. 27. Eupatorium-2.
146. *Sarcophaga sarraenioides* Ald. Tippecanoe. Sept. 21. Taraxacum.
147. *Sarcophaga ventricosa* Wulp. Paeonia-2; Eupatorium-1,5.
148. *Sarcophaga (Acridiophaga)* sp. Marshall, Tippecanoe. July 7-Aug. 23. Asclepias; Euphorbia.
149. *Sarcophaga (Chaetoravinia)* sp. Tippecanoe. June 24. Agastache.

150. *Sarcophaga* spp. Knox, Tippecanoe. April 5-Aug. 25. Salix; Tri-
folium; Phaseolus; Paeonia; Agastache.
151. *Senotainia flavicornis* (Tns.). White. Aug. 9. Eryngium-2.
152. *Senotainia rubriventris* Macq. Marshall. Aug. 23. Euphorbia.
153. *Senotainia trilineata* (Wulp.). Marshall, Spencer, Tippecanoe,
White. July 30-Sept. 5. Euphorbia-1,2; Eryngium; Daucus-2;
Mentha-1,1; Eupatorium; Solidago.
154. *Senotainia* sp. Montgomery. Sept. 9. Eupatorium.
155. *Wolfahrtia vigil* (Walk.). Cass. Sept. 18. Solidago.

80. MUSCIDAE

156. *Graphomya maculata* (Scop.). Spencer, Tippecanoe, White. June
3-Sept. 16. Euonymus; Eryngium; Mentha; Solidago-1,1.
157. *Helina ruftibia* (Stein.). Tippecanoe. April 5-12. Salix-1,1,1;
Loniceria.
158. *Hydrophoria implicata* Huck. Tippecanoe. July 7. Daucus.
159. *Hylemya cilicrura* (Rond.). Clinton, Delaware, Grant, Madison,
Tippecanoe, Tipton. April 3-July 7. Salix-1,4,3,6,1,16,6; Stellaria-
1,2; Pyrus-5; Prunus-9,16; Pastinaca-3; Daucus-1,2; Paeonia-6;
Gypsophila; Agastache; Salvia-1,1; Taraxacum-1,23.
160. *Morellia micans* (Macq.). Tipton. April 29. Taraxacum.
161. *Musca domestica* Linn. Montgomery, Tippecanoe. May 22-Sept. 9.
Pastinaca; Daucus; Gypsophila; Eupatorium.
162. *Orthellia caesarion* (Mg.). Carroll, Cass, Grant, Montgomery, Tip-
pecanoe, White. April 5-Sept. 18. Salix-1,2; Prunus-7; Paeonia-2;
Euonymus-2; Eryngium; Asclepias; Eupatorium; Solidago.
163. *Paregle cinerella* (Fall.). Clinton, Delaware, Grant, Madison,
Montgomery, Tippecanoe, Tipton. April 19-Sept. 12. Salix-7; Clay-
tonia-5; Pyrus 9; Prunus; Paeonia; Gypsophila; Malva; Mentha;
Taraxacum-1,12,5.
164. *Stomoxys calcitrans* (Linn.). Montgomery. Sept. 9. Eupatorium.

82. SCOPEUMATIDAE

165. *Scopeuma furcatum* (Say). Tippecanoe. April 1-14. Salix-1,8,2;
Pyrus-5.
166. *Scopeuma stercorarium* (Linn.). Carroll. July 25. Asclepias.

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