A Synopsis of the 1976 Survey of Insects Frequenting the Common Milkweed, *Asclepias syriaca*, at one site in Ohio

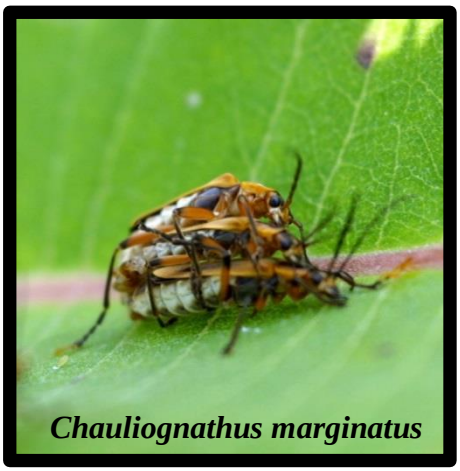
Table of Contents

Survey of Coleoptera, Hemiptera, Homoptera, Diptera, Lepidoptera, Neuroptera, Trichoptera, and Hymenoptera, collected on Common Milkweed, *Asclepias syriaca*, at one site in Ohio in 1976 resulting in the identification of 123 insect families, 372 genera, and 457 different species:

The large milkweed bug (left), *Oncopeltis fasciatus*, on the common milkweed, *Asclepias syriaca*, and the half-black bumble bee, *Bombus vagans*, on prairie blazing star, *Liatris*.

Survey of Coleoptera, Hemiptera, Homoptera, Diptera, Lepidoptera, Neuroptera, Trichoptera, and Hymenoptera, collected on Common Milkweed, *Asclepias syriaca*, at one site in Ohio in 1976 resulting in the identification of 123 insect families, 372 genera, and 457 different species

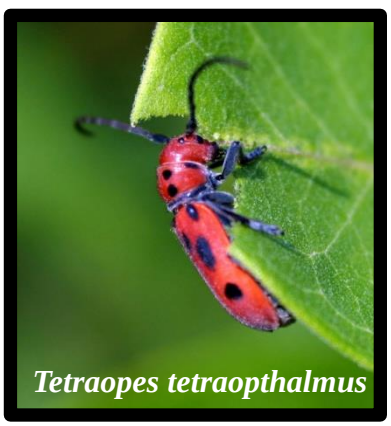
Dr. Patrick J. Dailey


Chauliognathus marginatus


Lygaeus kalmii


Oncopeltus fasciatus


Spragueia leo


Tetraopes tetraopthalmus


Colias philodice


Laphria flavicollis


Neokolla dolobrata


Hexagenia limbata


Danaus plexippus

Introduction

Please note that only a small percentage of the data collected in 1976 study has been published. Those two 1978 publications, one on the Coleoptera and the other on the Hemiptera frequenting the common milkweed, are referenced and reproduced in this paper. The insect identification list which follows took until 1986 to complete. All of the other data has never been published and it is for this reason that I am now making it available to interested researchers. All documentation for this recent data, including correspondence with taxonomists is available in another file referenced in this paper.

The common milkweed, *Asclepias syriaca* L. (Asclepiadaceae), is a herbaceous perennial which is widely distributed in eastern United States, and is frequent along roads and in fields. It occurs in large stands or as solitary plants; *A. syriaca* is unusual in that it can reproduce vegetatively and as a result is a highly successful colonist (Wilbur, 1976). The pinkish flowers are borne on large umbels, and the numerous, wind-borne seeds develop in large pods.

The most recent survey of insects associated with milkweeds is that of Weiss and Dickerson (1921). These authors observed 27 species of Coleoptera associated with *Asclepias syriaca* in various localities in New Jersey with no attempt at daily collecting and no information as to numbers of individuals present. This contrasts greatly with the 132 species of Coleoptera collected over a period of 90 days during the present study. Another attempt at observing insects associated with milkweed was that of Robertson (1887a, b, 1891), who was especially interested in the deposition of pollinia on insects and kept records of these species which frequented the flowers.

The study site, a railroad right-of-way located in Bowling Green, Wood County, Ohio, was chosen because it was neither sprayed nor mowed during the entire season. Within this area (18.29 X 99.4 m.) 337 milkweed plants were investigated. Most plants were randomly distributed throughout the study area, but there were several clumps of 5-15 plants.

Flowering began June 15 and continued into early September.
All insects in this survey were hand-picked or aspirated from each of these 337 plants daily for 90 consecutive days (June 9-September 6, 1976). In addition, four late-season collections were made (September 12, 18, 25, and October 4). Collecting was done between noon and 6:00 p.m. Some specimens were pinned and the others preserved in 85% ethanol to be sorted, counted, and determined as time permitted.

All insects were removed from the plants each day. Therefore, those collected the following day were individuals who had moved onto the milkweed plants during the preceding 24-hour period (the only exceptions to this would be the first collection, June 9, and the four late-season collections).

Acknowledgements

I would like to give special thanks and acknowledgement to the following 24 entomologists and their institutions for their help in identifying the species listed in this survey:

1) Robert C. Graves, Professor Emeritus, formerly of Bowling Green State University, Bowling Green, OH 43403

2) U. S. National Museum – W. N. Mathis, O. S. Flint, J. M. Burns, and R. Ward.

3) United States Department of Agriculture, Systematic Entomology Laboratory, IIBIII –L. Knutson, S. W. Batra, D. C. Ferguson, G. Steyskal, F. C. Thompson, W. W. Wirth, J. P. Kramer, E. E. Grissell, P. M. Marsh, D. R. Smith, D. M. Weisman, G. W. Beyers, R. H. Foots, A. Menke, R. J. Gagne, C. W. Sabrosky, and Manya B. Stoetzel.

4) Smithsonian Institution – W. D. Field and Thomas D. Eichlin, Cooperating Scientists USDA, Insect Taxonomy Laboratory, State Department of Food and Agriculture , Sacramento, CA 95814

***Asclepias incarnata* – swamp milkweed**

List of Insect Taxa collected on common milkweed in 1976

Order Homoptera - 8 families, 43 genera

Family Membracidae (treehoppers) - 7 genera, 8 species
Family Cercopidae (spittlebugs) - 2 genera, 2 species
Family Cicadellidae (cicadas) – 1 genus, 1 species
Family Cixiidae (broad, flattened planthoppers) – 1 genus, 1 species
Family Flatidae (exotic-looking planthoppers) – 2 genera, 2 species
Family Acanaloniidae (acanaloniid planthoppers) – 1 genus,2 species
Family Aphididae (Aphids, Plantlice) – 11 genera, 21 species

Order Hemiptera -13 families, 39 genera (published data)

Family Anthocoridae (minute pirate bugs) – 1 genus, 1 species
Family Miridae (Plant Bugs) – 16 genera, 19 species
Family Nabidae (damsel bugs) – 1 genus, 3 species
Family Reduviidae (assassin bugs) – 1 genus, 1 species
Family Phymatidae (ambush bugs) – 1 genus, 1 species
Family Piesmatidae (ash-gray leaf bugs) – 1 genus, 1 species
Family Lygaeidae (Seed Bugs) – 7 genera, 7 species
Family Berytidae (stilt bugs) – 2 genera, 2 species
Family Rhopalidae (scentless plant bugs) – 3 genera, 3 species
Family Alydidae (broadheaded bugs) – 1 genus, 1 species
Family Pentatomidae (Stink Bugs) – 3 genera, 4 species
Family Cydnidae (burrower bugs) – 1 genus, 1 species
Family Tingidae (lace bugs) – 1 genus, 1 species

Order Coleoptera -25 families, 100 genera (published data)

Family Carabidae (ground beetles) – 2 genera, 3 species
Family Staphylinidae (rove beetles) – 3 genera, 6 species
Family Scarabaeidae (lamellicorn, June, scarab beetles) – 1 genus, 1 species
Family Buprestidae (metallic wood borers) - 1 genus, 1 species

Order Coleoptera (continued)

Family Elateridae (click beetles) – 2 genera, 2 species
Family Lampyridae (fireflies) – 3 genera, 4 species
Family Cantharidae (soldier beetles) – 5 genera, 9 species
Family Dermestidae (carpet beetles) – 4 genera, 4species
Family Cleridae (checkered beetles) – 3 genera, 4 species
Family Melyridae (soft-winged flower beetles) – 1 genus, 1 species
Family Nitidulidae (sap beetles) – 4 genera, 4 species
Family Cryptophagidae (silken fungus beetles) – 1 genus, 1 species
Family Languridae (lizard beetles) - 1 genus, 1 species
Family Phalacridae (shining flower beetles) – 2 genera. 2 species
Family Corylophidae (minute fungus beetles) – 1 genus, 1 species
Family Coccinellidae (lady beetles) – 9 genera, 16 species
Family Ciidae (minute tree-fungus beetles)– 1 genus, 1 species
Family Mordellidae (tumbling flower beetles) – 3 genus, 5 species
Family Meloidae (blister beetles) – 3 genera, 5 species
Family Anthicidae (ant-like flower beetles) – 2 genera, 2 species
Family Cerambycidae (longhorned beetles) – 5 genera, 6 species
Family Bruchidae (bean weevils) – 2 genera, 2 species
Family Chrysomelidae (leaf beetles) – 24 genera, 30 species
Family Curculionidae (weevils) – 16 genera, 23 species
Family Scolytidae (bark beetles) –1 genus, 1 species

Order Diptera – 31 families, 66 genera

Family Lauxaniidae (lauxaniid flies) – 1 genus, 1 species
Family Dolichopodidae (long-legged flies) – 3 genera, 5 species
Family Chironomidae (midges) – 1 genus, 2 species
Family Ceratopogonidae (punkies, no-see-ums) – 1 genus, 1 species
Family Phoridae (scuttle flies) – 1 genus, 1 species
Family Therevidae (stiletto fles) –1 genus, 1 species
Family Stratiomyidae (soldier flies) – 3 genera, 3 species

Order Diptera (continued)

Family Tipulidae (crane flies) – 2 genera, 3 species
Family Empididae (dance flies) – 1 genus, 1 species
Family Asilidae (robber flies) – 1 genus, 1 species
Family Sciomyzidae (marsh flies) – 1 genus, 2 species
Family Sphaeroceridae (sphaerocerid flies) – 1 genus, 1 species
Family Chyromyidae (chyromyid flies) – 1 genus, 1 species
Family Platystomatidae (platystomatid flies) - 1 genus, 1 species
Family Otitidae (Uliidae) (picture-winged flies) – 3 genera, 3 species
Family Lonchaeidae (lonchaeid flies) – 1 genus, 1 species
Family Agromyidae (leaf miners, stem-seed borers) – 3 genera, 4 spp.
Family Anthomyidae (root or seed maggots) – 2 genera, 5 species
Family Syrphidae (flower flies) - 5 genera, 6 species
Family Conopidae (thick-headed flies) – 2 genera, 2 species
Family Tabanidae (horse flies / deer flies) – 1 genus, 1 species
Family Calliphoridae (blow flies) – 3 genera, 3 species
Family Sarcophagidae (flesh flies) – 3 genera, 4 species
Family Muscidae (house flies) – 5 genera, 6 species
Family Sciaridae (dark-winged fungus gnats) – 2 genera, 2 species
Family Chloropidae (grass flies and eye flies) – 7 genera, 9 species
Family Tachinidae (parasitoid flies) – 6 genera, 7 species
Family Scatopsidae (minute black scavenger flies) – 1 genus, 1 species
Family Milichiidae (milichiid flies) – 3 genera, 3 species

Order Lepidoptera - 13 families, 27 genera

Family Pieridae (whites and sulfurs) – 2 genera, 2 species
Family Lycaenidae (blues, coppers, and hairstreaks)– 1 genus,1species
Family Pyralidae (snout moths) - 4 genera, 4 species
Family Noctuidae (loopers, owlet moths, underwings)– 4 genera, 4 spp.
Family Yponomeutidae (ermine moths) – 3 unidentified specimens
Family Tortricidae (tortricid moths) – 2 genera, 2 species, 4 unidentified
Family Cochylidae (tribe of tortix moths) – 1 genus, 1 species

Order Lepidoptera (continued)
Family Danaidae (milkweed butterflies) – 1 genus, 1 species
Family Papilionidae (swallowtails) – 1 genus, 1 species

Order Neuroptera – 2 families, 3 genera
Family Hemerobiidae (Brown lacewings) - 2 genera, 2 species
Family Chrysopidae (Green lacewings) – 1 genus, 1 species

Order Trichoptera – 1 family, 1 genus
Family Hydropsychidae (net-spinning caddisflies) – 1 genus, 1 species

Order Hymenoptera -29 families, 93 genera
Family Formicidae (ants) – 11 genera, 18 species
Family Braconidae (parasitoids of lepidoptera) – 13 genera,13 species
Family Aphidiidae (aphid parasitoids) – 1 genus, 1 species
Family Argidae (argid sawflies) – 2 genera, 2 species
Family Tenthredinidae (common sawfles) – 2 genera, 3 species
Family Colletidae (plasterer and yellow-faced bees) – 2 genera, 5 spp.
Family Sphecidae (digger wasps) – 10 genera, 12 species
Family Ichneumonidae (ichneumonid flies) – 13 genera, 15 species
Family Gasteruptiidae (gasteruptiids) – 1 genus, 1 species
Family Halictidae (sweat bees) – 5 genera, 10 species
Family Apidae (bumble bees and honey bees) – 2 genera, 2 species
Family Anthophoridae (carpenter bees) – 2 genera, 2 species
Family Megachilidae (leafcutting bees) – 2 genera, 4 species
Family Vespidae (potter wasps) – 2 genera, 2 species
Family Eumenidae (Vespidae)(potter wasps) – 1 genus, 1 species
Family Pompilidae (spider wasps) – 2 genera, 2 species
Family Tiphiidae (tiphiid wasps) – 1 genus, 1 species
Family Bethylidae (bethylid wasps) – 2 genera, 2 species
Family Eucoilidae (parasitic wasps) – 1 genus, 1 species
Family Chrysididae (cuckoo wasps) – 1 genus, 1 species

Order Hymenoptera (continued)

Family Mutillidae (velvet ants) – 2 genera, 2 species
Family Tethredinidae (common sawflies) – 1 genus, 1 species
Family Pteromalidae (hyperparasitoid wasps) – 2 genera, 2 species, 1 unidentified
Family Eulophidae (ectoparasitoid wasps)– 1 genus, 1 species
Family Chalcididae (chalcid fles) – 1 genus, 1 species
Family Eupelmidae (ectoparasitoid wasps) – 2 genera, 2 species
Family Eurytomidae (seed chalcids) – 4 genera, 4 species
Family Encyrtidae (parasitoids of beetles, moths)– 1 genus, 1 species
Family Torymidae (parasitoid torymid wasps) – 1 genus, 1 species

Table 1. Total number of insect orders, families, genera and species represented in this 1976 *Asclepias syriaca* Survey

Order	No. of Families	No. of Genera	No. of Species
Coleoptera	25	100	132
Hemiptera	13	39	46
Homoptera	8	43	59
Diptera	31	66	69
Hymenoptera	32	93	114
Lepidoptera	11	27	32
Neuroptera	2	3	4
Trichoptera	1	1	1
Totals:	123	372	457

Asclepias syriaca

Table 2. Comparison of families and species within 7 insect orders collected during the 1976 insect survey on *Ascepias syriaca* and the number of species and families found in these orders in North America and Worldwide.

Insect Order	No. Families in 1976 survey	No. Species in 1976 survey	No. Families North America	No. Families Wwide
Coleoptera	25	132	112	166
Hemiptera	13	46	40	73
Homoptera	8	59	38	60
Diptera	31	69	108	130
Hymenoptera	32	114	70	90
Lepidoptera	11	32	75	135
Neuroptera	2	4	15	21

Insect Order	No. Species North America	No. Species Wwide	% of N.A. Families in 1976 study	% Wwide Families in 1976 study	% of N.A. Species in 1976 study	% Wwide species in 1976 study
Coleoptera	23592	>300000	22	15	0.56	0.04
Hemiptera	3587	>50000	32.5	17.8	1.28	0.03
Homoptera	6359	>32000	21.05	0.13	0.93	0.001
Diptera	16914	98000	28.7	23.8	0.41	0.0007
Hymenoptera	17777	103000	45.71	35.56	0.64	0.11
Lepidoptera	11286	>112000	14.67	8.15	0.28	0.03
Neuroptera	349	5500	13.33	9.52	1.15	0.07

Of special note in the 1976 study is the percentage of families surveyed compared to the total number of families found in north America and worldwide. The largest number of shared families in north America and worldwide is represented in the order Hymenoptera.

List of References for Illinois Flower-Visiting Insects of Common Milkweed, *Asclepias syriaca* .

http://www.illinoiswildflowers.info/plant_insects/database.html

Betz, Robert F., Ray D. Struven, James E. Will, & Francis B. Heitler (1994) "Insect pollinators: 12 milkweed species." Proceedings of the 13th North American PrairieConference, pp. 45-60.

Betz, Robert F., William R. Rommel, & Joseph J. Dichtl (1997) "Insect herbivores of 12 milkweed (Asclepias) species." Proceedings of the 15th North American PrairieConference, pp. 7-19.

Grundel, Ralph, & Noel B. Pavlovic (2000) "Nectar plant selection by the Karner Blue butterfly (Lycaeides melissa samuelis) at the Indiana Dunes National Lakeshore."American Midland Naturalist, 144(1), pp. 1-10.

Krombein, Karl V., Paul D. Hurd Jr., David B. Smith, & B.D. Burks (1979) Catalog of Hymenoptera in America North of Mexico, Vol. 2. Washington, DC: Smithsonian Institute Press.

Moure, Jesus S., & Paul D. Hurd, Jr. (1987) An Annotated Catalog of the Halictid Bees of the Western Hemisphere (Hymenoptera: Halictidae). Washington, DC: Smithsonian Institution Press.

Robertson, Charles (1929) Flowers and Insects. Lancaster, PA: The Science Press.

List of insect pollinators, reported on Common Milkweed in Illinois and the same species collected on Common Milkweed in Ohio during the 1976 study presented in this report.

Order Diptera
- **Family Muscidae**
  - ***Stomoxys calcitrans***
- **Family Tachinidae**
  - ***Gymnoclytia* sp.**

Order Lepidoptera
- **Family Pieridae**
  - ***Coleus eurythme***
- **Family Sessiidae**
  - ***Melitta* sp.**

Order Hymenoptera
- **Family Apidae**
  - ***Apis mellifera***
- **Family Anthophoridae**
  - ***Melissodes agilus***
- **Family Megachilidae**
  - ***Megachile mendica***
  - ***Heriiades carinata***
- **Family Sphecidae**
  - ***Sphex ichneumonicus***
  - ***Cerceris clypiata***
- **Family Halicidae**
  - ***Augochlorella striata***

References for Milkweed Communities and Identification of Insects used in the Preparation of Photographic Field Guides for the insect orders Hemiptera, Coleoptera, Homoptera, Diptera, Hymenoptera, and Neuroptera of the Heartland Tall Grass Prairie and The Nature Institute Sanctuary and Preserve.

The process of identifying insects is challenging, frustrating, and rewarding. Numerous resources were used to identify the insects depicted in the field guides found in this document. Please note that identification keys are tedious and there are very few entomologists capable of identifying all genera and species of insect found in north America and worldwide. That is why there are specialists for various insect families and genera. Anyone using the field guides included here should feel free to contact me if noticeable discrepancies occur in the species identified in the photographic images presented here. I have taken over 50,000 images of insects and my massive collection was used to prepare these field guides. The majority of images presented here were taken of insects within a 25 mile radius of Alton, Illinois. The Heartland Prairie in Alton and The Nature Institute in Godfrey, Illinois, were major sources for these field guides.

There are many websites available for helping with insect identification. The United States Department of Agriculture, and individual state departments of agriculture , natural history and resources provide similar identification sites. Also, many state universities with entomology departments may also provide identification information on their website.

The following website offers a list of milkweed citations including the two articles found in this particular 1976 study:

http://www.wiu.edu/AltCrops/Milkweed_files/Milkweed%20citations.htm

Another important source for milkweed enthusiasts is:

ISBN# 0-965-7472-6-4
Milkweed, Monarchs and More, Updated Second Edition, Field Version
by Ba Rea, Karen Oberhauser,
and Michael A. Quinn
Trade paper, perfect bound, 4.75" X 7", 112 pages
retail $9.00

Online sources for insect identification are numerous. The following website will help identifying many insect species. If, however, your research is more academic then you will need to acquire professional insect identification keys to verify specific species. The study presented here would not have been possible without the help of professional entomologists identified in this presentation.

http://bugguide.net/node/view/15740

Listing of insect taxa collected on the common milkweed (*Asclepias syriaca*) in 1976

Note: Information for the Hemiptera and Coleoptera were obtained from the following published material :

Dailey, Patrick J., Robert C. Graves, and John M. Kingsolver. 1978. Survey of Coleoptera collected on the common milkweed, Asclepias syriaca, at one site in Ohio. The Coleopterists Bulletin 32(3): 223-229.

Dailey, Patrick J., Robert C. Graves, and Jon Herring. 1978. Survey of Hemiptera collected on common milkweed, Asclepias syriaca, at one site in Ohio. Ent. News 89(7 & 8): 157-162.

All other information in this presentation is from unpublished data collected during the same survey. Correspondence with taxonomists for the species listed is available at the end of this paper and in a separate pdf file. Numerical data is limited for the Coleoptera, Hemiptera and Homoptera and for a few species in other orders presented here, as vials containing specimens from unpublished orders were accidentally destroyed. Identified species from this study should be available from the department of biology at Bowling Green State University, Bowling green, Ohio. Included photographs were taken in 1976 or are of Illinois insects collected at the Heartland Prairie, Alton, IL, the preserve at The Nature Institute in Godfrey, IL, or the Riverlands Migratory Bird Sanctuary in West Alton, IL.

Milkweed tiger moth caterpillar and the large milkweed bug

List of Species Collected by Order

Homoptera

	Total Individuals Collected	Dates Collected Day-Month
MEMBRACIDAE		
***Stictocephala diceros* (Say)**	**4**	**14-VII to 30-VII**
***Stictocephala bisonia* Kopp & Yonke**	**67**	**15-VI to 4-X**
***Micrutalis calva* (Say)**	**11**	**11-VI to 18-IX**
***Enchenopa binotata* (Say)**	**3**	**13-VII to 31-VIII**
***Campylenchia laticeps* Say**	**11**	**24-VI to 3-IX**
***Entylia bactriana* Germar**	**1**	**29-VII**
***Publilia concava* Say**	**1**	**18-VIII**
***Vanduzea arquata* Say**	**2**	**22-VI to 4-IX**
CERCOPIDAE		
***Philaenus spumarius* (L.)**	**45**	**10-VI to 5-IX**
***Lepyronia quadrangularis* (Say)**	**2**	**24-VI to 9-VIII**
CICADELLIDAE		
Graphocephala coccinea (Forster)	**106**	**11-VI to 4-X**
Graphocephala hieroglyphica (Say)	**3**	**18-VII to 18-IX**
Scaphytopius acutus (Say)	**20**	**10-VI to 24-IX**
Scaphytopius frontalis (Van Duzee)	**5**	**14-VI to 4-IX**
Colladonus clitellarius (Say)	**7**	**9-VI to 24-VI**
Agallia quadripunctata (Provancher)	**42**	**16-VI to 4-IX**
Paraphlepsius irroratus (Say)	**32**	**12-VI to 27-VIII**
Aceratagallia sanguinolenta (Provancher)	**15**	**17-VI to 8-VIII**
Aphrodes bicincta Curtis	**52**	**9-VI to 3-IX**
Draeculacephala antica (Walker)	**2**	**13-VI to 22 VI**
Draeculacephala portola Ball	**1**	**27-VIII**
Gyponana octolineata (Say)	**2**	**9-VI to 10-VIII**
Athysanus argentatus Fabricius	**1**	**16-VI**
Empoasca erigeron DeLong	**3**	**15-VI to 24-IX**
Empoasca fabae (Harris)	**1**	**30-VII**
Agalliopsis novella (Say)	**6**	**16-VI to 16-VIII**
Macrosteles fascifrons (Stal)	**1**	**11-VII**
Jikradia olitoria (Say)	**4**	**24-VII to 3-IX**
Japananus hyalinus (Osborn)	**1**	**19-VII**
Gypona melanota Spangberg	**1**	**4-VIII**
Scaphoideus titanus Ball	**2**	**2-VII to 16-VII**
Erythroneura tricincta Fitch	**1**	**15-VII**

Homoptera

DICTYOPHARIDAE		
Scolops pungens Germar	**1**	**3-VIII**
CIXIIDAE		
Oliarus humilis Say	**57**	**21-VI to 10-VIII**
FLATIDAE		
Metcalfa pruinosa (Say)	**2**	**6-VIII to 8-VIII**
Ormenoides venusta (Melichar)	**2**	**27-VII to 10-VII**
ACANALONIIDAE		
Acanalonia conica (Say)	**1**	**28-VII**
Acanalonia bivittata (Say)	**151**	**16-VI to 18-IX**

Note: Data for total number specimens collected and span of dates collected is not yet available for many species which follow. Abundant species without numerical data are indicated with an asterisk (*).

APHIDIDAE

Macrosiphum euphorbiae (Thomas)
Macrosiphum rosae (L.)
Aphis citricola van der Goot
Aphis gossypii Glover
Aphis helianthi Monell
Aphis tibae Scopoli
Aphis asclepiadis Fitch
Aphis craccivora Koch
Aphis nerii (Boyer)
Aphis sp.
Dactynotus sp.
Dactynotus (***Uromelan***) sp.
Myzocallis sp.
Myzocallis asclepiadis (Monell)
Chaitophorus sp.
Pterocomma sp.
Masonaphis sp.
Acyrthosiphon sp.
Myzus persicae (Sulcer)
Hyadaphis foeniculi (Passerini)
Rhopalosiphum maidis (Fitch)

Aphis nerii

Diptera

LAUXANIIDAE
Camptoprosopella sp.

DOLICHOPODIDAE
Condylostylus sp.*
Condylostylus sipho (Say)*
Condylostylus caudatus (Wied.)*
Chrysotus sp.
Hercostomus sp.

CHIRONOMIDAE
Chironomous spp.
Chironomous crassicaudatus Mall.

CERATOPOGONIDAE
Palpomyia sp.

PHORIDAE
Megaselia sp.

THEREVIDAE
Psilocephala haemorhoidalis (Macq.)

STRATIOMYIDAE
Stratiomys sp.
Nemotelus spp.
Microchrysa polita (L.)

TIPULIDAE
Nephrotoma ferruginea (Fabricius)
Nephroma sodalis (Loew)
Limonia (G.) ***communis*** (O.S.)

TEPHRITIDAE
Euleia fratria (Lw.)
Rhagoletis pomonella (Walsh)*
Euaresta festiva (Lw.)
Euaresta bella (Lw.)

Condylostylus occidentalis

Stratiomys meigenii

Trupanea actinobola

EMPIDIDAE
Platypalpus sp.

ASILIDAE
Atomosia puella (Wiedemann)

SCIOMYZIDAE
Tetanocera loewi Steyskal
Tetanocera ferruginea Fallen

PSILIDAE
Psila bivittata Loew

SPHAEROCERIDAE
Copromyza atra (Meigen)

CHYROMYIDAE
Gymnochiromyia sp.

PLATYSTOMATIDAE
Rivellia winifredae Namba

OTITIDAE
Seioptera vibrans (Linnaeus)
Physiphora demandata (Fallen)
Tetanops luridipennis Loew

LONCHAEIDAE
Lonchaea polita Say

AGROMYZIDAE
Melanagromyza buccalis Spencer
Melanagromyza sp.
Liriomyza sp.
Cerodontha dorsalis (Loew)

ANTHOMYZIDAE
Hylema florilega (Zetterstedt)*
Hyelma platura (Meigen)*
Pegomya lipsia (Walker)

Efferia sp.

***Rivellia* sp.**

Phytomyza aquilegivora

ANTHOMYZIDAE
Pegomya affinis Stein
Pegomya vanduzeei Malloch

SYRPHIDAE
Eristalis tenax (L.)
Eristalis arbustorum (L.)*
Metasyrphus americanus (Wied.)
Platycheirus sp.
Sphaerophoria contigua Macquart*
Toxomerus marginatus (Say)*

OTITIDAE
Seioptera vibrans (Linnaeus)
Physiphora demandata (Fallen)
Tetanops luridipennis Loew

LONCHAEIDAE
Lonchaea polita Say

Milesia virginiensis

***Lonchaea* sp.**

Eutrichota affinis

Helophilus fasciatus

CONOPIDAE
Thecophora sp.
Zodion americanum Wiedemann

TABANIDAE
Chrysops ater Macquart

CALLIPHORIDAE
Pollenia rudis (Fab.)*
Phaenicia sericata (Mg.)
Bufolucilia silvarum (Mg)*

SARCOPHAGIDAE
Wohlfahrtia vigil (Walker)
Blaesoxipha reversa (Aldrich)
Blaesoxipha sp.
Oxysarcodexia sp.

MUSCIDAE
Mucina stabulans (Fallen)
Musca domestica L.
Stomoxys calcitrans (L.)
Coenosia tigrina (Fab.)
Coenosia sp.
Phaonia aberrans Malloch

SCIARIDAE
Bradysia sp.
Eugnoriste sp.*

SCATOPSIDAE
Scatopse fuscipes Meigen

MILICHIIDAE
Pholeomyia indecora (Lw.)
Leptometropa latipes (Mg.)
Madiza glabra Fall.

***Physocephala* sp.**

Cochliomya macellaria

***Eugnoriste* sp.**

CHLOROPIDAE
Thaumatomyia bistriata (Wlk.)
Chaetochlorops inquilinis (Coq.)
Dasyopa latifrons (Lw.)
Hippelates bishoppi Sabr.
Olcella provocans (Beck.)*
Oscinella soror (Macq.)
Oscinella neocoxendix Sabr.
Siphonella setulosa (Mall.)
Siphonella abdominalis Beck

TACHINIDAE
Gymnoclytia dubia West
Peleteria haemorrhoa (Wulp)
Actia sp.
Medina barbata (Coq.)
Winthemia sinuata Rein.
Winthemia rufopicta (Big.)
Cylindromyia decora Ald.

NEUROPTERA

HEMEROBIIDAE
Hemerobius prob. ***humulinus*** L.
Micromus posticus Wlk.

CHRYSOPIDAE
Chrysopa carnea Steph.*
Chrysopa oculata Say

TRICHOPTERA

HYDROPSYCHIDAE
Cheumatopsyche sp.

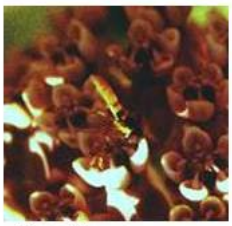
***Pollenia* sp.**

Xanthomelanodes flavipes

Climaciella brunnes

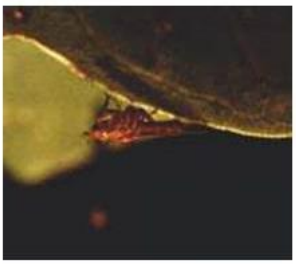
Diptera photographed on common milkweed, *Asclepias syriaca*, in 1976

Sarcophaga flesh fly.



Flower fly.

Two flies stuck to flower by milkweed pollinia.
Many do not escape and eventually die.



Asilid robber fly.

Fruit fly (*Paroxyna* ?)

Tachinid fly.

***Asclepias incarnata*, swamp milkweed, at Heartland Prairie. This milkweed is also a favorite of Monarch caterpillars**

Hymenoptera

	Number of Indviduals collected	Dates collected
FORMICIDAE		
Camponotus subbarbatus Emery	**5**	**14-VI to25-VI**
Lasius alienus (Foerster)	**2,225**	**9-VI to 25-IX**
Lasius sp.		
Formica exsectoides Forel	**1**	**25-VI**
Formica subsericea Say	**2,675**	**9-VI to 4-X**
Formica pallidefulva nitidiventris Emery	**174**	**10-VI to 5-IX**
Formica sp.		
Formica spp.		
Pheidole sp.		
Myrmica sp.		
Tetramorium caespitum (L.)	**122**	**10-VI to 6-IX**
Leptothorax ambiguus Emery	**54**	**9-VI to 15-VII**
Leptothorax curvispinosus Mayr	**1**	**13-VI**
Aphaenogaster sp.	**1**	**8-VII**
Crematogaster cerasi Mayr	**1,667**	**9-VI to 25-IX**
Crematogaster sp.		
Tapinoma sessile (Say)	**37**	**11-VI to 15-VII**
Prenolepis imparis (Say)	**4**	**16-VI to 25-X**

BRACONIDAE
Rogas spp.
Macocentrus spp.
Vipio sp.
Chorebus sp.
Orgilus sp.
Microgaster sp.
Blacus sp.
Aspilota sp.
Apanteles spp.*
Agathis spp.*
Meteorus spp.
Microplitis sp.
Bracon sp.*

***Lytoplus* sp.**

APHIDIIDAE
Lysiphlebus sp.

ARGIDAE
Schizocerella pilicornis (Holmgren)
Sphacopilus cellullaris (Say)*

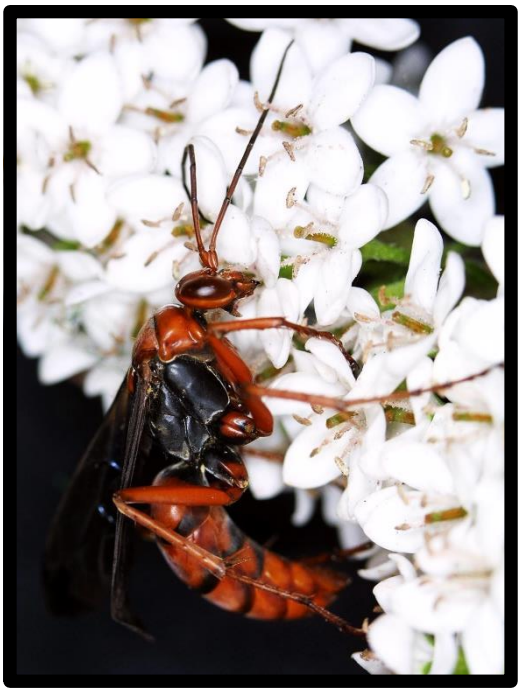
TENTHREDINIDAE
Ametastegia glabrata (Fallen)
Dolerus similis (Norton)
Dolerus sp.

COLLETIDAE
Hylaeus cressoni (DeGeer)*
Hylaeus modestus Say*

SPHECIDAE
Sphex ichneumoneus (L.)*
Sphex pensylvanicus L.*
Isodontia mexicana (Saussure)
Prionyx parkeri Bohart & Menke
Cerceris deserta Say
Cerceris clypeata Dahlbom
Pemphredon sp.*
Dionotus sp.
Ectemnius stirpicola (Packard)
Crossocerus annulipes (Lepeletier & Brulle)
Hoplisoides sp.
Lyroda subita Say

ICHNEUMONIDAE
Scambus sp.
Hercus pleuralis (Prov.)
Diplazon laetatorius (F.)*
Parania sp.
Cymodusa distincta (Cr.)*
Hyposoter annulipes (Cr.)
Hyposoter pilosulus (Prov.)
Enicospilus merdarius (Grav.)
Isdromas lycaenae (How.)
Ethelurgus sp.

Ammophila procera

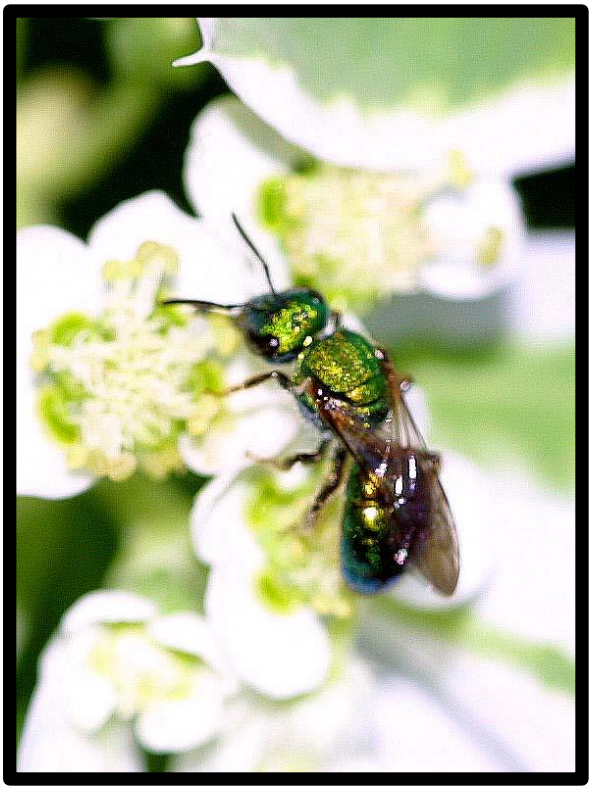


Trogus pennator

ICHNEUMONIDAE (continued)
Phygadeuon sp.
Mastrus sp.
Pycnocryptus director (Thbg.)*
Gelis sp.1
Gelis sp.2

GASTERUPTIIDAE
Gasteruption assectator (L.)

HALICTIDAE
Augochlorella striata (Prov.)*
Agapostemon virescens (F.)
Halictus ligatus Say
Lasioglossum coriaceum (Smith)
Evylaeus sp.
Dailictus pilosus (Sm.)*
Dialictus sp.1, 2, 3, 4, 5
Dialictus zephyrus (Sm.)*



***Augochlora* sp.**

APIDAE
Apis mellifera L.
Bombus pennsylvanicus (DeGeer)

ANTHOPHORIDAE
Melissodes agilis Cr.
Anthophora abrupta Say

MEGACHILIDAE
Megachile latimanus Say
Megachile centuncularis L.
Megachile mendica Cr.*
Heriades carinata (Cr.)

***Megachile* sp.**

VESPIDAE
Vespula germanica (F.)
Polistes fuscatus (F.)*

EUMENIDAE
Parancistrocercus pensylvanicus (Saussure)

POMPILIDAE
Auplopus nigrellus (Banks)
Priocnemis scitula (Cresson)

TENTHREDINIDAE
Ametastegia glabrata (Fallen)

PTEROMALIDAE
Perilampus sp.
Eucharitinae sp.
Pteromalinae sp.*

EULOPHIDAE
Tetrastichus sp.

CHALCIDIDAE
Spilochalcis sp.

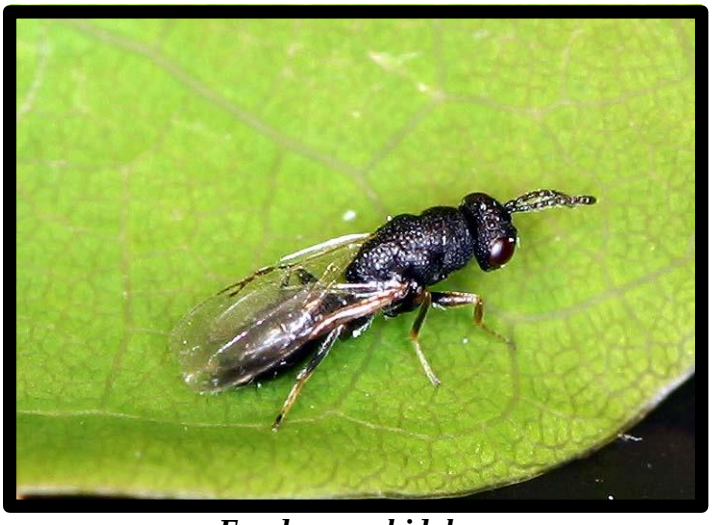
EUPELMIDAE
Eupelmus sp.
Eupelmella sp.

EURYTOMIDAE
Eudecatoma sp.*
Rileya sp.
Harmolita sp.
Eurytoma sp.*

ENCYRTIDAE
Unknown Genera

TORYMIDAE
Torymus sp.

Entypus unifasciatus



Euodynerus hidalgo

***Monodontomerus* sp.**

Hymenoptera photographed on common milkweed, *Asclepias syriaca*, in 1976

Honey bee, *Aphis mellifera*.

Leaf cutting bee, *Megachile* sp.

Great golden digger wasp, *Sphex ichneumoneus.*

Bumble bee, *Bombus* sp.

Polistes dorsalis

***Crematogaster* ants farming aphids.**

Coleoptera (published data)

CARABIDAE	**No. Collected**	**Dates Collected**
***Lebia grandis* Hentz**	**1**	**10-VI**
***Lebia viridis* Say**	**11**	**13-VI to 30-VII**
***Calleida punctata* LeConte**	**5**	**20-VI to 27-VIII**
STAPHYLINIDAE		
Stenus sp.	**1**	**13-V1**
Philonthus sp.	**2**	**23-VII to 18-IX**
Aleochara sp.	**4**	**11-VI to 2-VII**
Aleocharinae*:* species A	**4**	**19-VI to 23-VII**
species B	**1**	**23-VIII**
species C	**1**	**28-VI**
SCARABAEIDAE		
***Trichiotinus piger* (Fabricius)**	**2**	**28-VI to 13-VII**
BUPRESTIDAE		
***Agrilus otiosus* (Gyllenhal)**	**2**	**26-VI to 5-VII**
ELATERIDAE		
***Aeolus dorsalis* (Say)**	**2**	**19-VI to 8-VII**
***Melanotus communis* (Gyllenhal)**	**2**	**12-VI to 20-VII**
LAMPYRIDAE		
***Photinus indictus* (LeConte)**	**6**	**13-VI to 4-VII**
***Photinus pyralis* (Linne)**	**54**	**23-VI to 2-VIII**
Photuris sp.	**2**	**26-VI to 29-VI**
***Pyropyga decipiens* (Harris)**	**56**	**9-VI to 31-VII**
CANTHARIDAE		
***Chauliognathus pennsylvanicus* DeGeer**	**6**	**8-VIII to 26-VIII**

CANTHARIDAE (continued)		
Chauliognathus marginatus		
Fabricius	**29**	**20-VI to 11-VIII***
***Podabrus modestus* (Say)**	**35**	**10-VI to 4-VII***
Podabrus sp.A	**1**	**11-VI**
sp B	**1**	**28-VI**
***Silis latiloba* Blatchley**	**1**	**27-VII**
Silis sp.	**4**	**31-VII to 8-VIII**
***Trypherus latipennis* (Germar)**	**2**	**16-VI to 1-VII**
Cantharus sp.	**3**	**18-VI to 12-VII**
DERMESTIDAE		
***Trogoderma glabrum* (Herbst)**	**122**	**23-VI to 18-VIII**
Attagenus sp.	**1**	**18-VI**
Anthrenus sp.	**4**	**14-VI to 2-VII**
Megatoma sp.	**1**	**13-VII**
CLERIDAE		
***Cymatodera undulata* (Say)**	**1**	**29-VII**
***Isohydnocera tabida* (LeConte)**	**1**	**17-VI**
***Isohydnocera curtipennis* (Newman)**	**10**	**14-VI to 1-VII***
Enoclerus sp.	**2**	**19-VI to 23-VI**
MELYRIDAE		
Collops sp.	**3**	**9-VI to 15-VII**
NITIDULIDAE		
***Glischrochilus quadrisignatus* (Say)**	**61**	**2-VII to 4-X**
***Conotelus obscurus* Erichson**	**23**	**18-VI to 12-VII**
***Stelidota geminata* (Say)**	**1**	**26-VIII**
***Brachypterolus pulicarius* (Linne)**	**1**	**22-VI**

CRYPTOPHAGIDAE		
Antherophagus ochraceus		
Melsheimer	**5**	**28-VI to 31-VII**
LANGURIIDAE		
***Acropteroxys gracilis* (Newman)**	**5**	**11-VI to 11-VII**
PHALACRIDAE		
Phalacrus sp.	**18**	**14-VI to 30-VIII**
Stilbus sp.	**5**	**3-VII to 15-VII**
CORYLOPHIDAE		
Undetermined sp.	**7**	**17-VI to 7-VIII**
COCCINELLIDAE		
***Scymnus (Pullus) iowensis* Casey**	**277**	**13-VI to 4-X***
***Scymnus (Pullus) socer* LeConte**	**1**	**15-VII**
***Scymnus (Diomus) terminatus* (Say)**	**73**	**21-VI to 29-VIII***
***Coccinella undecimpunctata* (Linne)**	**284**	**8-VII to 4-X***
***Coccinella transversoguttata* Mulsant**	**347**	**17-VI to 4-X***
***Coccinella novemnotata* Herbst**	**8**	**18-VI to 10-VIII**
***Hyperaspis undulata* (Say)**	**15**	**11-VI to 25-VIII**
***Hyperaspis binotata* (Say)**	**1**	**23-VI**
***Hippodamia parenthesis* (Say)**	**28**	**6-VII to 13-VIII***
***Hippodamia tridecimpunctata tibialis* (Say)**	**10**	**26-VI to 23-VIII**
***Hippodamia convergens* Guerin**	**241**	**18-VI to 4-X***
***Brachyacantha ursina* (Fabricius)**	**323**	**10-VI to 10-VIII***
***Cycloneda sanguinea* (Linne)**	**37**	**19-VI to 31-VIII***
***Adalia bipunctata* (Linne)**	**323**	**14-VI to 1-IX***
***Coleomegilla fuscilabris* Mulsant**	**74**	**11-VI to 6-IV***
***Epilachna varivestis* Mulsant**	**1**	**15-VII**

CIIDAE		
***Hadraule blaisdelli* (Casey)**	**2**	**20-VII**
MORDELLIDAE		
***Mordella marginata* (Melsheimer)**	**4**	**15-VI to 26-VIII**
***Mordellistena semiusta* LeConte**	**1**	**26-VII**
***Mordellistena marginalis* (Say)**	**1**	**31-VIII**
***Mordellistena pustulata* Melsheimer**	**2**	**13-VI to 15-VI**
***Pentaria trifasciata* (Melsheimer)**	**2**	**27-VI to 12-VIII**
MELOIDAE		
***Epicauta pe stifera* Werner**	**1**	**18-VI**
***Epicauta pennslvanica* (DeGeer)**	**5**	**1-VIII to 26-VIII**
ANTHICIDAE		
***Anthicus ephippium* LaFerte**	**1**	**12-VII**
***Ischyropalpus nitidulus* LeConte**	**1**	**8-VIII**
CERAMBYCIDAE		
***Tetraopes tetrophthalmus* (Forster)**	**2,682**	**10-VI to 20-VIII***
***Tetraopes femoratus* LeConte**	**64**	**17-VI to 12-IX***
***Megacyllene robiniae* (Forster)**	**2**	**18-IX**
***Dectes spinosus* (Say)**	**3**	**22-VII to 26-VII**
***Typocerus velutinus* (Olivier)**	**1**	**28-VI**
***Hippopsis lemniscata* (Fabricius)**	**1**	**5-VII**
BRUCHIDAE		
***Megacerus discoidus* (Say)**	**6**	**28-VI to 1-VIII**
Althaeus n. sp.	**1**	**3-VIII**

CHRYSOMELIDAE

Crioceris asparagi **(Linne)**	**20**	**27-VI to 22-VIII***
Lema trilineata **Olivier**	**3**	**24-VII to 14-VIII**
Fidia viticida **Walsh**	**3**	**24-VI to 19-VII**
Paria thoracica **(Melsheimer)**	**2**	**22-VI to 6-VII**
Chrysochus auratus **(Fabricius)**	**12**	**2-VII to 14-VIII**
Zygogramma suturalis **(Fabricius)**	**1**	**26-VII**
Labidomera clivicollis **(Kirby)**	**24**	**11-VI to 18-IX**
Diabrotica undecimpunctata howardi **Barber**	**20**	**19-VI to 6-IX**
Diabrotica longicornis **(Say)**	**1**	**17-VII**
Trirhabda virgata **LeConte**	**3**	**4-VII to 25-VII**
Crepidodera nana **(Say)**	**3**	**19-VI to 23-VIII**
Crepidodera sp.	**1**	**19-VI**
Psylliodes convexior **LeConte**	**2**	**15-VI to 19-VI**
Psylliodes punctulata Melsheimer	**2**	**19-VI to 7-VII**
Phyllotreta zimmermanni **(Crotch)**	**14**	**11-VI to 25-VII***
Phyllotreta cruciferae **(Goeze)**	**2**	**13-VI to 17-VI**
Blepharida rhois **(Forster)**	**1**	**18-IX**
Longitarsus insolens **Horn**	**4**	**14-VII to 10-VIII**
Disonycha xanthomelas **(Dalman)**	**18**	**13-VII to 17-VIII**
Chaetocnema confinis **Crotch**	**3**	**15-VI to 16-VI**
Systena frontalis **(Fabricius)**	**1**	**5-VIII**
Altica chalybea **Illiger**	**1**	**25-VI**

CHRYSOMELIDAE		
***Altica litigata* Fall**	**1**	**23-VI**
***Epitrix cucumeris* (Harris)**	**1**	**15-VI**
***Epitrix fascula* Crotch**	**2**	**11-VI to 18-VI**
***Anoplitis inaequolis* (Weber)**	**3**	**5-VII to 3-VIII**
***Chalepus dorsalis* Thunberg**	**1**	**13-VI**
***Deloyala guttata* Olivier**	**93**	**9-VI to 4-X***
***Metriona bicolor* (Fabricius)**	**57**	**10-VI to 25-IX***
***Phagiometriona clavata* (Fabricius)**	**5**	**26-VI to 13-VIII**
CURCULIONIDAE		
***Otiorhynchus ovatus* (Linne)**	**18**	**7-VII to 30-VIII**
***Calomycterus setarius* Roelofs**	**2**	**29-VI to 13-VII**
***Sitona flavescens* (Marsham)**	**1**	**27-VI**
***Sitona scissifrons* (Say)**	**3**	**13-VI to 29-VII**
***Sitona hispidula* (Fabricius)**	**7**	**9-VI to 29-VIII**
***Hypera postica* (Gyllenhal)**	**1**	**14-VIII**
***Hypera punctata* (Fabricius)**	**1**	**20-VIII**
***Smicronyx flavicans* (LeConte)**	**1**	**23-VIII**
***Smicronyx corniculatus* (Fabricius)**	**1**	**8-VIII**
***Tychius picirostris* (Fabricius)**	**1**	**18-VII**
***Curculio caryae* (Horn)**	**1**	**6-VIII**
***Gymnetron antirrhini* Paykull**	**3**	**13-VII to 4-VIII**
***Gymnetron tetrum* (Fabricius)**	**135**	**9-VI to 13-VIII***
***Baris striata* Say**	**1**	**5-VII**
***Madarellus undulatus* (Say)**	**89**	**14-VI to 30-VII***
Centrinaspis sp.	**4**	**3-VII to 4-VIII**

CURCULIONIDAE		
***Cylindrocopturus nr. quercus* (Say)**	**1**	**27-VI**
***Conotrachelus anaglypticus* Say**	**1**	**30-VII**
***Conotrachelus nenuphar* (Herbst)**	**1**	**2-VIII**
***Rhyssomatus lineaticollis* (Say)**	**46**	**9-VI to 25-VIII***
***Tyloderma foveolata* Say**	**3**	**7-VII**
***Sphenophorus parvulus* Gyllenhal**	**1**	**27-VI**
***Sphenophorus zeae* (Walsh)**	**1**	**13-VI**
SCOLYTIDAE		
***Chramesus hicoriae* LeConte**	**1**	**29-VI**

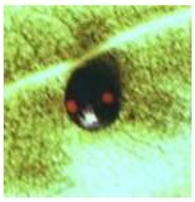
Coccinellidae, lady beetles, photographed on common milkweed, *Asclepias syriaca*, in 1976

Two-spotted lady beetle, *Adalia bipunctata* Linné.

Undulated lady beetle, *Hyperaspis undulata* Say .

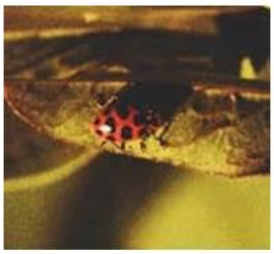
Nine-spotted lady beetle, *Coccinella novemnotata* Herbst.

Eastern lady beetle,*Coccinella transversoguttata* Mulsant .

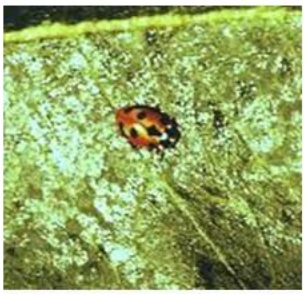


Hyperaspis binotata (Say).

Thirteen-spotted lady beetle, *Hippodamia tridecimpunctata tibialis* (Say).



Spotted lady beetle, *Coleomegilla fuscilabris* Mulsant.



Parenthesis lady beetle, *Hippodamia parenthesis* Say.

Spotless lady beetle, *Cycloneda sanguinea* (Linné).

Other Coleoptera photographed on common milkweed, *Ascelpias syriaca,* at one site in Ohio in 1976.

Curculionid beetle.

Striped cucmber beetle, *Acalymma vittata* (Fab.).

Blister beetle, *Epicauta pestifera* Werner.

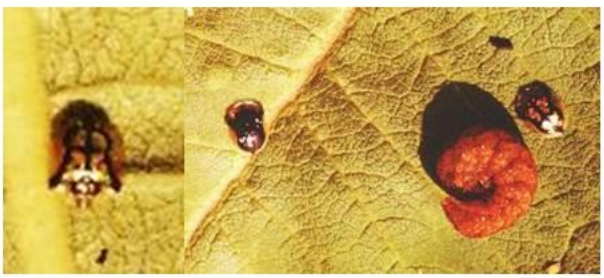
Swamp milkweed beetle, *Labidomera clivicollis* (Kirby). Larval stage shown on milkweed flowers in upper left hand photo.

Rose chafer, Macrodactylus subspinosus Fabricius.

Black blister beetle, *Epicauta pennsylvanica* DeGeer.

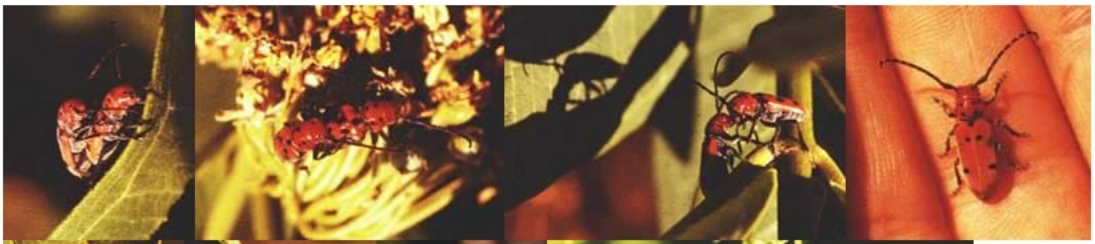
Chrysomelid beetle, *Plagiometriona clavata* (Fabricius).

Downy leather wing, *Podabrus tomentosus* Say.



Tortoise shell beetles, *Deloyala guttata* Olivier. Note polymorphic shell pattern. Larva of unknown species.

Chrysomelid beetle, *Trirhabda virgata* LeConte.



The red milkweed beetle, all *Tetraopes tetraopthalmus* Forster except for *T. femoratus*. Milkweed tiger moth caterpillar, *Euchaetias egle* (Dru.), appears in photo at lower right.

Hemiptera

	Number Collected	Dates Collected
ANTHOCORIDAE		
***Orius insidiosus* (Say)**	**11**	**20-VI to 23-VIII**
MIRIDAE		
***Neurocolpus nubilus* (Say)**	**14**	**17-VI to 10-VIII**
***Leptopterna dolobrata* (Linne)**	**2**	**12-VI to 22-VI**
***Lygus lineolaris* (Palisot de Beauvois)**	**204**	**12-VI to 4-X***
***Reuteroscopus ornatus* (Reuter)**	**30**	**19-VI to 6-IX**
Trigonotylus sp.	**2**	**10-VIII to 14-VIII**
Ilnacora sp.	**2**	**26-VI**
***Criocoris saliens* (Reuter)**	**1**	**13-VI**
***Plagiognathus albatus* Van Duzee**	**1**	**16-VI**
***Plagiognathus politus* Uhler**	**248**	**13-VI to 12-IX***
Plagiognathus sp.	**1**	**14-VI**
***Hyaliodes vitripennis* (Say)**	**1**	**4-VIII**
Chlamydatus sp.	**2**	**6-VII to 12-VII**
Ceratocapsus sp.	**1**	**2-VIII**
***Amblytylus nasutus* (Kirschbaum)**	**12**	**10-VI to 17-VI**
***Capsus ater* (Linne)**	**1**	**18-VI**
***Taedia scrupeus* (Say)**	**1**	**10-VIII**
***Poecilocapsus lineatus* (Fabricius)**	**2**	**10-VI to 24-VI**
***Adelphocoris rapidus* (Say)**	**1**	**28-VII**
***Adelphocoris lineolatus* (Goeze)**	**137**	**10-VI to 25-IX***

NABIDAE		
***Nabis subcoleoptratus* (Kirby)**	**6**	**9-VI to 3-VII**
***Nabis roseipennis* Reuter**	**1**	**23-VI**
***Nabis americoferus* Carayon**	**8**	**23-VI to 10-VIII**
REDUVIIDAE		
***Sinea diadema* (Fabricius)**	**17**	**11-VI to 18-IX**
PHYMATIDAE		
***Phymata fasciata* (Gray)**	**11**	**19-VI to 25-IX**
PIESMATIDAE		
***Piesma cinereum* (Say)**	**2**	**13-VI to 14-VI**
LYGAEIDAE		
***Lygaeus kalmii* Stal**	**1,173**	**9-VI to 4-X***
***Oncopeltus fasciatus* (Dallas)**	**4**	**15-VII to 27-VIII**
***Phlegyas abbreviatus* (Uhler)**	**10**	**25-VI to 27-VII**
***Ortholomus scolopax* (Say)**	**6**	**9-VIII to 2-IX**
***Pachybrachius bilobatus* (Say)**	**6**	**9-VIII to 6-IX**
***Nysius ericae* (Schilling)**	**1**	**2-VII**
***Blissus leucopterus* (Sap)**	**1**	**25-VII**
BERYTIDAE		
***Jalysus spinosus* (Say)**	**4**	**25-VII to 18-IX**
***Berytinus minor* (Herrich-Schaffer)**	**1**	**13-VII**
RHOPALIDAE		
***Leptocoris trivittatus* (Sap)**	**9**	**18-VII to 4-X**
***Stictopleurus crassicornis* (Linne)**	**1**	**18-IX**
***Harmostes reflexulus* (Say)**	**1**	**4-VIII**
ALYDIDAE		
***Alydus eurinus* (Say)**	**2**	**20-VI to 18-IX**

PENTATOMIDAE		
***Cosmopepla bimaculata* (Thomas)**	**79**	**17-VI to 4-X**
***Euschistus variolarius* (Palisot de Beauvois)**	**11**	**26-VI to 4-X**
***Euschistus tristigmus* (Say)**	**1**	**24-VII**
***Podisus maculiventris* (Say)**	**11**	**15-VI to 18-IX**
Unidentified nymphs	**19**	**20-VI to 12-IX**
CYDNIDAE		
***Sehirus cinctus* (Palisot de Beauvois)**	**15**	**22-VI to 27-VII**
TINGIDAE		
***Corythucha marmorata* (Uhler)**	**2**	**17-VI to 18-VI**

Hemiptera and Homoptera photographed on common milkweed, *Asclepias syriaca*, in 1976

Acanalonia bivittata

Acanalonia conica

Cosmopepla bimaculata

Oncopeltus fasciatus

Lygaeus kalmii

Adelphocoris lineolatus

Lepidoptera

PIERIDAE		
Colias eurytheme Bdv.		
Pieris rapae (Linnaeus)	**1**	**1-VII**
LYCAENIDAE		
Hyllolycaena hyllus (Cramer)		
PYRALIDAE		
Crambus sp.		
Micocambrus elegans (Clem.)		
Loxostege sp.	**1**	**26-VI**
Pyrausta sp.	**1**	**15-VI**
sp. of Pyraustinae		
DANAIDAE		
Danaus plexippus (L.)		
SESIIDAE		
Albuna fraxini (Hy. Edw.)*		
Melittia satyriniformis Hub.*		
N**OCTUIDAE**		
Papaipema nebris (Guenee)	**6**	**9-VI to 5-VII**
Alypia octomaculata (Fabricius)	**1**	**7-VII**
Pseudaletia unipuncta (Haworth)	**5**	**13-VI to 18-VIII**
Amathes bicarnea (Guenee)	**1**	**5-VII**
HESPERIIDAE		
Thymelicus lineola (Ochsenheimer)*		
Polites coras (Cramer)		
(2 unidentified specimens)		
GEOMETRIDAE		
Eupathecia sp.		

Danaus plexippus

ARCTIIDAE

Diacrisia virginica (Fabricius)	**1**	**15-VII**
Euchaetias egle (Dru.)	**125**	**5-VII to 6-IX**
Cycnia tenera Hbn.	**1**	**13-VIII**
Estigmene acrea (Dru.)	**1**	**4-IX**

(4 unidentified)

CTENUCHIDAE

(2 unidentified)

YPONOMEUTIDAE

Atteva punctella (Cram.)*

(3 unidentified)

TORTRICIDAE

Sparganothis sulfureana (Clem.)	**5**	**9-VI to 14-VIII**
Choristoneura rosaceana (Harr.)	**3**	**12-VII to 4-VIII**

Lepidoptera photographed on common milkweed, *Asclepias syriaca*, in 1976

Ailanthus webworm or ermine moth, *Atteva punctella* **(Cram.).**

Cabbage butterfly, *Pieris rapae* **(Linnaeus).**

Monarch butterfly. *Danaus plexippus* **(L.).**

Silver-spotted skipper,*Epargyreus clarus* **(Cram.).**

Squash vine borer, *Melittia cucurbitae* **(Harr.).**

Hickory hairstreak, *Satyrium caryaevorus* **(McDunnough).**

Mourning cloak, *Nymphalis antiopa* **(Linnaeus**

Collection of correspondence from taxonomists and other pertinent data from 1976 survey of insects frequenting milkweed, *Asclepias syriaca*

The University of Vermont

DEPARTMENT OF ZOOLOGY
MARSH LIFE SCIENCE BUILDING
BURLINGTON, VERMONT 05405 U.S.A.

May 1, 1980

Dr. Lloyd Knutson, Chairman
Insect Identification and Beneficial Insect
Introduction Institute
U.S.D.A., Science and Education Administration
Agricultural Research, Northeastern Region
Beltsville Agricultural Research Center
Beltsville, MD 20705

Dear Dr. Knutson:

It certainly has been a long time since our last correspondence concerning the identification of insects frequenting the common milkweed. For the past year I have been working as a postdoctoral research associate in Dr. George M. Happ's laboratory at the University of Vermont. Most of our research concerns various aspects of reproductive biology in the mealworm, Tenebrio molitor. Recently, with the help of a U.V.M. student, we were able to pick up the milkweed research again. As a result, we came across about 15 specimens of Homoptera which need identification. According to the identification lists provided by you, the majority, if not all, of the Homoptera were previously identified by Dr. J. P. Kramer. If possible, I would appreciate Dr. Kramer's expertise in finalizing the identification of these specimens to facilitate publication of these results. Dr. Kramer, of course, will be a co-author of this publication once it is complete, and I will submit a rough draft of the manuscript to him for critical analysis prior to its submittal.

If there are any further questions, please do not hesitate to contact me. Again, thank you for your help.

Very truly yours,

Patrick J. Dailey

PJD:jm

OSU

The Ohio State University

Department of Entomology
103 Botany and Zoology Building
1735 Neil Avenue
Columbus, Ohio 43210
Phone 614 422-8209

March 11 1982

Dr. Robert C. Graves
Department of Biological Sciences
Bowling Green State University
Bowling Green Ohio 43403

Dear Dr. Graves:

Since receivimg your letter I have been out of Columbus for several day, thus the delay in answering.

Two changes have been made in your list of Cicadellidae. According to our collection the other groups are correct,but I have not kept in touch with all of the Fulgorid generic changes. If you wish these checked, I would suggest that you send the Fulgorid list to Dr. Lois O'Brien, School of Agriculture and Home Economics, Florida Agriculture and Mechanical College, Tallahassee, Florida 32037.

With regard to my Illinois leafhopper paper, this was published in 1948 and generically is completely out of date. Oman published his check list of Cicadellidae soon after that in which he added several new genera. Then Nielson revised the old genus Jassus in 2 volumes, a third in now in preparation, and Dave Young has put out 2 volumes,one very large,about 1200 pages, North Carolina Agric. College Tech. Bull. 239 - on the large leafhoppers, The Cicadellini. These publications have added many new genera.

Many other things have changed also. For instance you questioned why the species Athysanus argentatus (Fabricius) was not in the Illinois bulletin. This is a European introduction,and had been introduced about or shortly before that time and was not then in either Ohio or that area. Then it spead rapidly and is now one of the most common of our pasture and meadow leafhoppers throughout the middle states area. I worked extensively on the Empoascas in the 1920s & 1930s. At that time Empoasca fabae Harris, the common potato leafhopper was abundant on alfalfa but could not be found on Soya Beans. Now it is a pest of those beans. Changes of abundance, change of food plant, migration to new areas,all these types of things may and do happen in time, thus changing the whole faunistic picture.

With regard to species now reported from Ohio, I cannot answer your question. I have never reported new species records for Ohio, although I have found several species not reported in the Osborn Ohio leafhoppers. I would say that unless Dr. Dorothy Knull or MacClain have not published them that they have not been reported. In 1939 I began my study of Central(Mexico) and South American leafhoppers have spent most of my available time since on that fauna.

If I can help you with any further data or answers,regarding literature etc. do not hesitate to call upon me.

Sincerely

Dwight M. DeLong

P.S. This is not a draft manuscript, but just a list of information we have found on these species so far. Any interesting ecological data will be greatly appreciated, and if any of these species have not been reported from Ohio, we would like to know. Thank you.

CICADELLIDAE

Graphocephala coccinea. "This is one of the largest, most conspicuously marked, and most common species of the N.A. leafhopper fauna". Abundant on Rubus, and frequent on ornamental shrubs such as Forsythia, often in sufficient numbers to cause economic injury (DeL. 48).

G. hieroglyphica. There is a Neokolla hieroglyphica (Say) listed in DeL. (48) as a "common willow species" abundant along the Illinois and Miss. Rivers. I am not sure this is the same species.

Same

Scaphytopius. DeL.(48) states that only one species S. elegans is known from the U. S. No doubt there are name changes.

Calladonus clitellarius. Abundant and widely distributed on both shrubs and herbs. (DeL. 48).

Agallia quadripunctata. Common, in fields, weeds, gardens, etc. (DeL. 23). Abundant in moist, open woodland areas (DeL. 48).

Paraphlepsius irroratus. The most common species in a very large genus. Occurs in almost every habitat condition and on almost every type of cultivated crop (DeL. 48).

Aceratogallia sanguinolenta. The most widespread and abundant sp. of the genus, commonly known as the "clover leafhopper". Abundant on many crops and may cause heavy feeding injury. (DeL. 48).

Aphrodes bicintus. This species is not listed in DeL.(48)and probably does not occur in Illinois.

Draculacephala antica. Abundant in eastern U.S. (DeL. 48).

D. portola. There are only 4 Ill. records of this sp. in DeL.(48) and he mentions 2 varieties.

Gyponana octolineata. In CT. it is a very common species, occurs in practically all moist grassy areas. May damage grass crops and also occurs on trees and shrubs. Adults appear in early July and remain throughout the season. (DeL.23)

Athysanus argentarius. Neither this genus nor species listed from IL in DeL. (48).

Empoasca erigeron. This genus is not treated in detail in DeL. (48) as most spp. can only be distinguished by male genitalia.

E. fabae. The "potato leafhopper", will pass its life cycle on a great number of wild and cultivated plants, including dock, bean, potato, eggplant, rhubarb, clover, alfalfa, apple, and ornamentals (DeL. 28)

Agalliopsis novella. Common on herbaceous vegetation throughout the eastern U.S. (DeL. 48).

M. fascifrons. This species not listed from IL in DeL. (48).

Jikradia olitoria. This genus is not listed from IL in DeL. (48). However there is a Jassus olitorius Say which is common on oak, sassafras and similar shrubs (DeL. 48). Is this the same sp.?

Japananus hyalinus. No ecological data given, although this sp. is recorded from IL (DeL. 48).

Gypona melanota. Occurs on low shrubs in cut-over areas and in open woodland (DeL. 48). Grass-feeding and found in meadow, pasture and prairie situations (DeL. 23).

Scaphoideus titanus . Not listed from IL (DeL. 48). In his review of Scaphoideus (DeL. 39) he states:"S. titanus Ball, described as a variety of immistus, has not been examined."

Erythroneura tricincta. One of the well-known and more distinctly marked grape leafhoppers, also found on several ornamental vines (DeL. 48).

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_____. 1928. Some observations upon the biology and control of the potato leafhopper (Empoasca fabae) Harris. J. Econ. Entomol. 21: 183-188.

MEMBRACIDAE

Strictocephala diceros. Genus listed as Stictocephala (Osb. 40). This species not listed from OH (Osb. 40).

S. bisonia. ditto.

Micrutalis calva. A very common sp. on black locust and doubtless occurs everywhere that food plant (Gleditsia) is found (Osb. 40)

Enchenops binotata. Listed as Enchenopa binotata (Say), one of the most common spp. occurring throughout the eastern U.S. , it feeds on bittersweet and a variety of other plants, mostly shrubs or small trees (Osb. 40).

Campylenchia laticeps. Only C. curvata is listed from OH in Osb. (40).

Entylia bactriana. A common large sp. Hosts are given as thistle, Joe Pye weed, sunflower, redbud, Panicum, goldenrod, burdock (Osb. 40)

Publilia concava. Widely distributed, lives on Helianthus, often attended by ants which feed on juicy exudates from their bodies (Osb. 40).

Vanduzea arquata. Extremely abundant species, found on black locust (Gleditsia) and may be found wherever the host plant occurs.

CICADELLIDAE

Paraphlepsius irroratus. Extremely abundant. Adults can be collected from a wide variety of trees and shrubs or among grasses. Reported from apple, clover, sugar beets, legumes, cotton, wheat, rose, cherry (Hamilton, 75)

DICTYOPHARIDAE

Scolops pugens. Listed as Scolops pungens. It has been collected in southern OH (Osb. 38)

CIXIIDAE

Oliarus humilis. Quite common in the eastern states (Osb. 38)

ACANALONIIDAE

Acanalonia conica Say. A fairly common sp. probably occurring throughout the state. Recorded from Osage-orange, lilac, corn, ragweed and sugar beet (Osb. 38)

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Osborn, H. 1940. The Membracidae of Ohio. OHIO BIOL. SURVEY BULL. 37 (vol. 7, no. 2): 51-101.

Bowling Green State University

Department of Biological Sciences
Bowling Green, Ohio 43403
Phone 419-372-2332

Jan. 30, 1982

Dear Pat,

The following is the information I was able to find on the Homoptera for paper. At present I have not found anything on families other than Cicadellidae, but I will keep looking. I have followed the same order as in your Table 1.

Graphocephala coccinea. "This is one of the largest, most conspicuously marked, and most common species of the N.A. leafhopper fauna". Abundant on Rubus, and frequent on ornamental shrubs such as Forsythia, often in sufficient numbers to cause economic injury (DeL. 48).

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Rushed this to you as soon as I could. All O.K. Will write more later - Bob

Feb. 11, 1982

MEMORANDUM

Department of Biological Sciences
Bowling Green, Ohio 43403
Phone 419-372-2332

TO:

Dear Pat,

FROM:

SUBJECT:

Here is some more information I have found about the Homoptera. It appears that there is very little good host plant information for most of these, and I have seen no mention of Asclepias. I suspect that little is known about the ecology of many of these species, but I am not expert in this group, and I really do not have much in the way of literature on the Homoptera.

The snow here is ass-high on a 10 foot Indian, and the temperatures have been Arctic. It was -12° yesterday morning, and as W. C. Fields used to say, "It ain't a fit day out for man nor beast". Am looking forward to spring. Hope all goes well down in subtropical southern Illinois!

Best regards,

Bob

Robert C. Graves

P.S. I got the Rhodnius. Thanks

March 16, 1982

MEMORANDUM

Department of Biological Sciences
Bowling Green, Ohio 43403
Phone 419-372-2332

TO:

Dear Pat:

FROM:

SUBJECT:

Just another quick note with some new information about the Homoptera species.

I wrote to Dr. DeLong (who has been emeritus for years and years, but still is active in research and publication) and asked about a few matters of nomenclature, etc. His letter and comments (marked in red) on the species lists are enclosed.

I believe this is about all I will be able to find out about this group as I have no additional literature that might help. We do not have the papers that he lists in his letter (3rd paragraph), but I expect the U. of Ill. library will have them (it is one of the best ent. libraries in the U. S.), should you get a chance to visit there.

Not much news here. We continue to go down the drain as our budget keeps being cut and cut and cut again, each month it seems. Today they cut $6,500 from our operating budget. More cuts expected soon. Now we are getting a new president - an educational philosopher who is pres. of West. Washington College in Bellingham, WA. Would you believe they gave him $70,000.00 to start ? And he is only 44. About all we know about him is that he's a black belt in karate and writes poetry. Well things are really looking up!

Hope things are better where you are. We still have snow in spots.

Best regards, Bob

OSU

The Ohio State University

Department of Entomology
103 Botany and Zoology Building
1735 Neil Avenue
Columbus, Ohio 43210
Phone 614 422-8209

March 11 1982

Dr. Robert C. Graves
Department of Biological Sciences
Bowling Green State University
Bowling Green Ohio 43403

Dear Dr. Graves:

Since receiving your letter I have been out of Columbus for several day, thus the delay in answering.

Two changes have been made in your list of Cicadellidae. According to our collection the other groups are correct, but I have not kept in touch with all of the Fulgorid generic changes. If you wish these checked, I would suggest that you send the Fulgorid list to Dr. Lois O'Brien, School of Agriculture and Home Economics, Florida Agriculture and Mechanical College, Tallahassee, Florida 32037.

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If I can help you with any further data or answers, regarding literature etc. do not hesitate to call upon me.

Sincerely
D Wright
Dwight M. DeLong

P.S. This is not a draft manuscript, but just a list of information we have found on these species so far. Any interesting ecological data will be greatly appreciated, and if any of these species have not been reported from Ohio, we would like to know. Thank you.

CICADELLIDAE

Graphocephala coccinea. "This is one of the largest, most conspicuously marked, and most common species of the N.A. leafhopper fauna". Abundant on Rubus, and frequent on ornamental shrubs such as Forsythia, often in sufficient numbers to cause economic injury (DeL. 48).

G. hieroglyphica. There is a Neokolla hieroglyphica (Say) listed in DeL. (48) as a "common willow species" abundant along the Illinois and Miss. Rivers. I am not sure this is the same species.

Scaphytopius. DeL.(48) states that only one species S. elegans is known from the U. S. No doubt there are name changes.

Calladonus clitellarius. Abundant and widely distributed on both shrubs and herbs. (DeL. 48).

Agallia quadripunctata. Common, in fields, weeds, gardens, etc. (DeL. 23). Abundant in moist, open woodland areas (DeL. 48).

Paraphlepsius irroratus. The most common species in a very large genus. Occurs in almost every habitat condition and on almost every type of cultivated crop (DeL. 48).

Aceratogallia sanguinolenta. The most widespread and abundant sp. of the genus, commonly known as the "clover leafhopper". Abundant on many crops and may cause heavy feeding injury. (DeL. 48).

Aphrodes bicintus. This species is not listed in DeL.(48)and probably does not occur in Illinois.

Draeculacephala antica. Abundant in eastern U.S. (DeL. 48).

D. portola. There are only 4 Ill. records of this sp. in DeL.(48) and he mentions 2 varieties.

Gyponana octolineata. In CT. it is a very common species, occurs in practically all moist grassy areas. May damage grass crops and also occurs on trees and shrubs. Adults appear in early July and remain throughout the season. (DeL.23)

Athysanus argentarius. Neither this genus nor species listed from IL in DeL. (48).

Table 1. Homoptera collected on Asclepias syriaca in Bowling Green, Ohio.

	Total number of specimens collected	Dates collected
Family Membracidae		
Stictocephala diceros (Say)	4	14-VII to 30-VII
Stictocephala bisonia Kopp & ~~Yonke~~ Yonke	67	15-VI to 4-X
Micrutalis calva (Say)	11	11-VI to 18-IX
Enchenopa binotata (Say)	1	3-VI
Campylenchia laticeps (Say)	11	24-VI to 3-IX
Entylia bactriana Germar	1	29-VII
Publilia concava (Say)	1	18-VIII
Vanduzea arquata (Say)	2	22-VI to 4-IX
Family Cicadellidae		
Graphocephala coccinea (Förster)	106	11-VI to 4-X
Graphocephala hieroglyphica (Say)	3	18-VII to 18-IX
Scaphytopius acutus (Say)	20	10-VI to 24-IX
Scaphytopius frontalis (Van Duzee)	5	14-VI to 4-IX
Colladonus clitellarius (Say)	7	9-VI to 24-VI
Agallia quadripunctata (Provancher)	42	16-VI to 4-IX
Paraphlepsius irroratus (Say)	32	12-VI to 27-VIII
Aceratagallia sanguinolenta (Provancher)	15	17-VI to 8-VIII
Aphrodes ~~bicinctus (Schrank)~~ bicincta Curtis	52	9-VI to 3-IX
Draeculacephala antica (Walker)	2	13-VI to 22-VI
Draeculacephala portola Ball	1	27-VIII
Cyponana octolineata (Say)	2	9-VI to 10-VIII
Athysanus ~~argentarius Metcalf~~ argentatus Fabricius	1	16-VI
Empoasca erigeron DeLong	3	15-VI to 24-IX
Empoasca fabae (Harris)	1	30-VII
Agalliopsis novella (Say)	6	16-VI to 16-VIII
Macrosteles fascifrons (Stal)	1	11-VII
Jikradia olitoria (Say)	4	24-VII to 3-IX
Japananus hyalinus (Osborn)	1	19-VII
Cypona melanota Spangberg	1	4-VIII
Scaphoideus titanus Ball	2	2-VII to 16-VII
Erythroneura tricincta Fitch	1	15-VII
Family Cercopidae		
Philaenus spumarius (L.)	45	10-VI to 5-IX
Lepyronia quadrangularis (Say)	2	19-VIII to 24-VI
Family Dictyopharidae		
Scolops ~~punens Germar~~ punctens Germar	1	3-VIII
Family Cixiidae		
Oliarus humilis (Say)	1	1-VII
Family Flatidae		
Metcalfa pruinosa (Say)	2	6-VIII to 8-VIII
Ormenoides venusta (Melichar)	2	27-VII to 10-VII
Family Acanaloniidae		
Acanalonia conica (Say)	1	28-VII
Acanalonia bivittata (Say)	1	15-VII

Metcalf's Gen. Cat. of Homop. lists spumarius as a var. of Phil. leucophthalmus (Linn.)

Empoasca erigeron. This genus is not treated in detail in DeL. (48) as most spp. can only be distinguished by male genitalia.

E. fabae. The "potato leafho per", will pass its life cycle on a great number of wild and cultivated plants, including dock, bean, potato, eggplant, rhubarb, clover, alfalfa, apple, and ornamentals (DeL. 28)

Agalliopsis novella. Common on herbaceous vegetation throughout the eastern U.S. (DeL. 48).

M. fascifrons. This species not listed from IL in DeL. (48).

Jikradia olitoria. This genus is not listed from IL in DeL. (48). However there is a Jassus olitorius Say which is common on oak, sassafras and similar shrubs (DeL. 48). Is this the same sp.?

Japananus hyalinus. No ecological data given, although this sp. is recorded from IL (DeL. 48).

Gyrona melanota. Occurs on low shrubs in cut-over areas and in open woodland (DeL. 48). Grass-feeding and found in meadow, pasture and prairie situations (DeL. 23).

Scaphoideus titanus . Not listed from IL (DeL. 48). In his review of Scaphoideus (DeL. 39) he states:"S. titanus Ball, described as a variety of immistus, has not been examined."

Erythroneura tricincta. One of the well-known and more distinctly marked grape leafhoppers, also found on several ornamental vines (DeL. 48).

LITERATURE CITED

DeLong, D. M. 1923. The Cicadellidae of Connecticut. Conn. Geol. & Nat. Hist. Bull. 34: 56-163.

_____. 1939. A review of the genus Scaphoideus. Proc. Ent. Soc. Wash. 41: 33-45.

_____. 1948. The leafhoppers, or Cicadellidae, of Illinois (Eurymelinae-Balcluthinae). Bull. Ill. Nat. Hist. Surv. 24: (art. 2) 93-376.

_____. 1928. Some observations upon the biology and control of the potato leafhopper (Empoasca fabae) Harris. J. Econ. Entomol. 21: 183-188.

Bowling Green State University

Department of Biological Sciences
Bowling Green, Ohio 43403
Phone 419-372-2332
Cable: BGSUOH

Nov. 19, 1986

Dear Pat,

It was nice to talk to you last week. Today we have some real winter weather and snow. It looks like Christmas time, but it seems much too early.

I located the information on Homoptera. I am sure I sent you this at the time, but in case you can't find it, here is a copy of what I have. You will recall that I contacted Dr. Dwight M. DeLong (now deceased) about these species, and his comments are enclosed.

We don't have anything on aphids so, as you suggested, the best thing would be to contact the aphid person who did the IDs for you and get the latest poop. I don't know a thing about aphids, and I don't suppose there are too many people who are experts on them.

If you will send me a copy of the aphid species I will see if I can find anything in the library.

Got to rush off to class so will get this in the mail. Hope all goes well, and that we will see you again one of these days. Anne and the kids send their best. Anne said she will have to bake you some cookies one of these days.

With best regards,

Bob

Robert C. Graves

United States Department of Agriculture | Agricultural Research Service | Northeastern Region Beltsville Agricultural Research Center | Beltsville, Maryland 20705

November 23, 1982
Ref.: Lot 78-10144

Dr. Patrick J. Dailey
Department of Biological Sciences
Bowling Green State University
Bowling Green, Ohio 43403

Dear Dr. Dailey:

The following identifications represent a fifth partial report on the specimens submitted with your request of October 24, 1978.

As additional identifications become available, we will report again.

LEPIDOPTERA

Pieridae
#102 - Colias eurytheme Bdv. 1

Lycaenidae
#103, 104 - Hyllolycaena hyllus (Cramer) 2

Hesperiidae
#105, 106 2
There is no longer anyone in the Systematic Entomology Laboratory of IIBIII, USDA, to identify this family.

Determined November 1, 1982 by W. D. Field
Smithsonian Institution

The specimens will be returned under separate cover.

We have prepared the enclosed statements in order to give the many users of our identification services more information on our procedures. Please review this information carefully.

Sincerely,

LLOYD KNUTSON, Chairman
Insect Identification and Beneficial
Insect Introduction Institute

Enclosures

Separate cover: Specimens

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

AGRICULTURAL RESEARCH
NORTHEASTERN REGION
BELTSVILLE AGRICULTURAL RESEARCH CENTER
BELTSVILLE, MARYLAND 20705

March 12, 1979
Ref.: Lot 78-10144

Dr. Patrick J. Dailey
Department of Biological Sciences
Bowling Green State University
Bowling Green, Ohio 43403

Dear Dr. Dailey:

The identifications listed below represent a fourth partial report on the specimens submitted with your letter of October 24, 1978. Previous reports on this material were made with my letters of November 17, and December 15, 1978, also January 22, 1979.

HYMENOPTERA
Colletidae
#351,352 Hylaeus nr. modestus Say 1♂,1♀
[Note: for specific ID, I suggest you contact R. R. Snelling, Los Angeles Nat. Hist. Museum, 900 Exposition Blvd, Los Angeles CA 90007]
Determined February, 1979 by S. W. T. Batra, Systematic Entomology Laboratory, IIBIII

LEPIDOPTERA
Arctiidae 85-88 4
Ctenuchidae 89-90 2
Yponomeutidae 91,92,101 3
Tortricoidea 93,98,99,100 4
[There is no one at this time in the Systematic Entomology Laboratory of IIBIII to identify adults of the above Lepidoptera. Please see the enclosed statement.]

Pyralidae
94-96 Crambus sp. 3
[Specimens all too poor for identification.]
97 Microcrambus elegans (Clem.) 1
Determined February 26, 1979 by D. C. Ferguson
Systematic Entomology Laboratory, IIBIII

The specimens will be returned under separate cover.

Sincerely,

Lloyd Knutson, Chairman
Insect Identification and Beneficial
Insect Introduction Institute

Enclosure

Psilidae
#583 - Psila bivittata Loew 1
Sphaeroceridae
#375 - Copromyza atra (Meigen) 1
Chyromyidae
#589 - Gymnochiromyia sp. 1
Platystomatidae
#574, 578 - Rivellia winifredae Namba 2
Otitidae
#571 - Seioptera vibrans (Linnaeus) 1
#537, 538, 570, 575-577 - Physiphora demandata (Fallén) 6
#584-588 - Tetanops luridipennis Loew 5
Lonchaeidae
#572, 573 - Lonchaea polita Say 2
Agromyzidae
#591 - Melanagromyza buccalis Spencer 1 kept (no Dailey #)
#590 - Melanagromyza sp. 1♀
#579 - Liriomyza sp. 1♀
#581 - Cerodontha dorsalis (Loew) 1♀
Anthomyiidae
#526, 529, 530, 535, 536, 546, 548, 551, 552
Hylemya florilega (Zetterstedt) 9
#525, 527, 528, 534, 539, 545, 547, 549, 550, 553, 554, 555, 556, 557, 558, 561, 562, 564, 565, 566, 567, 568
Hylemya platura (Meigen) 22
#533, 544, 559 - Pegomya lipsia (Walker) 3
#540, 541 - Pegomya affinis Stein 2
#563 - Pegomya vanduzeei Malloch 1
Determined November 13, 1978 by G. Steyskal

Syrphidae
#617 - Eristalis tenax (L.) 1♀
#612, 613, 614, 615, 616, 618, 619
Eristalis arbustorum (L.) 4♂, 3♀
#620 - Metasyrphus americanus (Wied.) 1♀
#621 - Platycheirus sp.
#622, 623, 624, 625, 626, 629, 633
Sphaerophoria contigua Macquart 4♂, 3♀
#627, 628, 630, 631, 632, 634, 635
Toxomerus marginatus (Say) 7♂, ♀
Conopidae
#636 - Thecophora sp. 1♀
#637 - Zodion americanum Wiedemann 1♀
Tabanidae
#638 - Chrysops ater Macquart 1♂
Dolichopodidae
#639, 640, 641, 642 - Condylostylus sipho (Say) 2♂, 2♀
#643, 655 - Condylostylus caudatus (Wied.) 2♂

IDENTIFICATIONS FOR LOT 78-10144

DIPTERA

Tipulidae

675,679,677,676-Vials, #34-pinned
Nephrotoma ferruginea (Fabricius) 7♂♀
678 Nephrotoma sodalis (Loew) 1♂
35 Limonia (G.) communis (O.S.) 1♀
Determined January, 1979 by G. W. Beyers, Cooperating Scientist for the Systematic Entomology Laboratory of IIBIII, University of Kansas, Manhattan, Kansas

Tephritidae

43[112] Euleia fratria (Lw.) 1♀
71[110] Rhagoletis pomonella (Walsh) 1♀
66[108][111], 60[109] Euaresta festiva (Lw.) 3♀♀
16[114], 32[113] Euaresta bella (Lw.) 2♀♀
Determined December 13, 1978 by R. H. Foote

Dolichopodidae

192 Genus & sp. Det: January 14, 1979 by F.C. Thompson 1♀, broken

Empididae

193 Platypalpus sp. 1
194 " " 1
195 " " 1
196 " " 1
197 " " 1

Asilidae

198 Atomosia puella (Wiedemann) 1

Sciomyzidae

199 Tetanocera loewi Steyskal 1
200 Tetanocera ferruginea Fallén 1
Determined January 14, 1979 by L. Knutson

HYMENOPTERA

Eupelmidae

#432,437,438 Eupelmella sp. 3
Determined January 5, 1979 by E. E. Grissell

Sphecidae

297-305 Sphex ichneumoneus (L.) 9
306-311 Sphex pensylvanicus L. 6
312 Isodontia mexicana (Saussure) 1
313 Prionyx parkeri Bohart & Menke 1
314 Cerceris deserta Say 1
315 Cerceris clypeata Dahlbom 1
316-320 Pemphredon sp. 5
321-323 Diodontus sp. 3
324-325 Ectemnius stirpicola (Packard) 2
326-327 Crossocerus annulipes (Lepeletier & Brullé) 2

HYMENOPTERA

Sphecidae (continued)

328 Hoplisoides sp.	1
329 Lyroda subita Say	1

Vespidae

330(Dailey #93) Vespula germanica (F.)	1, kept
331-334 Polistes fuscatus (F.)	4

Eumenidae

335 Parancistrocerus pensylvanicus (Saussure)	1

Pompilidae

336 Auplopus nigrellus (Banks)	1
337 Priocnemis scitula (Cresson)	1

Tiphiidae

338 Tiphia illinoensis Roberts	1

Bethylidae

339 Pristocera armifera (Say)	1
340 Parasierola sp.	1

Eucoilidae

341 Hexacola sp.	1

Chrysididae

342 Omalus iridescens (Norton)	1

Mutillidae

343 Pseudomethoca frigida (Smith)	1
344-350 Timulla vagans (F.)	7

Determined January 8, 1979 by A. Menke

Tethredinidae

353 Ametastegia glabrata (Fallén)	1

Determined January 8, 1979 by D. R. Smith

LEPIDOPTERA

Hesperiidae

33 Polites coras (Cramer)	1♀

Determined December, 1978 by J. M. Burns,
U. S. National Museum

IDENTIFICATIONS FOR DR. PATRICK J. DAILEY

HEMIPTERA - HOMOPTERA

Specimens in fluid

Flatidae

#15 - Metcalfa pruinosa (Say)	1
#18 - Ormenoides venusta (Melichar)	2

Cercopidae

#19 Lepyronia quadrangularis (Say)	1

Cicadellidae

#08 - Scaphoideus titanus Ball	2
#13 - Jikradia olitoria (Say)	1
#22 - Jikradia olitoria (Say)	1

Specimens mounted

Cercopidae

#19 - Lepyronia quadrangularis (Say)	1

Cixiidae

#03 - Oliarus humilis (Say)	1

Flatidae

#15 - Metcalfa pruinosa (Say)	1
#18 - Ormenoides venusta (Melichar)	1

Acanaloniidae

#04 - Acanalonia bivittata (Say)	1

Dictyopharidae

#06 - Scolops pugens (Germar)	1

Membracidae

#05 - Enchenopa binotata (Say)	1
#02 - Campylenchia laticeps (Say)	1
#24 - Entylia bactriana Germar	1
#07 - Publilia concava (Say)	1
#01 - Vanduzea arquata (Say)	1

Cicadellidae

#16 - Macrosteles fascifrons (Stal)	1
#22 - Jikradia olitoria (Say)	1
#13 - Jikradia olitoria (Say)	1
#12 - Japananus hyalinus (Osborn)	1
#09 - Paraphlepsius irroratus (Say)	1
#20 - Gypona melanota Spangberg	1
#11 - Graphocephala hieroglyphica (Say)	1
NOTE: dark form	
#23 - Graphocephala hieroglyphica (Say)	
NOTE: normal coloration	
#14 - Graphocephala hieroglyphica (Say)	
#21 - Draeculacephala portola Ball	1
#08 - Scaphoideus titanus Ball	1
#17 - Empoasca fabae (Harris)	1
#10 - Erythroneura tricincta Fitch	1

Determined June 4, 1980 by J. P. Kramer
Systematic Entomology Laboratory, USDA

IDENTIFICATIONS LOT 78-10144

DIPTERA

Calliphoridae	
Pollenia rudis (Fab.)	11
Phaenicia sericata (Mg.)	1
Bufolucilia silvarum (Mg.)	9
Sarcophagidae	
Wohlfahrtia vigil (Walker)	1
Blaesoxipha reversa (Aldrich)	1
Blaesoxipha sp.	1♀
Oxysarcodexia sp.	1♀
Muscidae	
Muscina stabulans (Fallén)	2
Musca domestica L.	1
Stomoxys calcitrans (L.)	3
Coenosia tigrina (Fab.)	4
Coenosia sp.	1
#543 - Phaonia aberrans Malloch	1
Sciaridae	
Bradysia sp.	4
Eugnoriste sp.	6
Scatopsidae	
Scatopse fuscipes Meigen	1

Determined November 9, 1978 by R. J. Gagné

Milichiidae	
Pholeomyia indecora (Lw.)	1
Leptometopa latipes (Mg.)	2
Madiza glabra Fall.	1
Chloropidae	
Thaumatomyia bistriata (Wlk.)	2
Chaetochlorops inquilinis (Coq.)	1
Dasyopa latifrons (Lw.)	5
Hippelates bishoppi Sabr.	1
Olcella provocans (Beck.)	10
Oscinella neocoxendix Sabr.	1
Oscinella soror (Macq.)	1
Siphonella setulosa (Mall.)	1
Siphonella abdominalis Beck	7, kept 2
[kept one #18 and one no number]	
Genus sp. undetermined	1
[broken and poorly mounted]	
Tachinidae	
Gymnoclytia dubia West (#61 [green 354])	kept 1
Peleteria haemorrhoa (Wulp)	1
Actia sp.	1
Medina barbata (Coq.)	1
Winthemia sinuata Rein.	3
Winthemia rufopicta (Big.)	3
Cylindromyia decora Ald.	1

Determined November 9, 1978 C. W. Sabrosky

Ichneumonidae (continued)

#41 - Scambus sp.	♀
#45 - Hercus pleuralis (Prov.)	♀
#40,49,51,57-59 - Diplazon laetatonius (F.)	6♀
#48 - Parania sp.	♂
#50,55,60 - Cymodusa distincta (Cr.)	♂, 2♀
#42 - Hyposoter annulipes (Cr.)	♀
#46 - Hyposoter pilosulus (Prov.)	♀
#56 - Enicospilus merdarius (Grav.)	♀

Gasteruptiidae

#68 - Gasteruption assectator (L.)	♀

[These are determined, but policy statement will apply to future lots because these specimens have no direct and in many cases no indirect association with Asclepias or insects feeding thereon. (Please see statement of policy sent with our letter of November 17, 1978.).]

Determined December 1, 1978 by R. W. Carlson

LEPIDOPTERA

Sesiidae

#69-76 - Albuna fraxini (Hy. Edw.) [69 & 72 = ♀♀]	8
#77-84 - Melittia satyriniformis Hub. [80,81,84 = ♀♀]	8

Determined November 27, 1978 by Thomas D. Eichlin
Cooperating Scientist, Insect Taxonomy Laboratory,
State Department of Food & Agriculture
Sacramento, California 95814

NEUROPTERA

Hemerobiidae

#691- Hemerobius prob. humulinus L.	1
#694 - Micromus posticus Wlk.	1

Chrysopidae

#696,688,697,692 (2 of 3),693,687,690,695 (1 of 2), 698,681,684,686,680,686,682,683 Chrysopa carnea Steph.	22
#692 (1 of 3), 695 (1 of 2) Chrysopa oculata Say	2
#689 - Chrysopa quadripunctata Burm.	

TRICHOPTERA

Hydropsychidae

#107 - Cheumatopsyche sp.	1

Determined November 16, 1978 by O. S. Flint, U.S. National Museum

Dolichopodidae (continued)
#644, 645, 647, 648, 649, 650, 651, 652, 653, 654, 656
Condylostylus sp. 11♀
#657 - Chrysotus sp. 1♂
#646 - Hercostomus sp. 1♀
Determined November 13, 1978 by F. C. Thompson

Culicidae
#658 - Genus sp. ? 1♀
[Too poor for I.D.]
Determined November 8, 1978 by R. Ward, Medical Entomology Project
U. S. National Museum

Chironomidae
#659, 661, 663, 664, 666 - Chironomus spp. 5
[poor condtn.]
#660, 662 - Chironomus crassicaudatus Mall. 2
Ceratopogonidae
#665 - Palpomyia sp. 1
Phoridae
#670 - Megaselia sp. 1
Therevidae
#667, 668, 669 - Psilocephala haemorhoidalis (Macq.) 3
Stratiomyidae
#674 - Stratiomys sp. 1
#671, 672 - Nemotelus spp. 2
#673 - Microchrysa polita (L.) 1
Determined November 9, 1978 by W. W. Wirth

HEMIPTERA - HOMOPTERA
Acanaloniidae
#237 - Acanalonia conica (Say) ✓ 1
Cercopidae
#241, 240, 238, 225, 239, 205
Philaenus spumarius (L.) ✓ 6
Membracidae
#248 - Stictocephala diceros (Say) ✓ 1
#249, 250 - Stictocephala bisonia Kopp & Yonke ✓ 2
#247 - Genus sp. ? 1 nymph
#242, 246, 245, 244, 243 - Micrutalis calva (Say) ✓ 5
Cicadellidae
#201-204 - Graphocephala coccinea (Förster) ✓ 4

Cicadellidae (continued)

#214, 215, 227, 232, 233, 236	
Scaphytopius acutus (Say)	6
#212, 216 - Scaphytopius frontalis (Van Duzee)	2
#209 - Colladonus clitellarius (Say)	1
#220, 223, 224, 234, 235	
Agallia quadripunctata (Provancher)	5
#228 - Aceratagallia sanguinolenta (Provancher)	1
#217, 229, 230 - Paraphlepsius irroratus (Say)	3
#207, 211, 218, 221, 222, 226	
Aphrodes bicintus (Schrank)	6
#208 - Draeculacephala antica (Walker)	1
#219 - Gyponana octolineata (Say)	1
#206 - Athysanus argentarius Metcalf	1
#210 - Empoasca erigeron De Long	1
#213, 231 - Agalliopsis novella (Say)	2

Determined November 9, 1978 by J. P. Kramer

HYMENOPTERA

Pteromalidae	
Perilampus sp.	5
[2 species]	
Eucharitinae	1
Pteromalinae	6
[3 genera, 3 species]	
Eulophidae	
Tetrastichus sp.	2
[2 species]	
Chalcididae	
Spilochalcis sp.	1
Eupelmidae	
Eupelmus sp.	1
Eupelmella sp.	1
Eurytomidae	
Eudecatoma sp.	5
Rileya sp.	1
Harmolita sp.	1
Eurytoma sp.	6
[5 species]	
Encyrtidae	
Genera unknown (3)	4
Torymidae	
Torymus sp.	1
[We normally identify only reared material.] *	

Determined November 9, 1978 by E. E. Grissell

* Please see the enclosed statement.

IDENTIFICATIONS LOT 78-10144

DIPTERA

Lauxaniidae

#292-296 - Camptoprosopella sp.	5♀

Determined December 4, 1978 by W. N. Mathis, U. S. National Museum

HYMENOPTERA

Halictidae

#15, 17 - Augochlorella striata (Prov.)	1♂, 1♀
#4, 11 - Agapostemon virescens (F.)	1♀, 1♂
#13 - Halictus ligatus Say	1♀
#21 - Halictus ligatus Say	1♂
#9 - Lasioglossum coriaceum (Smith)	1♀
#16 - Evylaeus sp.	1♂
#24 - Dialictus pilosus (Sm.)	1♀
#19 - Dialictus sp. 1	1♂
#29 - Dialictus sp. 2	1♂
#23 - Dialictus zephyrus (Sm.)	1♀
#26 - Dialictus sp. 3	1♀

Apidae

#5 - Apis mellifera L.	1 worker
#1 - Bombus pennsylvanicus (DeGeer)	1 worker

Anthophoridae

#10 - Melissodes agilis Cr.	1♂
#2 - Anthophora abrupta Say	1♂

Colletidae

#30 - Hylaeus cressoni (Ckll.)	1♀
#22,32,28,18,27,25 - Hylaeus modestus Say	1♂, 5♀
#14- Dialictus sp. 4	1♂
#31 - Dialictus sp. 5	1♂

[Recommend sending Dialictus and Evylaeus to to Dr. G. C. Eickwort, Department of Entomology, Cornell University, Ithaca, New York 14850 for specific determinations.]

Megachilidae

#3 - Megachile latimanus Say	1♂
#6 - Megachile centuncularis L.	1♀
#7,8 - Megachile mendica Cr.	2♂
#12,20 - Heriades carinata (Cr.)	1♂, 1♀

Determined by S.W.T. Batra, Systematic Entomology Laboratory, IIBIII

Ichneumonidae

#47 - Isdromas lycaenae (How.)	♀
#36,38 - Ethelurgus sp.	♂,♀
#53 - Phygadeuon sp.	♀
#37,43 - Mastrus sp.	2♀
#39,44,52,54 - Pycnocryptus director (Thbg.)	♂, 3♀
#63,64,67 - Gelis sp. 1	3♀
#61,62,65,66 - Gelis sp. 2	4♀

Braconidae	
#252, 259 - Rogas spp.	2
#263, 270, 273, 282 - Macrocentrus spp.	4
#283 - Vipio sp.	1
#262 - Chorebus sp.	1
#286 - Orgilus sp.	1
#265 - Microplitis sp.	1
#260, 255-258, 287, 288 - Bracon spp.	7
#277 - Microgaster sp.	1
#269 - Blacus sp.	1
#291 - Aspilota sp.	1
#267, 254, 271, 272, 279, 289 - Apanteles spp.	6
#278, 285, 261, 268, 276, 274, 280, 281, 290 Agathis spp.	9
#253, 264, 266, 275 - Meteorus spp.	4
Aphidiidae	
#284 - Lysiphlebus sp.	1
#251 - Specimen too poor for identification [Please see the enclosed policy statement.]	1
Determined November 9, 1978 by P. M. Marsh	
Argidae	
#383 - Schizocerella pilicornis (Holmgren)	1
#382, 386, 388, 387, 385, 384 Sphacophilus cellularis (Say) [kept Dailey #50, 16]	6, kept 2
Tenthredinidae	
#389, 391 - Ametastegia glabrata (Fallén) [kept Dailey #43]	2, kept 1
#392, 390 - Dolerus similis (Norton)	2
#699 - Dolerus sp.	1 larva
Formicidae	
#470 - Pheidole sp.	1♂
#468 - Myrmica sp.	1♀
#397, 398, 399 - Tetramorium caespitum (L.)	3 workers
#403, 400, 402, 404 - Leptothorax ambiguus Emery [No Dailey #]	4, kept 1
#401 - Leptothorax curvispinosus Mayr	1 worker
#454 - Aphaenogaster sp.	1♂
#514 - 524 - Crematogaster cerasi (Fitch)	11 workers
#480, 481 - Crematogaster sp.	2♀
#413-423, 428-431, 434-436, 439, 444, 446-452 Tapinoma sessile (Say)	35 workers
#427, 425, 479, 424 - Prenolepis imparis (Say)	4 workers

Formicidae (continued)

#472, 488, 471, 476, 495	
Camponotus subbarbatus Emery	5 workers
#433, 440-443, 455-461 - Lasius alienus (Foerster)	12 workers
#507-511 - Lasius sp.	5♂
#474 - Formica exsectoides Forel	1 worker
#475, 492, 494, 496-506, 512, 513	
Formica subsericea Say	16 workers
#426, 477, 478, 482, 484-487, 489-491	
Formica pallidefulva nitidiventris Emery	11 workers
#483 - Formica sp.	1 worker
#393-396, 467, 469, 473, 493 - Formica spp.	8♀
#445, 453, 462-466 - Formica spp.	7♂

Determined November 13, 1978 by D. R. Smith

LEPIDOPTERA

Noctuidae	
#744 - Papaipema nebris (Guenée)	1
#754 - Papaipema nebris (Guenée)	1
#756 - Papaipema nebris (Guenée)	1
#761 - Papaipema nebris (Guenée)	1
#763 - Papaipema nebris (Guenée)	1
#767 - Papaipema nebris (Guenée)	1
#770 - Papaipema nebris (Guenée)	1
#750 - Alypia octomaculata (Fabricius)	1
#745 - Pseudaletia unipuncta (Haworth)	1
#749 - Pseudaletia unipuncta (Haworth)	1
#759 - Pseudaletia unipuncta (Haworth)	1
#762 - Pseudaletia unipuncta (Haworth)	1
#765 - Pseudaletia unipuncta (Haworth)	1
#752 - Amathes bicarnea (Guenée)	1
Pieridae	
#748 - Pieris rapae (Linnaeus)	1
Pyralidae	
#746 - Loxostege sp.	1
#757 - Pyrausta sp.	1
#774 - sp. of Pyraustinae	1
Arctiidae	
#753 - Euchaetias egle (Drury)	1
#775 - Euchaetias egle (Drury)	2
#747 - Cycnia tenera Hübner	1
#755 - Diacrisia virginica (Fabricius)	1
#768 - Estigmene acrea (Drury)	1

IDENTIFICATIONS LOT 78-10144
Page 7

Geometridae

#760 - Eupathecia sp.	1
#764 - Eupathecia sp.	1
#769 - Eupathecia sp.	1
#772 - Eupathecia sp.	1

Tortricidae

#751 - Sparganothis sulphurana (Fabricius)	1
#758 - Sparganothis sulphurana (Fabricius)	1
#771 - Sparganothis sulphurana (Fabricius)	1
#771 - Choristoneura rosaceana (Harris)	1
#766 - Choristoneura rosaceana (Harris)	1
#773 - Argyrotaenia velutinana (Walker)	1

Determined November 9, 1978 by D. M. Weisman

Identification Responsibilities of SEL Staff

Psocoptera, Thysanoptera, Acarina Research Unit (Dr. Douglass R. Miller, Lead Scientist)

Correspondence to the scientists in this Research Unit should be addressed to the Systematic Entomology Laboratory, USDA, ARS, Agricultural Research Center - West, Beltsville, Maryland 20705.

Dr. Edward W. Baker [Room 3, Bldg. 004, BARC-West; phone (301) 344-3890]
Certain parasitic Mesostigmata, Scutacaridae, Prostigmata (except Cunaxidae, Cheyletidae, and Erythraeidae), and Acaridae.
Dr. Douglass R. Miller [Room 7, Bldg. 004, BARC-West; phone (301) 344-3895]
Coccoidea.
Miss Kellie O'Neill [Room 5, Bldg. 004, BARC-West; phone (301) 344-3893]
Thysanoptera.
Mr. Robert L. Smiley [Room 2, Bldg. 004, BARC-West; phone (301) 344-3891]
Certain free-living Mesostigmata, Tarsonomoidea (Tarsonemidae, Pyemotidae, Podapolipodidae), Cunaxidae, Cheyletidae, Cheyletiellidae, Erythraeidae.
Dr. Manya B. Stoetzel [Room 6, Bldg. 004, BARC-West; phone (301) 344-3168]
Aphididae, Psyllidae, and Aleyrodidae.

Correspondence to the scientists in the following Research Units should be addressed to the Systematic Entomology Laboratory, c/o U.S. National Museum, Washington, D. C, 20560.

Coleoptera Research Unit (Dr. John M. Kingsolver, Lead Scientist)

Dr. Donald M. Anderson [Room W-613, NMNH; phone (202) 447-5336]
Scolytoidea, immature stages of Curculionidae, Scolytoidea, Scarabaeoidea, Bostrichoidea, Cerambycidae, and most other Phytophaga to family.
Dr. Robert D. Gordon [Room W-611, NMNH; phone (202) 447-5245]
Scarabaeoidea, Lampyroidea, Meloidae, Orthoperidae, and Coccinellidae. (Staphylinidae for biological control purposes only).
Dr. John M. Kingsolver [Room W-602, NMNH; phone (202) 447-5409]
Histeroidea, Dascilloidea, Byrrhoidea, Dermestoidea, Buprestidae, Trogositidae, Bruchidae, and miscellaneous families in Staphylinoidea, Cucujoidea, Dryopoidea, and Coccinelloidea; larval Dermestidae, Bruchidae, and Buprestidae.
Mr. Theodore J. Spilman [Room W-604, NMNH; phone (202) 447-2983]
Cupegoidea, Silphidae, Lymexylonidae, Tenebrionoidea, Cucujidae, Cerambycidae, Elateroidea, and miscellaneous families in Melodidea and Bostrichoidea; Stylopidae.
Dr. Donald R. Whitehead (Room W-605, NMNH; phone (202) 447-5229]
Curculionidae
Dr. Richard E. White [Room W-612, NMNH; phone (202) 447-5203]
Anobiidae, Chrysomelidae, Anthribidae, Brentidae, and Cleridae.

August 1976

INSECT IDENTIFICATION AND BENEFICIAL INSECT INTRODUCTION INSTITUTE
Beltsville Agricultural Research Center

Chairman: Dr. Lloyd Knutson
Room 1, Building 003
USDA, ARS, Northeastern Region
Agricultural Research Center - West
Beltsville, Maryland 20705
[phone: (301) 344-3182]

The Insect Identification and Beneficial Insect Introduction Institute (IIBIII) is composed of two laboratories, the Systematic Entomology Laboratory (SEL) and the Beneficial Insect Introduction Laboratory (BIIL). Associated with SEL, but operating from the Institute Chairman's office is the Identification Services Unit (ISU), headed by Ms. Edna M. Hoover [Room 7, Bldg. 003, BARC-West]. Specimens for identification and letters pertaining to such material should be addressed to the Institute Chairman at the Beltsville address given above. The specimens are recorded in the ISU and referred for identification to the appropriate research scientists. Identification reports, prepared in the ISU, note if the identifications were provided by SEL scientists, SEL cooperating scientists, U.S. National Museum staff or others. If publications result from the identifications provided, it is requested that appropriate acknowledgment be given.

SYSTEMATIC ENTOMOLOGY LABORATORY

Chief: Dr. Ronald W. Hodges
Room 2, Bldg. 003, BARC-West
[phone: (301) 344-3183]

Location Leader at the National Museum:
Dr. Paul M. Marsh
Room 444, NMNH
[phone: (202) 447-2952]

Research scientists of SEL conduct basic and applied research on the taxonomy of insects and mites, provide identifications primarily of material of importance to agriculture, and help maintain the National Collection of Insects.

o Diptera Research Unit (Dr. Raymond J. Gagne, Lead Scientist)

Dr. Raymond J. Gagne [Room W-616, NMNH; phone (202) 447-2297]
Sciaridae, Mycetophilidae, Scatopsidae, Cecidomyiidae, Muscidae, Glossinidae, Gasterophilidae, Calliphoridae, Sarcophagidae, and Oestridae.
Dr. Richard H. Foote [Room W-621, NMNH; phone (202) 447-8512]
Psilidae, Pyrgotidae, and Tephritidae.
Dr. Lloyd Knutson [Room 1, Bldg. 003, BARC-W; phone (301) 344-3182 or Room W-618, NMNH; phone (202) 447-5347]
Asiloidea, Empididae, and Sciomyzidae.
Dr. Curtis W. Sabrosky [Room W-614, NMNH; phone (202) 447-5347]
Milichiidae, Carnidae, Chloropidae, Aulacigastridae, Odiniidae, Anthomyzidae, Asteiidae, Tachinidae, Rhinophoridae, and Cuterebridae.
Mr. George C. Steyskal [Room W-617, NMNH; phone (202) 447-5341]
Anthomyiidae, Agromyzidae, and majority of the other acalyptrate families.
Dr. F. Christian Thompson [Room W-619, NMNH; phone (202) 447-2439]
Tipuloidea, Psychodoidea, Culicoidea (except Culicidae, Ceratopogonidae and Chironomidae), Bibionoidea, Dolichopodidae, Syrphoidea, Tabanidae, Anisopodidae, Braulidae, Hippoboscidae, Streblidae, and Nycteribiidae.
Dr. Willis W. Wirth [Room W-614, NMNH; phone (202) 447-4546]
Ceratopogonidae, Chironomidae, Lonchopteroidea, Phoroidea, Ephydridae, Canaceidae, and majority of the families in Tabanoidea and Drosophiloidea.

O Hymenoptera Research Unit (Dr. Paul M. Marsh, Lead Scientist)

Dr. Suzanne W. T. Batra [Bldg. 417, ARC-E; phone (301) 344-2384 or Room 444, NMNH; phone (202) 447-2952]
Apoidea. (See also Beneficial Insect Introduction Laboratory).
Dr. Robert W. Carlson [Room W-548, NMNH; phone (202) 447-5305]
Stephanidae, Ichneumonidae, Evanioidea, Trigonalidae, and Megalyridae.
Dr. Gordon Gordh [Room 446, NMNH; phone (202) 447-5578]
Chalcidoidea.
Dr. Paul M. Marsh [Room 444, NMNH; phone (202) 447-2952]
Braconidae, Pelecinidae, and Proctotrupoidea.
Dr. Arnold S. Menke [Room 452, NMNH; phone (202) 447-2953]
Bethyloidea, Scolioidea, Vespoidea, Pompiloidea, Sphecoidea, Cynipoidea and Belostomatidae (Hemiptera).
✓ Dr. David R. Smith [Room 546, NMNH; phone (202) 447-5356]
Symphyta and Formicidae; (Isoptera, for APHIS only).

o Lepidoptera Research Unit (Lepidoptera, Heteroptera, Auchenorhyncha-Homoptera) (Dr. Douglas C. Ferguson, Lead Scientist)

Dr. Douglas C. Ferguson [Room S-408, NMNH; phone (202) 447-5280]
Drepanoidea, Geometroidea, Uranioidea, and Pyraloidea.
Dr. Jon L. Herring [Room S-404, NMNH; phone (202) 447-5609]
Heteroptera (except Belostomatidae and Gelastocoridae), Tingidoidea.
Dr. Ronald W. Hodges [Room 2, Bldg. 003, BARC-W; phone (301) 344-3183 or Room S-409, NMNH; phone (202) 447-5497]
Gelechioidea (except Stenomidae and Xyloryctidae).
✓ Dr. James P. Kramer [Room S-405, NMNH; phone (202) 447-5609]
Fulgoroidea, Cicadelloidea, Cicadidae, Membracidae, and Cercopidae.
Dr. Edward L. Todd [Room S-411, NMNH; phone (202) 447-2574]
Noctuoidea, Gelastocoridae.
Mr. Donald M. Weisman [Room S-413, NMNH; (202) 447-2574]
Immature stages of all Lepidoptera.

Resident Cooperating Scientists.

Dr. Barnard D. Burks [Bldg. 417, ARC-E; phone (301) 344-3185]
Chalcidoidea.
Dr. Ashley B. Gurney [Room 428, NMNH; phone (202) 447-3379]
Orthoptera, Dermaptera, and Zoraptera.
Miss Louise M. Russell [Room G, Bldg. 004; phone (301) 344-3895]
Aphididae, Psyllidae, and Aleyrodidae.

Associated Staff.

Mr. Steve Nakahara, Plant Protection and Quarantine Division, Animal and Plant Health Inspection Service. [Room 7B, Bldg. 004; (301) 344-3894]
Coccoidea, Thysanoptera.

BENEFICIAL INSECT INTRODUCTION LABORATORY

Chief: Mr. Jack R. Coulson [Bldg. 417, ARC-E, Beltsville Md. 20705 phone (301) 344-3185]

Laboratory Chief serves as Technical Advisor to ARS European Parasite Laboratory in France and to ARS Asian Parasite Laboratory in Japan. Assists in coordination of ARS biological control programs through ARS Working Group on Natural Enemies of Insects, Weeds, and Other Pests, and through national biocontrol documentation and evaluation activities of laboratory. Advises on liberation of exotic natural enemies of weeds through Working Group on Biological Control of Weeds.

Dr. Suzanne W. T. Batra [Bldg. 417, ARC-E; phone (301) 344-2384]
Research on natural enemies of weeds for release or distribution. (See also Systematic Entomology Laboratory.)
Ms. Pattye Kessler [Bldg. 417, ARC-E; phone (301) 344-2384]
Assistant to the Laboratory Chief. Curator of the reference collections: Introduced Beneficial Insect Voucher Specimens and Insects Not Known to Occur in U.S. Assists in coordinating laboratory's biological control information.
Dr. Robert F. W. Schroder [Bldg. 417, ARC-E; phone (301) 344-2369]
Research on natural enemies of insect pests. Maintains cultures of beneficial insects for release or distribution. Genetic studies, TDY explorations, cost-benefit analyses related to biocontrol.

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

AGRICULTURAL RESEARCH
NORTHEASTERN REGION
BELTSVILLE AGRICULTURAL RESEARCH CENTER
BELTSVILLE, MARYLAND 20705

May 14, 1980

Dr. Patrick J. Dailey
Department of Zoology
University of Vermont
Marsh Live Science Building
Burlington, Vermont 05405

Dear Dr. Dailey:

Please feel free to send the specimens mentioned in your letter of May 1, 1980. I am sending a copy of your letter to Dr. Kramer to inform him of your desire to include him as a co-author.

Sincerely,

Lloyd Knutson/mcy

LLOYD KNUTSON, Chairman
Insect Identification and Beneficial
Insect Introduction Institute

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

AGRICULTURAL RESEARCH
NORTHEASTERN REGION
BELTSVILLE AGRICULTURAL RESEARCH CENTER
BELTSVILLE, MARYLAND 20705

June 9, 1980

Dr. Patrick J. Dailey
Department of Zoology
University of Vermont
Marsh Live Science Building
Burlington, Vermont 05405

Dear Dr. Dailey:

The identifications on the enclosed list are a complete report on the material you submitted directly to Dr. Kramer.

In the future, insect or mite specimens submitted for identification should be sent to my office at Beltsville. By keeping the records in our Institute Office and making reports from Beltsville, we relieve the scientists of some correspondence. Please see the enclosed copy of our guidelines for submittal of specimens.

The specimens will be returned under separate cover.

Sincerely yours,

Lloyd Knutson

LLOYD KNUTSON, Chairman
Insect Identification and Beneficial
Insect Introduction Institute

Enclosure:
Identification List

Separate cover:
Specimens

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION

Agricultural Research
Northeastern Region
Systematic Entomology Laboratory
c/o U. S. National Museum NHB 168
Washington, D. C. 20560

February 26, 1979

Dr. Patrick J. Dailey
Department of Zoology
University of Vermont
Burlington, Vermont 05405

Dear Dr. Dailey:

As requested in your letter of the 6th I am returning to your new address the specimen of Melanagromyza buccalis (not baccalis). I am also enclosing herewith the latest key to Melanagromyza and the original description and figures from Memoir no 64 of the Entomological Society of Canads. Species of Melanagromyza cannot be determined with any degree of certainty without examination of male terminalia. If you would like me to examine your other specimens of Agromyzida I would be glad to do so.

Most sincerely,

Geo. Steyskal

Geroge C. Steyskal
Research Entomologist

enclosure: reprint

MATERIAL EXAMINED.

Nova Scotia: Lockeport, 1 ♀, 1 Aug. 1958 (J.R.V.).

Ontario: Normandale, 31 ♂ ♂, 21–29 May 1956 (J.R.V.); 1 ♂, 2 ♀ ♀, 21 May – June 1956 (J.R.L.); Rondeau Park, 1 ♂, 7 Sept. 1954 (W.R.M.).

GENUS *Melanagromyza* Hendel

Melanagromyza Hendel, 1920, p. 120; 1931–36, p. 156; Spencer, 1966*b*, pp. 3–60.

Type of genus: *Agromyza aeneoventris* Fallén, 1823*a*.

Of the 17 species represented in Canada, 14 are described below as new. This is primarily a southern genus and no species penetrate into the Arctic. *M. alaskae* sp. n. described from Anchorage is at the northern limit of the distribution of the genus.

Melanagromyza species are predominantly stem-borers and the four Canadian species whose life-history is known, *Mel.* sp. (Steyskal), *martini* sp. n., *matricarioides* sp. n., and *virens* (Loew), all feed in this way. In the southern United States and the Neotropical Region there is a well-developed group of seed-feeders (Spencer 1966*d*, p. 7). These are generally smaller but otherwise morphologically identical to the stem-borers. The European species were recently revised by Spencer (1966*b*).

Most species are host-specific. Many species feed on hosts in the larger families such as Compositae and Umbelliferae but a wide range of other families is also attacked.

Four *Ophiomyia* and two *Hexomyza* species which on external characters could be mistaken for *Melanagromyza* species are included in the key given below.

KEY TO CANADIAN *Melanagromyza* SPECIES

1 Costa ending at vein r_{1+2} 2
– Costa extending to vein m_{1+2} 3
2 Veins entirely colorless, wings exceptionally pale; orbits at most weakly shining ..... *Hexomyza albicula* sp. n.
– Wing normal; orbits and cheeks brilliantly shining black ..... *Ophiomyia simplex* (Loew)
3 Squamal fringe pale, white or at most ochrous 4
– Squamal fringe dark, black or brown 12
4 Mesonotum and abdomen entirely black; very large species, wing length 3.1–3.5 mm; orbits strongly projecting in profile, orbital setulae proclinate ..... *inornata* sp. n. ♀
– At least abdomen shining greenish or coppery 5
5 Orbits distinctly projecting above eye in profile 6
– Orbits not significantly projecting 7
6 Orbits shining black, very strongly projecting; large species, wing length 3.4 mm in male ..... *miranda* sp. n.
– Orbits not significantly shining: smaller species, wing length 2.5–3 mm ..... *martini* sp. n.
7 Large species, wing length up to 3.5 mm; abdomen normally shining bluish ..... sp. (Steyskal)
– Smaller species, wing length up to 2.8 mm; abdomen greenish or coppery 8
8 Orbits conspicuously broad, each almost ⅓ width of frons; orbital setulae in numerous rows, inner ones largely proclinate, particularly above, those nearer eye margin reclinate 9
– Orbits narrower, orbital setulae at most in 2 rows, not proclinate above 10

9 Aedeagus as in Figs. 81, 82; surstyli broadly rounded, with a fringe of minute bristles ..... *alaskae* sp. n.
– Aedeagus as in Figs. 113, 114; surstyli with 3 to 6 stout bristles at end (Fig. 115) ..... *virens* (Loew)
10 Jowls deepest in front (Fig. 83) ..... *buccalis* sp. n.
– Jowls deepest in centre 11
11 Mesonotum shining greenish or largely blackish ..... *matricarioides* sp. n.
– Mesonotum largely mat ..... *modesta* sp. n.
12 Peristomal hairs unusually strong or numerous 13
– Peristomal hairs slight, normal 14
13 Vibrissal margin with a dense fringe of peristomal hairs (Fig. 91) ... *lauta* sp. n.
– Vibrissal margin with a conspicuous group of strong hairs in front (Fig. 132) .. *Ophiomyia decima* sp. n.
14 3 or 4 dc, large species, wing length 3.2 mm; mesonotum shining black ..... *setifrons* (Mel.)
– 2 (at most 3) dc 15
15 Frons strongly projecting 16
– Frons not significantly projecting 19
16 Abdomen greenish; broad, low keel dividing base of antennae .... *shewelli* sp. n.
– Abdomen black 17
17 Orbits and ocellar triangle conspicuously shining black; jowls broad, ¼ to ⅓ eye height ..... *fastosa* sp. n.
– Orbits and ocellar triangle not significantly shining; jowls narrower, ⅛ to ¼ eye height 18
18 Mesonotum brilliantly shining black ..... *laetifica* sp. n.
– Mesonotum distinctly mat ..... *Hexomyza schineri* (Giraud)
19 Abdomen greenish; small species, wing length 1.9–2.2 mm .... *occidentalis* sp. n.
– Abdomen entirely black 20
20 Ocellar triangle and orbits conspicuously shining ..... *tetrica* sp. n.
– Ocellar triangle and orbits at most moderately shining 21
21 Mesonotum mat, grayish or brownish-black ..... *orientalis* sp. n.
– Mesonotum shining black ..... *Ophiomyia pulicaria* (Mg.)
O. pulicarioides Sehgal

Melanagromyza alaskae sp. n.

(Figs. 81, 82)

Head. Frons 1½ times width of eye, not projecting above eye in profile; orbits narrow above, conspicuously widening towards centre of frons, then again narrowing towards base of antennae; 2 equal, reclinate ors, 2 slightly weaker, incurved ori; orbital setulae very fine, in several rows, inner rows proclinate, particularly above, those nearest eye margin reclinate, particularly below; jowls deepest in centre below eye, almost ¼ height of eye; eye in male conspicuously pilose at level of ors; third antennal segment small, rounded, with significant pubescence, arista long, largely bare.

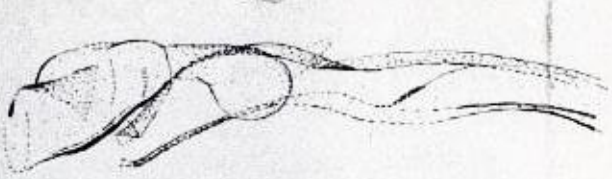
Wing. Length in male 2.7–2.8 mm, venation normal.

Legs. Mid-tibia with 2 strong lateral bristles.

Color. Frons mat black, ocellar triangle and orbits distinctly, though not brilliantly, shining; mesonotum largely shining blackish, with obvious greenish or coppery reflections, more so behind, abdomen greenish or coppery; squamae and fringe white, margin pale yellowish-brown.

Male Genitalia. Aedeagus distinctive, as in Figs. 81, 82; surstyli broadly rounded, with a fringe of minute bristles around inner margin.

Types. Holotype ♂, Alaska, Anchorage, 23 July 1951; paratype ♂, same data (both R.S.B.). Holotype, No. 10359 in CNC, paratype in author's collection.



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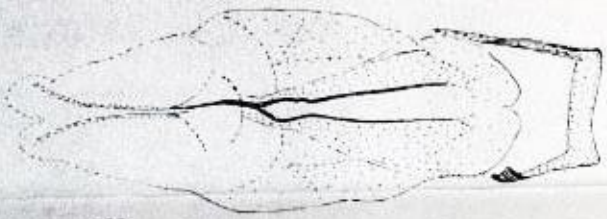
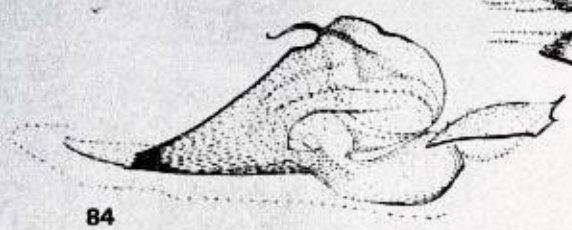


82



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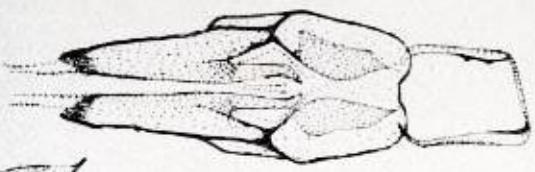

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FIGS. 78–79, *Japanagromyza brooksi*: 78, aedeagus; 79, surstylus. FIG. 80, *J. viridula*: aedeagus. FIGS. 81–82, *Melanagromyza alaskae*: 81, aedeagus, side view; 82, same, ventral view. FIGS. 83–85, *M. buccalis*: 83, head; 84, aedeagus, side view; 85, same, ventral view.

DIAGNOSIS. This species cannot be satisfactorily distinguished from *M. virens* (Loew) on external characters. The orbits are possibly slightly narrower, the orbital setulae finer and less numerous, the mesonotum slightly more shining. The aedeagus and surstyli, however, are entirely distinct.

Melanagromyza buccalis sp. n.

(Figs. 83–85)

HEAD. Frons not projecting above eye, 1½ times width of eye; 2 ors and either 2 or 3 ori; orbital setulae essentially reclinate, a few hairs of partial inner row possibly proclinate; ocellar triangle only weakly defined; jowls (Fig. 83) conspicuously projecting forwards, ⅓ height of eye; eye in male with conspicuous patch of hairs above; arista appearing virtually bare.

ADULT. Wing length in male from 2 to 2.3 mm, in female up to 2.8 mm; venation normal.

COLOR. Frons mat black or slightly brownish, orbits and ocellar triangle weakly shining; mesonotum appearing mat, black from front, more shining, greenish from behind; abdomen shining greenish in male, in female more coppery; squamae and fringe white, margins pale brown.

MALE GENITALIA. Aedeagus distinctive, as in Figs. 84, 85, with characteristic process on each side of distiphallus above; surstyli with a row of short, fine bristles interspersed with hairs along length of inner margin.

TYPES. Holotype ♂, Quebec, Lake Bernard, 7 Aug. 1938 (G.E.S.); paratypes: Ontario, Ottawa, 1 ♂, 25 Aug. 1908 (J.F.); 6 ♂ ♂, 20 June 1954 (D.C.); 1 ♂, 15 Aug. 1954 (R.L.); 1 ♂, 7 Oct. 1947 (G.E.S.); 1 ♂, 1 ♀, 9 June 1962 (J.R.V.); Mer Bleue, 1 ♂, 3 June 1938 (A.R.B.); Simcoe, 3 ♂ ♂, 2 ♀ ♀, 9–23 June 1939 (G.E.S.); Spencerville, 1 ♂, 1 ♀ (in cop.), 24 Aug. 1939 (G.H.H.); Quebec, L'Assomption, 4 ♂ ♂, 2 ♀ ♀, 7 Aug. 1936 (G.E.S.); Lac Bernard, 1 ♀, 7 Aug. 1938 (G.E.S.); Hull, 1 ♂, 25 Sept. 1923 (C.H.C.); Wakefield, 1 ♂, 20 June 1946 (G.S.W.); Knowlton, 1 ♂, 1 ♀ (in cop.), 1 Aug. 1929 (L.J.M.); Abbotsford, 1 ♂, 22 June 1937 (G.E.S.); Val d'Or, 4 ♀ ♀, 22 July 1967 (K.A.S.). Holotype, No. 10360, and paratypes in CNC, further paratypes in author's collection.

DIAGNOSIS. This is clearly a fairly common species in eastern Canada, the most westerly locality being Simcoe. It is readily recognisable by the characteristic jowls. The aedeagus is typical of the genus but quite distinctive.

Three females from Bowser, B.C., 16 June 1955 (G.E.S.), somewhat resemble *buccalis* but certainly represent a distinct species. The orbits are strongly projecting above the eye, the jowls are deeper, and there is a broad raised keel dividing the base of the antennae. The formal description of this species should best wait until males are available.

Melanagromyza fastosa sp. n.

(Figs. 86, 87)

HEAD. Frons variable, 1½ to twice width of eye, slightly or conspicuously projecting above eye in lower half; ocellar triangle well defined, extending ⅓ distance towards margin of lunule; 4 short, slender orbital bristles; orbital setulae sparse, slender, reclinate behind, more upright in front; jowls deep, ¼ to ⅓ vertical height of eye, cheeks forming distinct ring below eye; eye upright, bare; third antennal segment small, round at end, arista bare.

WING. Length in male 2.8 mm, costa extending to vein m_{1+2}, venation normal.

LEGS. Mid-tibia with 1 strong lateral bristle.

COLOR. Frons and jowls brownish black, orbits and ocellar triangle conspicuously shining black; mesonotum shining black, slightly more mat viewed from front, abdomen entirely black; squamae pale gray, margin and fringe black.

MALE GENITALIA. Aedeagus as in Figs. 86, 87; surstyli broad, thickly covered with short, strong hairs.

United States Department of Agriculture
Agricultural Research Service
Beltsville Area Beltsville Agricultural Research Center
Beltsville, Maryland 20705

November 20, 1986

Dr. Patrick J. Dailey
Division of Health & Natural Sciences
Lewis and Clark Community College
Godfrey, IL 62035

Dear Dr. Dailey:

Your November 17, 1986, letter has arrived and I am glad to know that my November 4th letter reached you via Vermont and to have your current address.

I am also glad to know that you may be able to use the aphid identifications I sent you. Currently I am involved with finishing two research projects, and it will be January before I will get back to helping you with information on aphid-Asclepias host plant relationships.

I wanted to write a quick letter to let you know that your letter has been received and that I will write with detailed information come 1987.

Sincerely,

Manya B. Stoetzel

MANYA B. STOETZEL
Research Entomologist
Systematic Entomology Laboratory

United States Department of Agriculture | Agricultural Research Service | Beltsville Area Beltsville Agricultural Research Center | Beltsville, Maryland 20705

November 4, 1986

Dr. Patrick J. Dailey
Department of Zoology
Marsh Life Science Building
University of Vermont
Burlington, Vermont 05405

Dear Dr. Dailey:

In October 1978 I received for identification 44 vials containing aphids you collected on the common milkweed, Asclepias syriaca. The aphids needed to be mounted for a specific identification, so I worked through the vials and made notes as to what was to be mounted from each. Unfortunately, at that time we had only one or two technicians; and it was more than two years before the specimens were prepared, stained, and mounted on slides.

More to the point, the material became buried in my mound of **aphids to be identified.** This month I am trying to get to the bottom of the stack of orphans that have been sitting for so long, and your lot has been identified.

Of course now I am wondering if you are still interested in the identification of these aphids. None-the-less, I am enclosing a copy of the identification forms which I will turn into our front office so that this lot will be cleared from our records.

Some of these aphids are not known from Asclepias. For example, I think the Dactynotus sp. is D. nigrotibium which is known only from species of Solidago, especially S. nemoralis. While I have not taken time to note those species not believed to have Asclepias as a host, I will do so if you will let me know that that information is of interest to you.

I apologize for not having been more attentive to these identifications, and I hope you will forgive me. The vials will be returned under separate cover.

Sincerely,

Manya B. Stoetzel 301-344-3168

MANYA B. STOETZEL
Research Entomologist
Systematic Entomology Laboratory

Separate cover - 44 vials

1 of 3 | Note to TSU: Reported in my letter of 4 X 1986 (copy attached)

Page of

IIBIII IDENTIFICATION REPORT

TAXONOMIST

SENDER: Patrick J. Dailey

LOT NO. 78 10144

MATERIAL FORWARDED — Pinned: Vials: Slides: Other:

DATE FORWARDED

PRIORITY

TEL. REPORT Tax.: TSU:

Incomplete Identification Code (II)

1 – Species is apparently undescribed
2 – Group now under revision *(Optional – enter name and address of revisor below identification)*
3 – Group needs revision; species are not identifiable
4 – More precise determination depends on characters found in other sex or caste
5 – More precise determination depends on characters found in other life stage
6 – More precise determination depends on genital characters that must be dissected and/or mounted on a slide to be seen
7 – Specimen *(Code)*: C – Critical parts missing P – In poor condition I – Improperly prepared
8 – Known habits of this group suggest specimen is irrelevant to your project; if relevant, resubmit with details
9 – More precise determination depends on knowledge of host
10 – Other *(Specify)*:
11 – No comparable identified specimens in U.S. National Collection

Specimen/ Vial/Slide/ No.	Family – Genus – Species – Author	Total Number Specimens	No. Specimens Kept	II Code	DB
#1 (705)	Macrosiphum euphorbiae (Thomas)	1	[illegible]	-	-
	Aphis citricola van der Goot	4	4	-	-
	Aphis gossypii Glover	4	-	-	-
	Aphis helianthi Monell	2	-	-	-
	Macrosiphum rosae (L.)	1	1 -	-	-
	Myzocallis sp.	1	1 -	-	-
	Aphis sp. - broken specimens + nymphs	17	78	-	-
#2 (711)	- vial dry when received.				
	Aphis gossypii Glover	1	1 -	-	-
	Macrosiphum rosae (L.)	2	2	-	-
	Aphididae	20+	8 -	-	-
#3 (703)	- vial dry when received				
	Macrosiphum euphorbiae (Thomas)	1	-	-	-
	Dactynotus sp.	5	-	-	-
	Myzocallis sp.	4	-	-	-
	Aphis sp	10	-	-	
	Chaitophorus sp	1	1	-	-
	Aphis helianthi Monell	1	1	-	-

IDENTIFIER: MB Stoetzel

DATE: 4 X 1 1986

USDA-AI

#4 (702)	Aphis fabae Scopoli	1	-	-	-
	Macrosiphum euphorbiae (Thomas)	2	-	-	-
	Dactynotus sp.	4	2	-	-
	Macrosiphum rosae (L.)	1	-	-	-
	Pterocomma sp	1	1	-	-
#5 (710)	Aphis sp	2	2	-	-
	Masonaphis sp.	1	1	-	-
#6 (707)	Dactynotus sp	8	2	-	-
	Aphis sp	15	7	-	-
#7 (704)	Aphis helianthi Monell	10+	2	-	-
	Myzocallis asclepiadis (Monell)	8	5	-	-
	Dactynotus sp	1	1	-	-
	Macrosiphum euphorbiae (Thomas)	2	2	-	-
	Aphis sp.	25+	6	-	-
#8 (712)	Dactynotus sp.	1	1	-	-
#9 (709)	vial empty				
#10 (713)	Dactynotus sp.	15+	3	-	-
	Myzocallis sp.	1 nymph	1	-	-
#11 (706)	Dactynotus sp.	3	3	-	-
	Acyrthosiphon sp.	1	1	-	-
#12 (734)	Aphis asclepiadis Fitch	1	1	-	-
	Dactynotus sp	4	4	-	-

		4 kgt - -
#17(721)	Dactynotus sp	
	Macrosiphum euphorbiae (Thomas)	1 kgt - -
	Myzus persicae (Sulzer)	1 kgt - -
	Aphis sp.	5 kgt - -
	Aphis sp	4 kgt - -
#18(725)	Hyadaphis foeniculi (Passerini)	6 kgt.
#19(720)	Acyrthosiphon sp	1 kgt
	Dactynotus sp.	3 kgt
	Aphis sp.	2 kgt
	Aphis sp.	2 kgt
	Hyadaphis foeniculi (Passerini)	2 kgt
#20(737)	Aphis nerii (Boyer de Fonscolombe)	1 kgt
	Dactynotus sp.	4 kgt
#21(736)		
#22(739)	Dactynotus sp	1 kgt
	Aphididae	1 nymph kgt
#23(738)	Dactynotus sp.	2 kgt
#24(716)	Macrosiphum euphorbiae (Thomas)	1 kgt
	Dactynotus sp.	2 kgt
	Aphis sp	2 kgt

SENDER: Patrick J. Dailey

LOT NO.: 78 10144

MATERIAL FORWARDED — Pinned: Vials: Slides: Other:

DATE FORWARDED

PRIORITY

TEL. REPORT — Tax.: TSU:

Incomplete Identification Code (II)

1 – Species is apparently undescribed
2 – Group now under revision *(Optional – enter name and address of revisor below identification)*
3 – Group needs revision; species are not identifiable
4 – More precise determination depends on characters found in other sex or caste
5 – More precise determination depends on characters found in other life stage
6 – More precise determination depends on genital characters that must be dissected and/or mounted on a slide to be seen
7 – Specimen *(Code):* C – Critical parts missing; P – In poor condition; I – Improperly prepared
8 – Known habits of this group suggest specimen is irrelevant to your project; if relevant, resubmit with details
9 – More precise determination depends on knowledge of host
10 – Other *(Specify):*
11 – No comparable identified specimens in U.S. National Collection

Specimen/ Vial/Slide/ No.	Family – Genus – Species – Author	Total Number Specimens	No. Specimens Kept	II Code	DB
#25(742)	Dactynotus sp	1	1	–	–
	Aphis sp.	1	1	–	–
#26(719)	Acyrthosiphon sp	1	1	–	–
	Aphis sp	1	1	–	–
	Dactynotus sp.	13	13	–	–
#27(722)	Dactynotus sp.	9	9	–	–
#28(724)	Aphis sp.	3	3	–	–
#29(717)	Dactynotus sp	2	2	–	–
#30(726)	Dactynotus sp	1	1	–	–
#33(730)	Macrosiphum euphorbiae (Thomas)	1	1	–	–
#34(741)	Aphis gossypii Glover	4	4	–	–
	Aphis sp	2	2	–	–
	Dactynotus sp	3	3	–	–
	Dactynotus (Uromelan) sp	1	1	–	–
	Myzocallis sp	1	1	–	–

IDENTIFIER: M & Stuetzel

DATE: 4 x 1 1986

Form NER-626 (Jul 83) USDA-ARS

#35 (718)	Aphis asclepiadis Fitch	3 kept
	Dactynotus sp.	2 kept
#37 (728)	Dactynotus sp.	1 kept
#39 (714)	Dactynotus sp	1 kept
#45 (700)	Aphis sp	25+, 2 kept
	Aphis sp	20+, 2 kept
#46 (701)	Myzocallis sp	4 nymphs kept
#47 (731)	Aphis sp.	2 kept
#48 (733)	Aphis sp.	2 kept
#50 (743)	Macrosiphum euphorbiae (Thomas)	1 kept
	Chaitophorus sp.	1 kept
#55 (723)	Dactynotus sp.	1 kept
#57 (735)	Rhopalosiphum maidis (Fitch)	1 kept
#60 (729)	Macrosiphum euphorbiae (Thomas)	1 kept
#91 (732)	Aphis sp.	25+, 10 kept

Table 1. Homoptera collected on *Asclepias syriaca* in Bowling Green, Ohio.

	Total number of specimens collected	Dates collected
Family Membracidae		
Strictocephala diceros (Say)	4	14-VII to 30-VII
Strictocephala bisonia Kopp & Yorke	67	15-VI to 4-X
Micrutalis calva (Say)	11	11-VI to 18-IX
Enchenopa binotata (Say)	1	3-VI
Campylenchia laticeps (Say)	11	24-VI to 3-IX
Entylia bactriana Germar	1	29-VII
Publilia concava (Say)	1	18-VIII
Vanduzea arquata (Say)	2	22-VI to 4-IX
Family Cicadellidae		
Graphocephala coccinea (Förster)	106	11-VI to 4-X
Graphocephala hieroglyphica (Say)	3	18-VII to 18-IX
Scaphytopius acutus (Say)	20	10-VI to 24-IX
Scaphytopius frontalis (Van Duzee)	5	14-VI to 4-IX
Colladonus clitellarius (Say)	7	9-VI to 24-VI
Agallia quadripunctata (Provancher)	42	16-VI to 4-IX
Paraphlepsius irroratus (Say)	32	12-VI to 27-VIII
Aceratagallia sanguinolenta (Provancher)	15	17-VI to 8-VIII
Aphrodes bicintus (Schrank)	52	9-VI to 3-IX
Draeculacephala antica (Walker)	2	13-VI to 22-VI
Draeculacephala portola Ball	1	27-VIII
Gyponana octolineata (Say)	2	9-VI to 10-VIII
Athysanus argentarius Metcalf	1	16-VI
Empoasca erigeron DeLong	3	15-VI to 24-IX
Empoasca fabae (Harris)	1	30-VII
Agalliopsis novella (Say)	6	16-VI to 16-VIII
Macrosteles fascifrons (Stal)	1	11-VII
Jikradia olitoria (Say)	4	24-VII to 3-IX
Japananus hyalinus (Osborn)	1	19-VII
Gypona melanota Spangberg	1	4-VIII
Scaphoideus titanus Ball	2	2-VII to 16-VII
Erythroneura tricincta Fitch	1	15-VII
Family Cercopidae		
Philaenus spumarius (L.)	45	10-VI to 5-IX
Lepyronia quadrangularis (Say)	2	19-VIII to 24-VIII
Family Dictyopharidae		
Scolops pugens Germar	1	3-VIII
Family Cixiidae		
Oliarus humilis (Say)	1	1-VII
Family Flatidae		
Metcalfa pruinosa (Say)	2	6-VIII to 8-VIII
Ormenoides venusta (Melichar)	2	27-VII to 10-VIII

Table 1 (cont.)

	Total number of specimens collected	Dates collected
Family Acanaloniidae		
Acanalonia conica (Say)	1	28-VII
Acanalonia bivittata (Say)	1	15-VII
Nymphs	81	21-VI to 21-VIII

TABLE 1. Homoptera collected on Asclepias syriaca in Bowling Green, Ohio.

	Total number of specimens collected	Dates collected
Family Membracidae		
Stictocephala diceros (Say)	4	14-VII to 30-VI
Stictocephala bisonia Kopp & York	67	15-VI to 4-X
Micrutalis calva (Say)	11	11-VI to 18-I
Enchenopa binotata (Say)	1	3-VI
Campylenchia latipes (Say)	11	24-VII to 3-IX
Entylia bactriana Germar	1	29-VII
Publilia concava (Say)	1	18-VIII
Vanduzea arquata (Say)	2	22-VI to 4-I
Family Cicadellidae		
Graphocephala coccinea (Förster)	106	11-VI to 4-X
Graphocephala hieroglyphica (Say)	3	18-VII to 18-IX
Scophytopius acutus (Say)	20	10-VI to 24-IX
Scophytopius frontalis (Van Duzee)	5	14-VI to 4-IX
Colladonus clitellarius (Say)	7	9-VII to 24-VI
Agallia quadripunctata (Provancher)	42	16-VI to 4-IX
Paraphlepsius irroratus (Say)	32	12-VI to 27-VIII
Acerata gallia sanguinolenta (Provancher)	15	17-VI to 8-VIII
Aphrodes bicinctus (Schrank)	52	9-VI to 3-IX
Draeculacephala antica (Walker)	2	13-VI to 22-VI
Draeculacephala portola (Ball)	1	27-VIII
Gyponana octolineata (Say)	2	9-VI to 10-VIII
Athysanus argentarius Metcalf.	1	16-VI
Empoasca erigeron DeLong	3	15-VI to 24-IX
Agallopsis novella (Say)	6	16-VI to 16-VIII
Macrosteles fascifrons (Stal)	1	11-VII
Jikradia olitoria (Say)	4	24-VII to 3-IX
Japananus hyalinus (Osborn)	1	19-VII
Gypona melanota Spangberg	1	4-VIII
Scaphoideus titanus Ball	2	2-VII to 16-VII
Empoasca fabae (Harris)	1	30-VII
Erythroneura tricincta Fitch	1	15-VII
Family Cercopidae		
Philaenus spumarius (L.)	45	10-VI to 5-IX
Lepyronia quadrangularis (Say)	2	19-VIII to 24-VIII

Family Acanaloniidae
Acanalonia conica (Say)
Acanalonia bivittata (Say)

Family Cercopidae
Philaenus spumarius (L.)
Lepyronia quadrangularis (Say)

Family Membracidae
Stictocephala diceros (Say)
Stictocephala bisonia Kopp & Yonke
Micrutalis calva (Say)
Enchenopa binotata (Say)
Campylenchia laticeps (Say)
Entylia bactriana Germar
Publilia concava (Say)
Vanduzea arquata (Say)

Family Cicadellidae
Graphocephala coccinea (Förster)
Graphocephala hieroglyphica (Say)
Scaphytopius acutus (Say)
Scaphytopius frontalis (Van Duzee)
Colladonus clitellarius (Say)
Agallia quadripunctata (Provancher)
Aceratagallia sanguinolenta (Provancher)
Paraphlepsius irroratus (Say)
Aphrodes bicintus (Schrank)
Draeculacephala antica (Walker)
Draeculacephala portola Ball
Gyponana octolineata (Say)
Athysanus argentarius Metcalf
Empoasca erigeron DeLong
Agalliopsis novella (Say)
Macrosteles fascifrons (Stal)
Jikradia olitoria (Say)
Japananus hyalinus (Osborn)
Gypona melanota Spangberg

Scaphoideus titanus Ball
Empoasca fabae (Harris)
Erythroneura tricincta Fitch

Family Flatidae
Metcalfa pruinosa (Say) ♀ 6-VIII-8-VIII
Ormenoides venusta (Melichar)

Family Cixiidae
Oliarus humilis (Say)

Family Dictyopharcidae
Scolops pygens (Germar)

Family Dictyopharidae		
Scolops pugens (Say)	1	3 - VIII
Family Cixiidae		
Oliarus humilis (Say)	1	1 - VII
Family Flatidae		
Metcalfa pruinosa (say)	2	6 - VIII to 8 - VIII
Ormenoidea venusta (Melichar)	2	27 - VII to 10 - VIII
Family Acanaloniidae		
Acanalonia conica (say)	1	28 - VII
Acanalonia bivittata (Say)	1	15 - VII
Nymphs	81	21 - VI to 21 - VIII

Material sent:		Label number	collecting date(s)
V. arquata?	T-14	01 ✓	22-VII
– C. curvata?	T-16	02 ✓	24-VII
O. humilis?	23-1	03 ✓	1-VIII
A. bivittata?	E-37	04 ✓	15-VIII
E. binotata	22	05 ✓	30-VII
G. scolops	M-56	06 ✓	3-VIII
G. pubilia	Q-71	07 ✓	18-VIII
	A-24,38	08 ✓	2-VII, 16 VII
	B-30	09 ✓	8-VII
	F-37	10 ✓	15-VII
	G-40	11 ✓	18-VII
	H-41	12 ✓	19-VII
	I-46,83	13 ✓	24-VII, 30 VIII
	N-57	14 ✓	4-VIII
	J$_2$-59,61	15 ✓	6-VIII, 8 VIII
	C-33	16 ✓	11-VIII
	L-52	17 ✓	30-VII
	J$_1$-49,63	18 ✓	27-VII, 10 VIII
	R-72,77	19 ✓	19-VIII, 24 VIII
	O-59	20	6-VIII
	S-80	21 ✓	27-VIII
	P-69,87	22 ✓	16-VIII, 3-IX
	T-92	23 ✓	25 X
– E. concisa?	51-1	24 ✓	29 VII

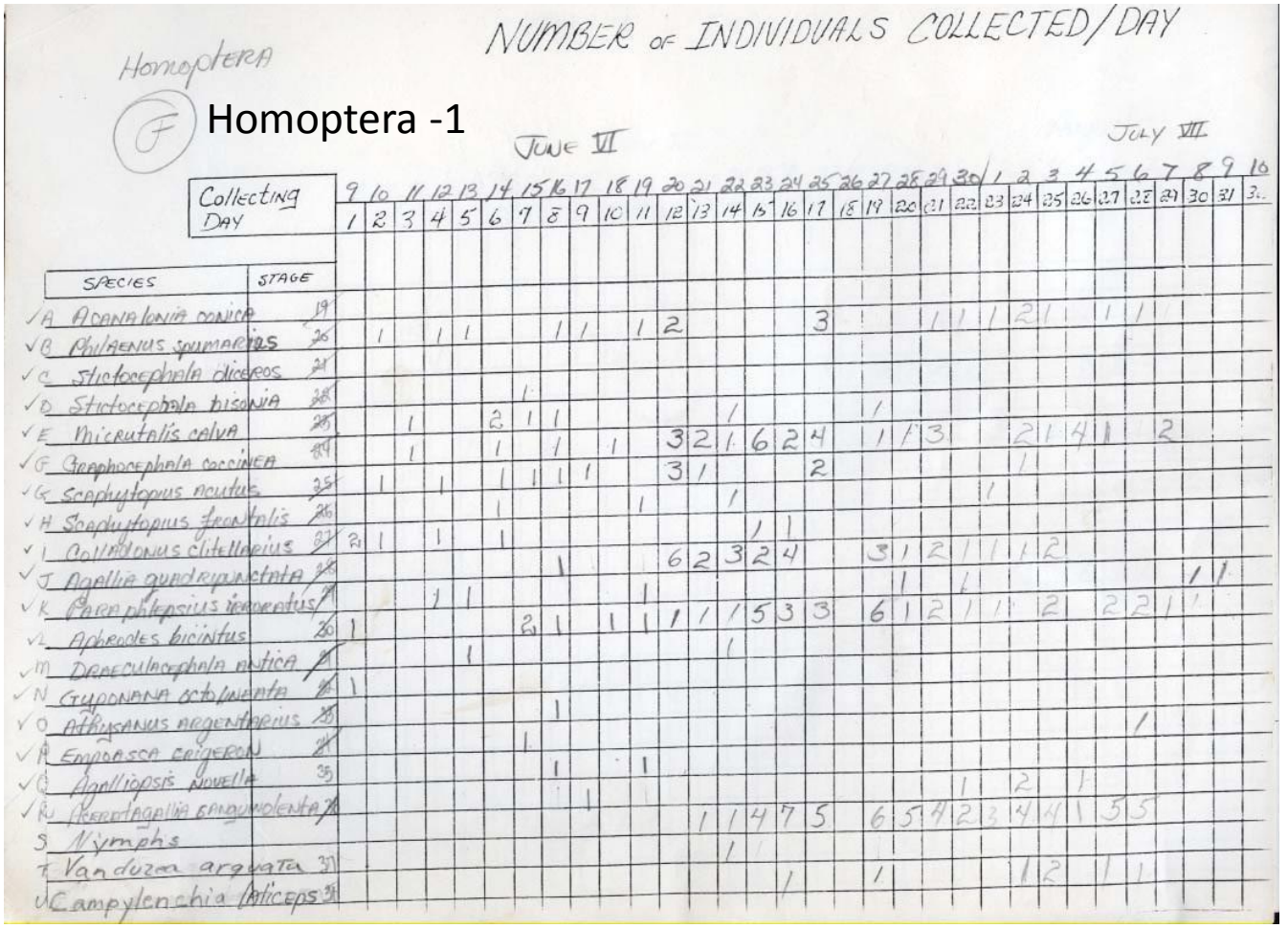
6 vials
24 pinned specimens

Sample #	Date
1	9-VI-76
2	10-VI-76
3	11-VI-76
4	12-VI-76
5	13-VI-76
6	14-VI-76
7	15-VI-76
8	16-VI-76
9	17-VI-76
10	18-VI-76
11	19-VI-76
12	20-VI-76
13	21-VI-76
14	22-VI-76
15	23-VI-76
16	24-VI-76
17	25-VI-76
18	26-VI-76
19	27-VI-76
20	28-VI-76
21	29-VI-76
22	30-VI-76
23	1-VII-76
24	2-VII-76
25	3-VII-76
26	4-VII-76
27	5-VII-76
28	6-VII-76
29	7-VII-76
30	8-VII-76
31	9-VII-76
32	10-VII-76
33	11-VII-76
34	12-VII-76
35	13-VII-76
36	14-VII-76
37	15-VII-76
38	16-VII-76
39	17-VII-76
40	18-VII-76
41	19-VII-76
42	20-VII-76
43	21-VII-76
44	22-VII-76
45	23-VII-76
46	24-VII-76
47	25-VII-76
48	26-VII-76
49	27-VII-76
50	28-VII-76
51	29-VII-76
52	30-VII-76
53	31-VII-76
54	1-VIII-76
55	2-VIII-76
56	3-VIII-76
57	4-VIII-76
58	5-VIII-76
59	6-VIII-76
60	7-VIII-76
61	8-VIII-76
62	9-VIII-76
63	10-VIII-76
64	11-VIII-76
65	12-VIII-76
66	13-VIII-76
67	14-VIII-76
68	15-VIII-76
69	16-VIII-76
70	17-VIII-76
71	18-VIII-76
72	19-VIII-76
73	20-VIII-76
74	21-VIII-76
75	22-VIII-76
76	23-VIII-76
77	24-VIII-76
78	25-VIII-76
79	26-VIII-76
80	27-VIII-76
81	28-VIII-76
82	29-VIII-76
83	30-VIII-76
84	31-VIII-76
85	1-IX-76
86	2-IX-76
87	3-IX-76
88	4-IX-76
89	5-IX-76
90	6-IX-76
91	12-IX-76
92	18-IX-76
93	25-IX-76
94	4-X-76

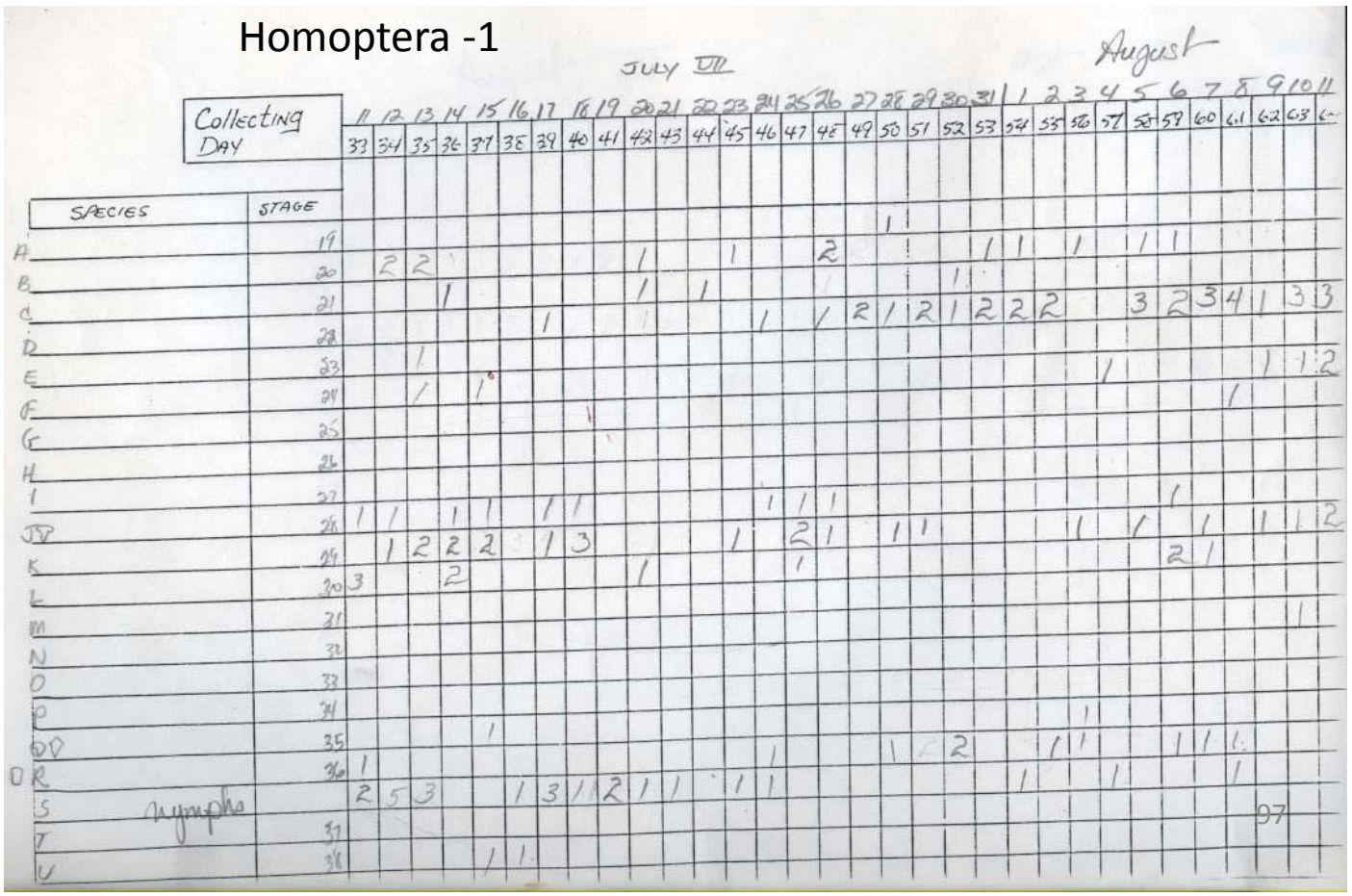
Homoptera

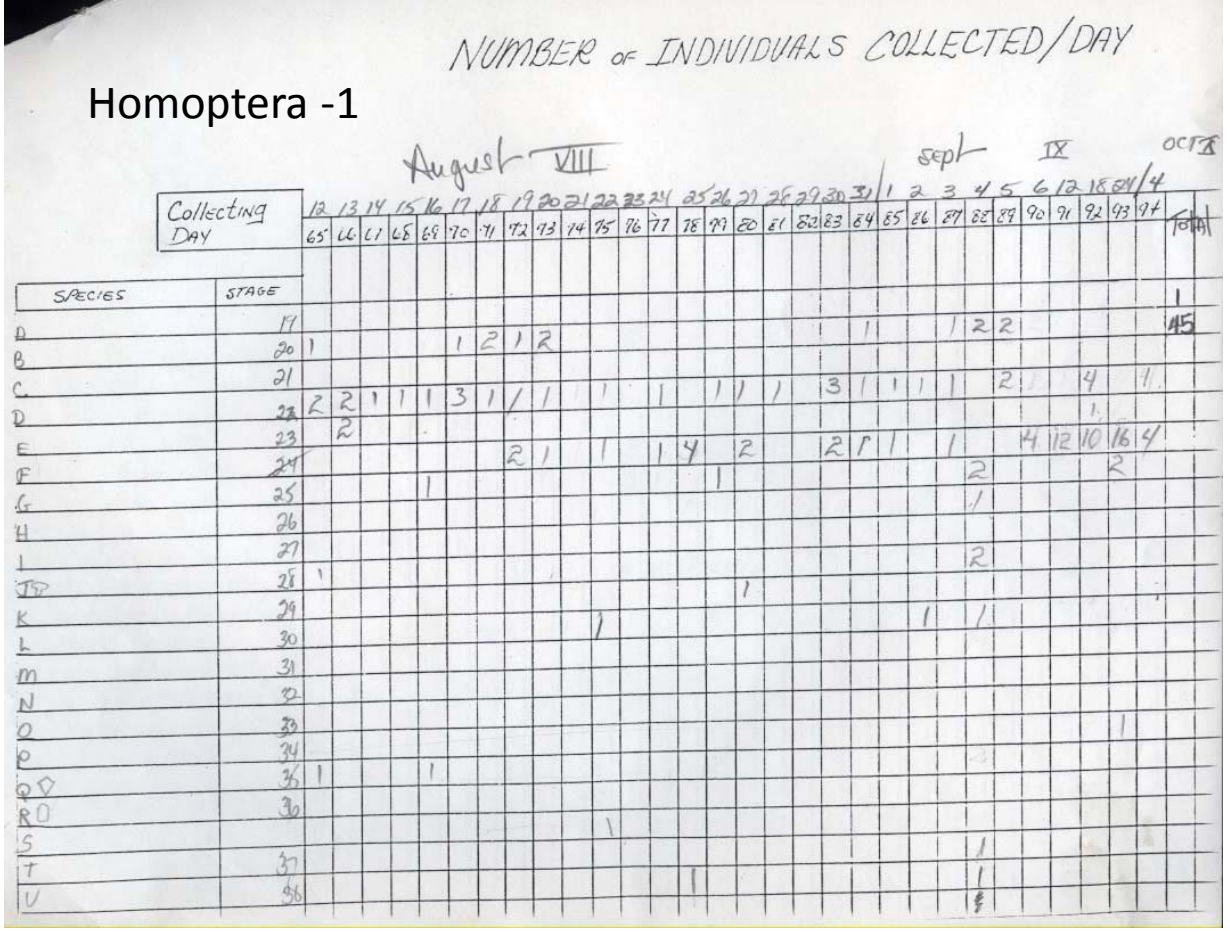
NUMBER of INDIVIDUALS COLLECTED/DAY

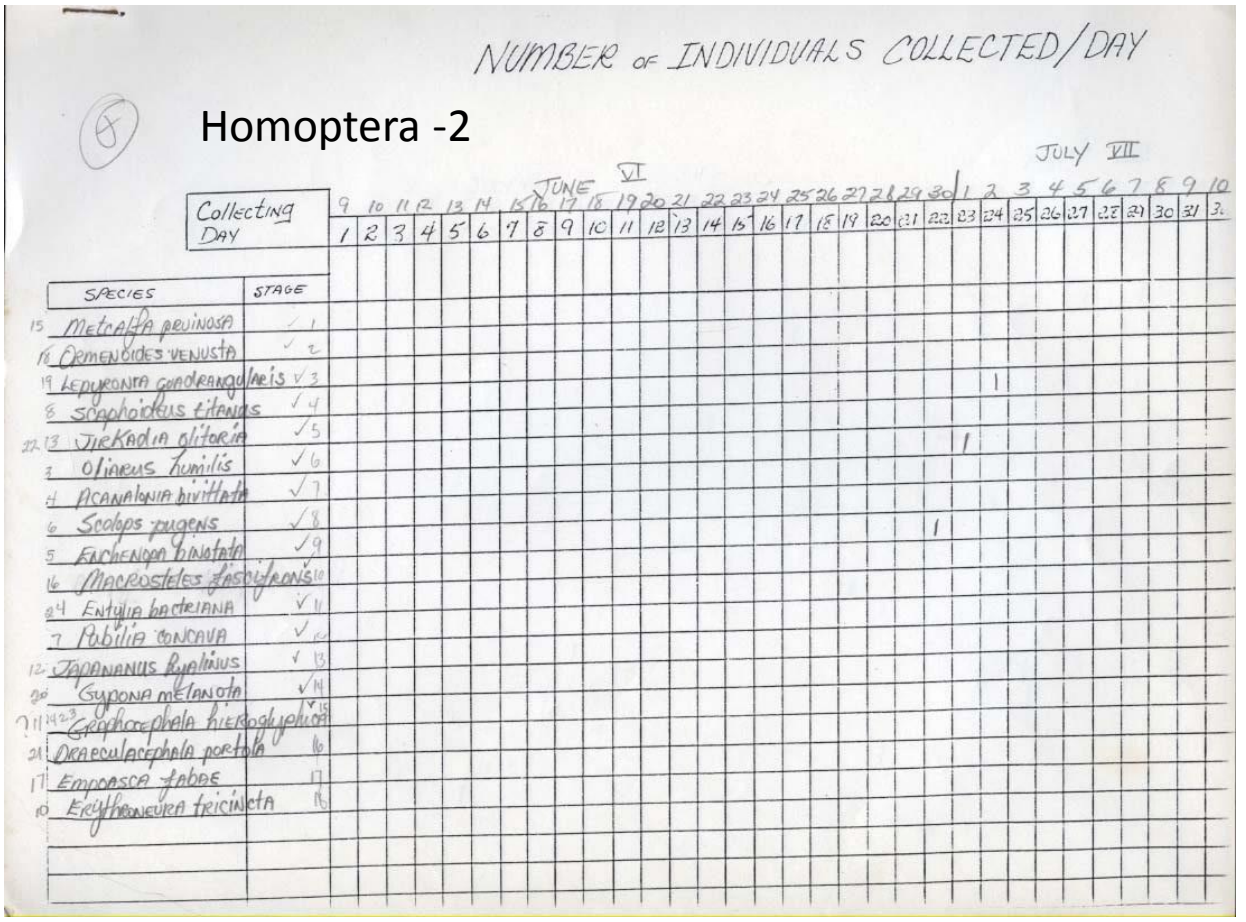
(F) Homoptera -1



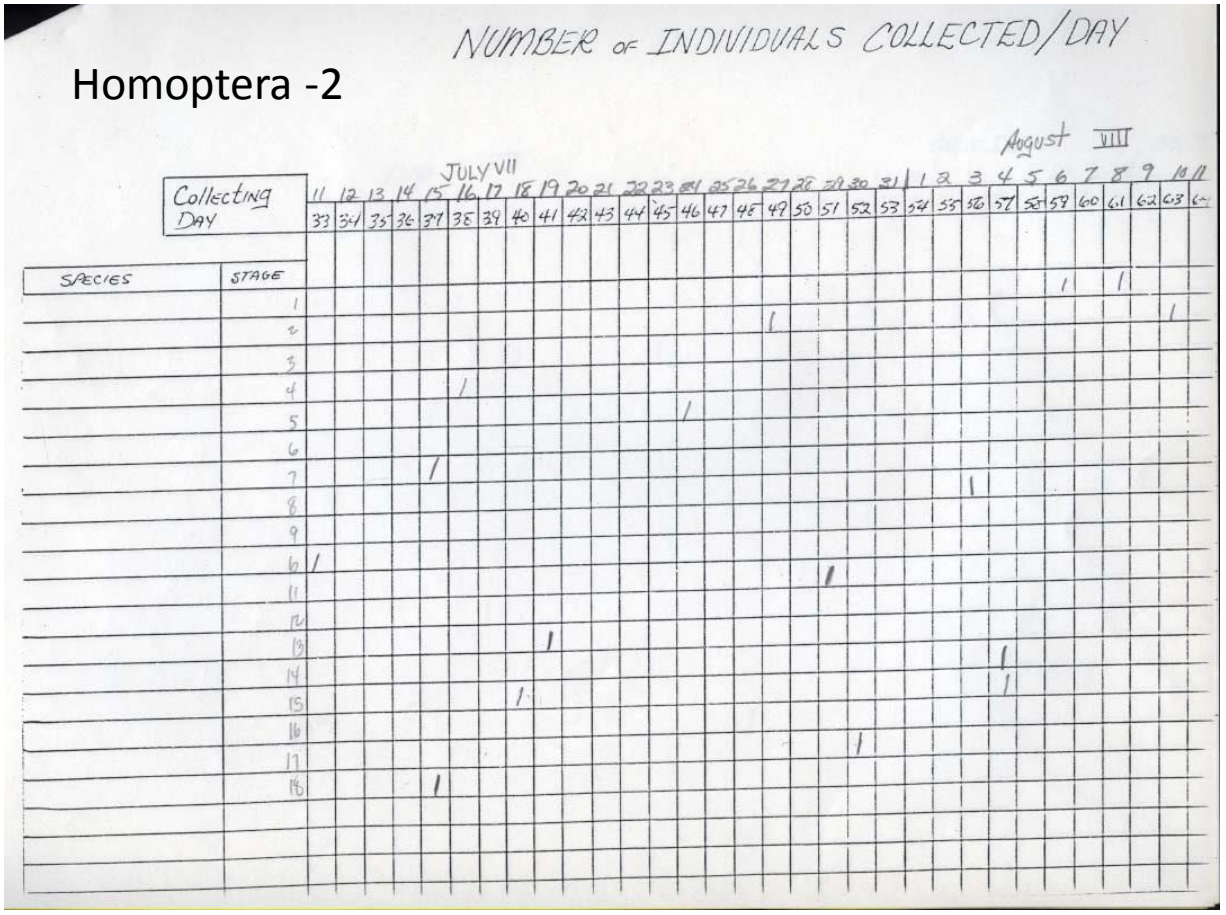
Homoptera -1



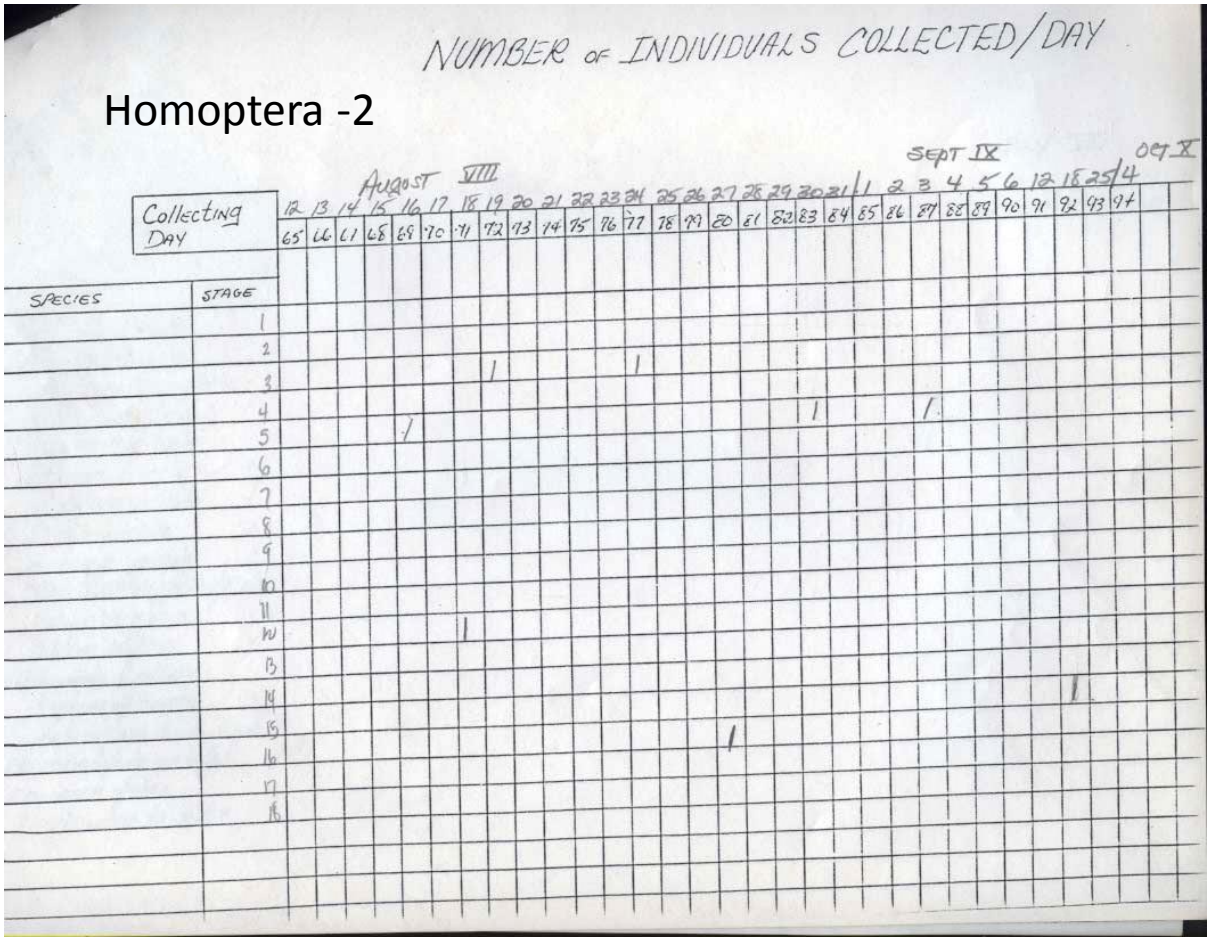

NUMBER OF INDIVIDUALS COLLECTED/DAY
Homoptera -1
August VIII
Sept IX
Collecting Day
SPECIES
STAGE
TOTAL


NUMBER OF INDIVIDUALS COLLECTED/DAY
Homoptera -2
JUNE VI
JULY VII
Collecting Day
SPECIES
STAGE
Metcalfa pruinosa
Ormenoides venusta
Lepyronia gonadranalis
Scaphoideus titanus
Vierkadia olitoria
Oliarus humilis
Acanalonia bivittata
Scolops sulcens
Euchenopa binotata
Macrosteles fascifrons
Entylia bactriana
Publilia concava
Japananus hyalinus
Gypona melanota
Graphocephala hieroglyphica
Draeculacephala portola
Empoasca fabae
Erythroneura tricincta

Homoptera -2



Homoptera -2



NUMBER of INDIVIDUALS COLLECTED/DAY

LEPIDOPTERA

(I)

LARVAE

	SPECIES	STAGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
A	Papaipema nebris		1				1					1					1									1			1			1		
B	Alypia octomaculata																																	
C	Pseudaletia unipuncta						1	1								1													1					
D	Amathes bicarnea																								1									
E	Peris rapae																			1														
F	Loxostege sp.								1																									
G	Pyrausta sp.																																	
H	PYRAUSTINAE GENERA																												23					
*I	Euchaetias egle (Drury)	MILKWEED TUSSOCK MOTH Arctiidae					125		5-VII to 6-IX																									
*J	Cycnia tenera Hbn.	Arctiidae					1		13-VIII																									
*K	Diacrisia virginica (Fabricius)	Arct.					1		15-VII																									
*L	Estigmene acrea (Drury)	Arctiidae					1		4-IX																					1				
M	Eupatheicia sp.									1																			1					
*N	Sparganothis sulfureana	(Clem.) Tortricidae	5	9-VI to 6-VIII																														
*O	Choristoneura rosaceana	(Harris) Tortricidae	3	12-VII to 4-VIII																														
*P	Argyrotaenia velutinana	(Wlk.) (Wlkr.) Cochylidae	3	16-VII to 28-IX																														

NUMBER of INDIVIDUALS COLLECTED/DAY

	SPECIES	STAGE	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
A																																		
B																																		
C													1																					
D																																		
E																																		
F																																		
G																			1															
H																																		
I			32				6						2	5			2						1				1							
J																																		
K							1																											
L					1																													
M																						1											1	
N			1																				1			1							
O							1																											
P																																		

NUMBER OF INDIVIDUALS COLLECTED/DAY

	SPECIES	STAGE	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
	Collecting Day																															
A																																
B																																
C									1																							
D																																
E																																
F																																
G																																
H			8	2			1				8				3	4		5	2	1	1					3	24					
I				1																												
J																																
K																									1							
L																																
M																																
N				1																												
O																																
P															1				1													

(A)

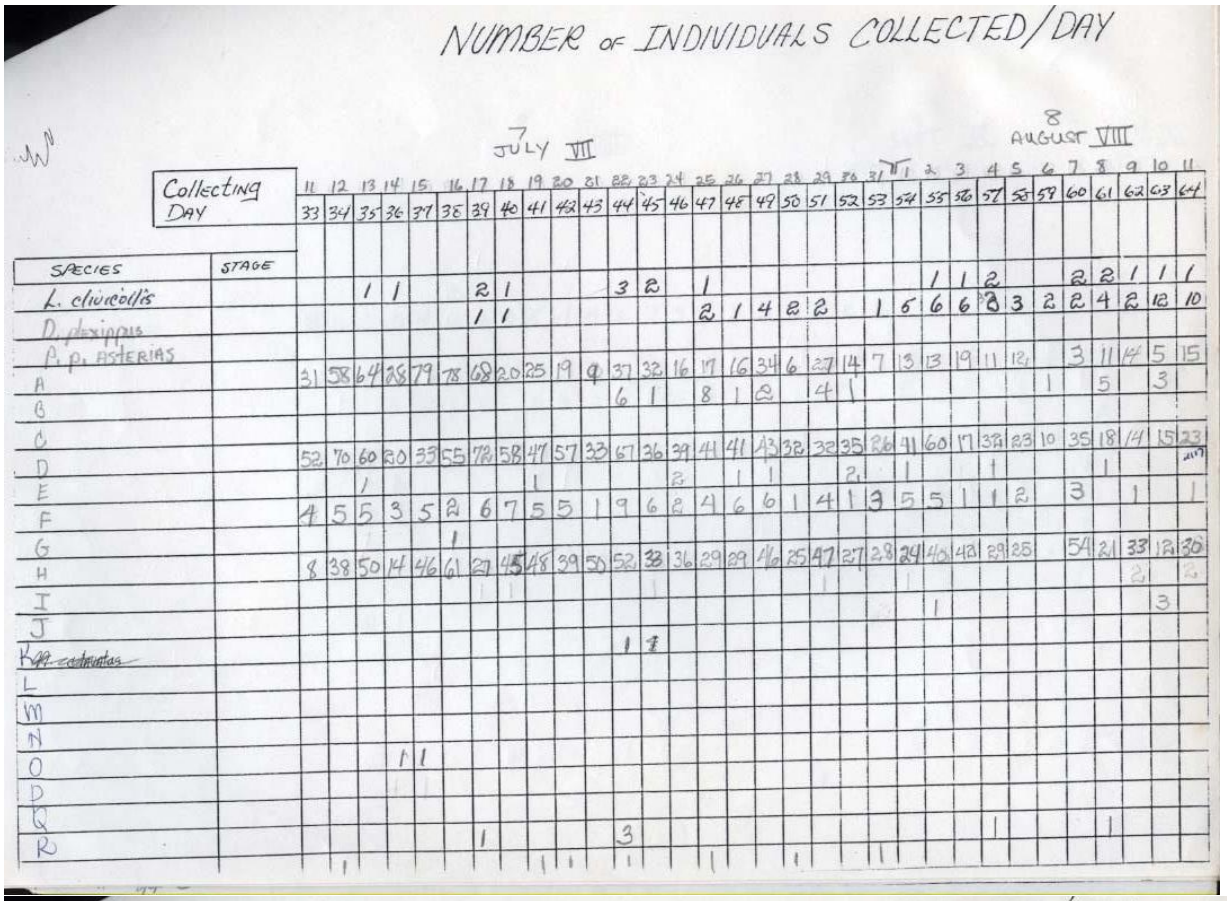
COLEOPTERA
LEPIDOPTERA
HYMENOPTERA

NUMBER OF INDIVIDUALS COLLECTED/DAY

6 JUNE VI — 7 JULY VII

	SPECIES	STAGE	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10
	Collecting Day		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
C	LABIDOMERA chiricollis	LARVAE																		1			1		1					2				
L	MANDUS pleximpus	LARVAE						1		1		1						1	1	1			1	1	2	1								
L	Papilio polyxenes asterius	LARVAE																		1														
Hy	A - Crematogaster lineolata		18	8	7	17	6	6	1	6	2	3	15	7	15	8	13	1	44	17	63	28	56	65	71	39	45	30	40	21	1	2	4	
	B Tetramorium caespitum			1							5	31	7	4							1		1							1			4	
	C Prenolepis imparis									1						1																		
	D Formica subsericea		1	9	6	9	5	10	19	19	13	10	20	32	36	21	20	13	44	24	23	32	34	74	64	69	74	57	51	53	22	18	25	18
	E Leptothorax ambiguus		2		4	1	1			24	1	1	1	2	2	1		3		1		2			5	2	2			2				42
	F Formica p. nitidiventris			2	1	2	1	1		2	2		1	3	2		2		1	2	1	3	1	3	6	3	1	3	5			2		
	G Camponotus subbarbatus							1		2																								
	H Lasius alienus		2	4		11	7	8	3	38	18	7	51	31	46	24	11	40	48	5	24	21	24	34	33	32	28	11	33	37	11	21		2
	I Myrmica sp.																																	
	J Lasius sp.																																	
	Myrmica (E) Pheidole sp.																																	
	Leptothorax curvispinosus						1																									1		
	Aphaenogaster sp.																																	
	Crematogaster sp.				2					4				1	4	1		2		1			3		3	2	8	2						
	Tapinoma sessile																		1															
	Formica exsectoides																																	
	Formica sp. A						1																											
	Formica spp. B ♀																																	
	Formica spp. C ♂																																	

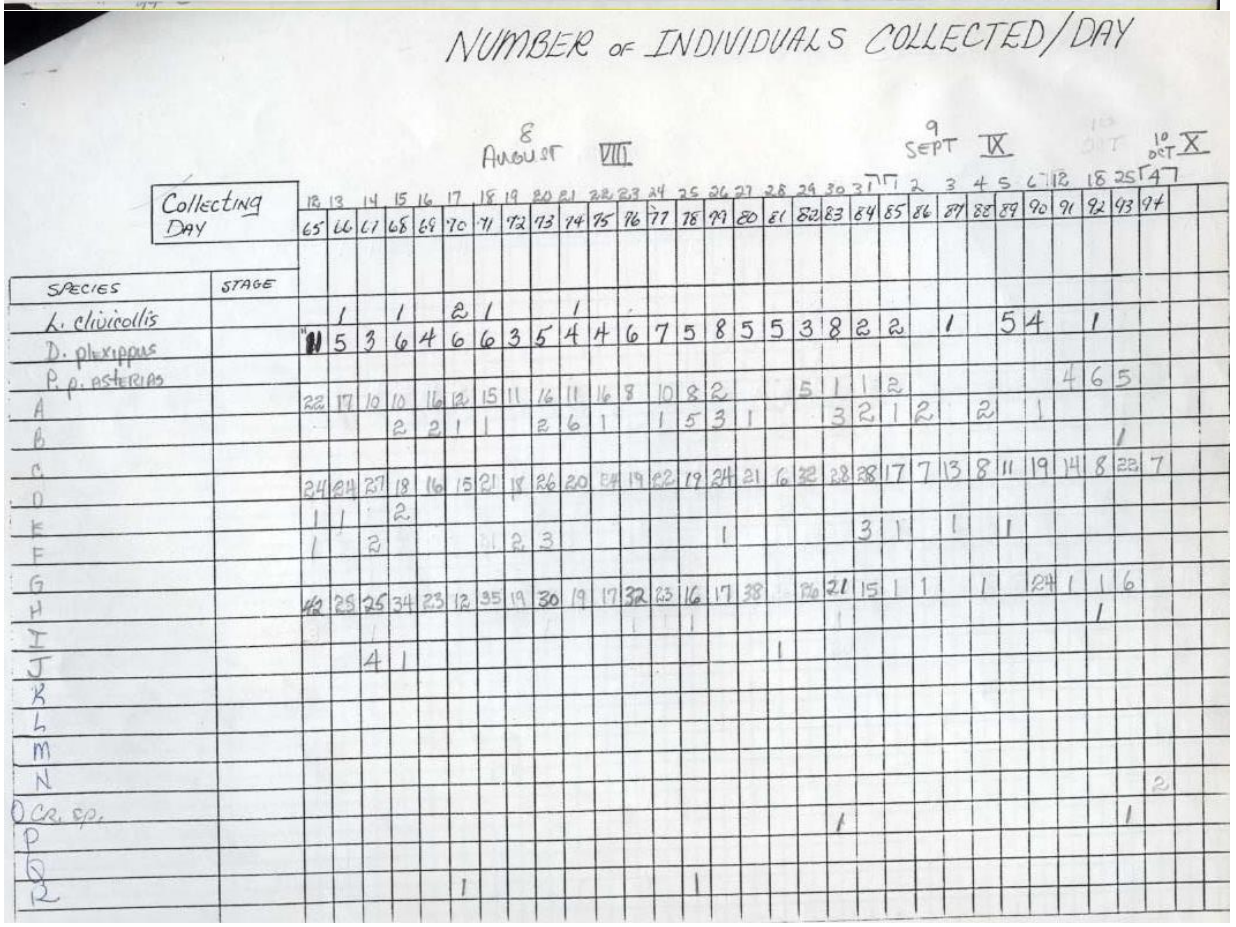
POORE



NUMBER of INDIVIDUALS COLLECTED/DAY

JULY VII — 8 AUGUST VIII

Collecting Day	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11
	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
SPECIES / STAGE																																
L. clivicollis			1	1			2	1				3	2		1								1	1	2		2	2	1	1	1
D. plexippus							1	1							2	1	4	2	2		1	5	6	6	3	3	2	2	4	2	12	10
P. p. ASTERIAS																																
A	31	58	64	28	79	78	68	20	25	19	9	37	32	16	17	16	34	6	27	14	7	13	13	19	11	12	1	3	11	4	5	15
B												6	1		8	1	2		4	1								5		3	
C																																
D	52	70	60	30	33	55	72	58	47	57	33	67	36	39	41	41	13	38	32	35	26	41	60	17	38	23	10	35	18	14	15	23
E			1						1					2		1	1			2	1	1			1				1			
F	4	5	5	3	5	2	6	7	5	5	1	9	6	8	4	6	6	1	4	1	3	5	5	1	1	2		3		1		1
G						1																										
H	8	38	50	14	46	61	27	45	48	39	50	52	33	36	29	29	16	25	47	27	28	24	43	43	29	25		54	21	33	12	30
I												1							1				1							3		
J																																
K												1	1																			
L																																
M																																
N																																
O					1	1																										
P																																
Q																																
R							1					3													1			1				



NUMBER of INDIVIDUALS COLLECTED/DAY

8 AUGUST VIII — 9 SEPT IX — 10 OCT X

Collecting Day	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12
	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94		
SPECIES / STAGE																																
L. clivicollis		1		1		2	1			1																						
D. plexippus	11	5	3	6	4	6	6	3	5	4	4	6	7	5	8	5	5	3	8	2	2		1		5	4		1				
P. p. ASTERIAS																																
A	22	17	10	10	16	12	15	11	16	11	16	8	10	8	2			5	1	1	2						4	6	5			
B				2	2	1	1		2	6	1		1	5	3	1			3	2	1	2		2		1			1			
C																																
D	24	24	27	18	16	15	21	18	26	20	24	19	22	19	24	21	6	32	28	38	17	7	13	8	11	19	14	8	23	7		
E	1	1		2											1					3	1		1		1							
F	1		2					2	3																							
G																																
H	42	25	25	34	23	12	35	19	30	19	17	32	23	16	17	38		20	21	15	1	1		1		24	1	1	6			
I																												1				
J			4	1													1															
K																																
L																																
M																																
N																														2		
O Cr. sp.																				1								1				
P																																
Q																																
R						1								1																		

SURVEY OF COLEOPTERA COLLECTED ON THE COMMON MILKWEED, *ASCLEPIAS SYRIACA*, AT ONE SITE IN OHIO

PATRICK J. DAILEY[1], ROBERT C. GRAVES[1], AND JOHN M. KINGSOLVER[2]

ABSTRACT

Coleoptera associated with the common milkweed, *Asclepias syriaca* L., were collected daily for 90 consecutive days. Of the 132 species listed, 18 were considered to be common (50 or more collected) while the majority of species were considered temporary visitors. The host specific milkweed beetle, *Tetraopes tetrophthalmus*, was the most common beetle collected.

INTRODUCTION

The most recent survey of insects associated with milkweeds is that of Weiss and Dickerson (1921). These authors observed 27 species of Coleoptera associated with *Asclepias syriaca* in various localities in New Jersey with no attempt at daily collecting and no information as to numbers of individuals present. This contrasts greatly with the 132 species of Coleoptera collected over a period of 90 days during the present study. Another attempt at observing insects associated with milkweed was that of Robertson (1887a, b, 1891), who was especially interested in the deposition of pollinia on insects and kept records of those species which frequented the flowers.

In this survey, we have attempted to develop a more complete list of Coleoptera collected from *A. syriaca* and to examine the daily abundance of these species during one entire growing season at a single site.

MATERIALS AND METHODS

The common milkweed, *Asclepias syriaca* L. (Asclepiadaceae), is a well-known species which is widely distributed in eastern North America. The plants are herbaceous perennials which reach heights of 90-150 cm. The pinkish to purplish flowers are borne on large umbels. The perennial roots produced numerous sprouts from late May to the latter part of June. Flowering began June 15 and continued into early September.

The study site, a railroad right-of-way located in Bowling Green, Wood County, Ohio, was chosen because it was neither sprayed nor mowed during the entire season. Within this area (18.29 x 99.4 m.) 337 milkweed plants were investigated. Most plants were randomly distributed throughout the study area, but there were several clumps of 5-15 plants.

Adult beetles were hand-picked or aspirated from each of these 337 plants daily for 90 consecutive days (June 9-September 6, 1976). In addition four late-season collections were made (Sept. 12, 18, 25, and Oct. 4). Collecting was done between noon and 6:00 PM. Specimens were preserved in 85% ethanol to be sorted, counted, and determined as time permitted.

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All insects were removed from the plants each day. Therefore those collected the following day were individuals which had emerged or moved onto the milkweed plants during the preceding 24-hour period (the only exceptions to this would be the first collection, June 9, and the four late-season collections).

Results and Discussion

The most abundant Coleoptera were two species of *Tetraopes*, both host-specific to milkweeds (Table 1, Figs. 1 and 2). Early emergence dates for *T. tetrophthalmus* adults have been recorded as follows: mid-June (Chemsak 1963), June 19 (Weiss and Dickerson 1921), June 6 and 17 (Williams 1941a), late June (Edgren and Calhoun 1958). Adults were last observed August 21 (Williams 1941a) and early September (Edgren and Calhoun 1958). Both *T. tetrophthalmus* and *T. femoratus* feed on milkweed roots as larvae, whereas adults eat the leaves and flowers (Chemsak 1963). We observed the adults to begin feeding at the tips of the apical leaves, and this type of damage was readily observable on many plants. The large numbers of *T. tetrophthalmus* are responsible for a reasonable amount of damage to *A. syriaca* plants, but such damage is not severe and is tolerated by the fast-growing plants. Although Chemsak (1963) reports that adult *T. tetrophthalmus* are not very active and do not appear to be strong fliers, the authors have observed adults in flight from plant to plant. Isolated plants, approximately 30 m or more from neighboring plants, were observed to have one or two adult *T. tetrophthalmus* present within an hour after removal of the beetle population. Exactly how far adults can migrate from neighboring milkweed plants is not known.

A second species, *Tetraopes femoratus*, occurred in much smaller numbers (fig. 2). The time of adult emergence closely parallels that recorded by other investigators. For example, Edgren and Calhoun (1958) found *T. femoratus* from late July to early September but in very low density. Similarly, Williams (1941b) first observed adults on July 23 and recorded a total of 38 individuals during the summer. *T. femoratus* is a predominantly western species, and this area is at or near its easternmost limit (Chemsak 1963) which may also help to explain its scarcity.

The chrysomelid, *Labidomera clivicollis*, which feeds on milkweed, was not common. These beetles and their larvae drop to the ground when disturbed and are difficult to locate in the undergrowth. Wilcox (1954) stated that this species was common on swamp milkweed (*A. incarnata* L.). We collected them on immature or abnormal *A. syriaca* plants occurring in stands of 20-30 individuals which reached heights generally less than 60 cm. These plants had small, narrow, apple-green leaves which were often wrinkled. None of these plants flowered. *Collops* were also found on these plants.

The majority of Coccinellidae were collected frequently on the dorsal and ventral surfaces of the leaves. Often, in older plants that had been extensively damaged by aphids, adults were collected in association with aphids, usually in leaves that had discolored and/or folded over on themselves (*Adalia bipunctata*). Larvae were observed but were not collected; they were allowed to develop into adults, which could be determined to species. Adults of *Brachyacantha ursina* were common in June and early

July and were often observed mating on the dorsal surface of the leaves. Coccinellid populations were relatively low after August 1.

Among other Coleoptera, most of the cantharids *Chauliognathus marginatus* and *Podabrus modestus* were collected while mating and constantly moving over the leaf surfaces. Some beetles were associated chiefly with the flowers, especially *Trogoderma glabrum, Diabrotica undecimpunctata, Conotelus obscurus, Megacerus discoidus, Fidia viticida,* and *Madarellus undulatus*. Species found in association with opened seed pods included *Glischrochilus quadrisignatus, Otiorhynchus ovatus, Calomycterus setarius, Sitona hispidula,* and *S. scissifrons*. The curculionids *Rhyssomatus lineaticollis* and *Gymnetron tetrum* were most common early in the season (June); these species fed on the plant stems. Predatory beetles such as Carabidae were seeking prey on the plants; for example, *Lebia viridis* adults will feed on the eggs, larvae, and pupae of flea beetles, *Altica* spp. (Isely 1920).

Although a majority of the species collected on *A. syriaca* were not abundant and probably represent species which are temporary visitors, those species that were numerous (more than 50 specimens collected) have either definite host-plant relationships (*T. tetrophthalmus, T. femoratus, L. clivicollis, R. lineaticollis,* and *G. tetrum),* are predators on other insects feeding on milkweed (*L. viridis, S. iowensis, S. terminatus, C. undecimpunctata, C. transversoguttata, H. convergens, B. ursina, A. bipunctata* and *C. fusciabris)* or are attracted to the milkweed flowers (*M. undulatus, T. glabrum, D. undecimpunctata, C. obscurus, M. discoidus* and *F. viticida).*

Table 1. Coleoptera collected on *Asclepias syriaca* in Bowling Green, Ohio.

Family	Species	Total Individuals Collected	Dates Collected
CARABIDAE	*Lebia grandis* Hentz	1	10-VI
	Lebia viridis Say	11	13-VI to 30-VII
	Calleida punctata LeConte	5	20-VI to 27-VIII
STAPHYLINIDAE	*Stenus* sp.	1	13-VI
	Philonthus sp.	2	23-VII to 18-IX
	Aleochara sp.	4	11-VI to 2-VII
	Aleocharinae: species A	4	19-VI to 23-VII
	species B	1	23-VIII
	species C	1	28-VI
SCARABAEIDAE	*Trichiotinus piger* (Fabricius)	2	28-VI to 13-VII
BUPRESTIDAE	*Agrilus otiosus* (Gyllenhal)	2	26-VI to 5-VII
ELATERIDAE	*Aeolus dorsalis* (Say)	2	19-VI to 8-VII
	Melanotus communis (Gyllenhal)	2	12-VI to 20-VII
LAMPYRIDAE	*Photinus indictus* (LeConte)	6	13-VI to 4-VII
	Photinus pyralis (Linné)	54	23-VI to 2-VIII
	Photuris sp.	2	26-VI to 29-VI
	Pyropyga decipiens (Harris)	56	19-VI to 31-VII
CANTHARIDAE	*Chauliognathus pennsylvanicus* DeGeer	6	8-VIII to 26-VIII
	Chauliognathus marginatus Fabricius	29	20-VI to 11-VIII*
	Podabrus modestus (Say)	35	10-VI to 4-VII*
	Podabrus sp. A	1	11-VI
	sp. B	1	28-VI
	Silis latiloba Blatchley	1	27-VII
	Silis sp.	4	31-VII to 8-VIII
	Trypherus latipennis (Germar)	2	16-VI to 1-VII
	Cantharus sp.	3	18-VI to 12-VII

DERMESTIDAE	*Trogoderma glabrum* (Herbst)	122	23-VI to 18-VIII
	Attagenus sp.	1	18-VI
	Anthrenus sp.	4	14-VI to 2-VII
	Megatoma sp.	1	13-VII
CLERIDAE	*Cymatodera undulata* (Say)	1	29-VII
	Isohydnocera tabida (LeConte)	1	17-VI
	Isohydnocera curtipennis (Newman)	10	14-VI to 1-VII*
	Enoclerus sp.	2	19-VI to 23-VI
MELYRIDAE	*Collops* sp.	3	9-VI to 15-VII
NITIDULIDAE	*Glischrochilus quadrisignatus* (Say)	61	2-VII to 4-X
	Conotelus obscurus Erichson	23	18-VI to 12-VII
	Stelidota geminata (Say)	1	26-VIII
	Brachypterolus pulicarius (Linné)	1	22-VI
CRYPTOPHAGIDAE	*Antherophagus ochraceus* Melsheimer	5	28-VI to 31-VII
LANGURIIDAE	*Acropteroxys gracilis* (Newman)	5	11-VI to 11-VII
PHALACRIDAE	*Phalacrus* sp.	18	14-VI to 30-VIII
	Stilbus sp.	5	3-VII to 15-VII
CORYLOPHIDAE	Undetermined sp.	7	17-VI to 7-VIII
COCCINELLIDAE	*Scymnus (Pullus) iowensis* Casey	277	13-VI to 4-X*
	Scymnus (Pullus) socer LeConte	1	15-VII
	Scymnus (Diomus) terminatus (Say)	73	21-VI to 29-VIII*
	Coccinella undecimpunctata (Linné)	284	8-VII to 4-X*
	Coccinella transversoguttata Mulsant	347	17-VI to 4-X*
	Coccinella novemnotata Herbst	8	18-VI to 10-VIII
	Hyperaspis undulata (Say)	15	11-VI to 25-VIII
	Hyperaspis binotata (Say)	1	23-VI
	Hippodamia parenthesis (Say)	28	6-VII to 13-VIII*
	Hippodamia tridecimpunctata tibialis (Say)	10	26-VI to 23-VIII
	Hippodamia convergens Guérin	241	18-VI to 4-X*
	Brachyacantha ursina (Fabricius)	323	10-VI to 10-VIII*
	Cycloneda sanguinea (Linné)	37	19-VI to 31-VIII*
	Adalia bipunctata (Linné)	323	14-VI to 1-IX*
	Coleomegilla fuscilabris Mulsant	74	11-VI to 6-IV*
	Epilachna varivestis Mulsant.	1	15-VII
CLIDAE	*Hadraule blaisdelli* (Casey)	2	20-VII
MORDELLIDAE	*Mordella marginata* (Melsheimer)	4	15-VI to 26-VIII
	Mordellistena semiusta LeConte	1	26-VII
	Mordellistena marginalis (Say)	1	31-VIII
	Mordellistena pustulata Melsheimer	2	13-VI to 15-VI
	Pentaria trifasciata (Melsheimer)	2	27-VI to 12-VIII
MELOIDAE	*Epicauta pestifera* Werner	1	18-VI
	Epicauta pennsylvanica (DeGeer)	5	1-VIII to 26-VIII
ANTHICIDAE	*Anthicus ephippium* LaFérte	1	12-VII
	Ischyropalpus nitidulus LeConte	1	8-VII
CERAMBYCIDAE	*Tetraopes tetrophthalmus* (Forster)	2,682	10-VI to 20-VIII*
	Tetraopes femoratus LeConte	64	17-VI to 12-IX*
	Megacyllene robiniae (Forster)	2	18-IX
	Dectes spinosus (Say)	3	22-VII to 26-VII
	Typocerus velutinus (Olivier)	1	28-VI
	Hippopsis lemniscata (Fabricius)	1	5-VII
BRUCHIDAE	*Megacerus discoidus* (Say)	6	28-VI to 1-VIII
	Althaeus n. sp.	1	3-VIII

CHRYSOMELIDAE	*Crioceris asparagi* (Linné)	20	27-VI to 22-VIII*
	Lema trilineata Olivier	3	24-VII to 14-VIII
	Fidia viticida Walsh	3	24-VI to 19-VII
	Paria thoracica (Melsheimer)	2	22-VI to 6-VII
	Chrysochus auratus (Fabricius)	12	2-VII to 14-VIII
	Zygogramma suturalis (Fabricius)	1	26-VII
	Labidomera clivicollis (Kirby)	24	11-VI to 18-IX
	Diabrotica undecimpunctata howardi Barber	20	19-VI to 6-IX
	Diabrotica longicornis (Say)	1	17-VII
	Trirhabda virgata LeConte	3	4-VII to 25-VII
	Crepidodera nana (Say)	3	19-VI to 23-VIII
	Crepidodera sp.	1	19-VI
	Psylliodes convexior LeConte	2	15-VI to 19-VI
	Psylliodes punctulata Melsheimer	2	19-VI to 7-VII
	Phyllotreta zimmermanni (Crotch)	14	11-VI to 25-VII*
	Phyllotreta cruciferae (Goeze)	2	13-VI to 17-VI
	Blepharida rhois (Forster)	1	18-IX
	Longitarsus insolens Horn	4	14-VII to 10-VIII
	Disonycha xanthomelas (Dalman)	18	13-VII to 17-VIII
	Chaetocnema confinis Crotch	3	15-VI to 16-VI
	Systena frontalis (Fabricius)	1	5-VIII
	Altica chalybea Illiger	1	25-VI
	Altica litigata Fall	1	23-VI
	Epitrix cucumeris (Harris)	1	15-VI
	Epitrix fascula Crotch	2	11-VI to 18-VI
	Anoplitis inaequalis (Weber)	3	5-VII to 3-VIII
	Chalepus dorsalis Thunberg	1	13-VI
	Deloyala guttata Olivier	93	9-VI to 4-X*
	Metriona bicolor (Fabricius)	57	10-VI to 25-IX*
	Phagiometriona clavata (Fabricius)	5	26-VI to 13-VIII
CURCULIONIDAE	*Otiorhynchus ovatus* (Linné)	18	7-VII to 30-VIII
	Calomycterus setarius Roelofs	2	29-VI to 13-VII
	Sitona flavescens (Marsham)	1	27-VI
	Sitona scissifrons (Say)	3	13-VI to 29-VII
	Sitona hispidula (Fabricius)	7	9-VI to 29-VIII
	Hypera postica (Gyllenhal)	1	14-VIII
	Hypera punctata (Fabricius)	1	20-VIII
	Smicronyx flavicans (LeConte)	1	23-VIII
	Smicronyx corniculatus (Fabricius)	1	8-VIII
	Tychius picirostris (Fabricius)	1	18-VII
	Curculio caryae (Horn)	1	6-VIII
	Gymnetron antirrhini Paykull	3	13-VII to 4-VIII
	Gymnetron tetrum (Fabricius)	135	9-VI to 13-VIII*
	Baris striata Say	1	5-VII
	Madarellus undulatus (Say)	89	14-VI to 30-VII*
	Centrinaspis sp.	4	3-VII to 4-VIII
	Cylindrocopturus nr. *quercus* (Say)	1	27-VI
	Conotrachelus anaglypticus Say	1	30-VII
	Conotrachelus nenuphar (Herbst)	1	2-VIII
	Rhyssomatus lineaticollis (Say)	46	9-VI to 25-VIII*
	Tyloderma foveolata Say	3	7-VII
	Sphenophorus parvulus Gyllenhal	1	27-VI
	Sphenophorus zeae (Walsh)	1	13-VI
SCOLYTIDAE	*Chramesus hicoriae* LeConte	1	29-VI

*Collecting data represented graphically in Fig. 1 and 2.

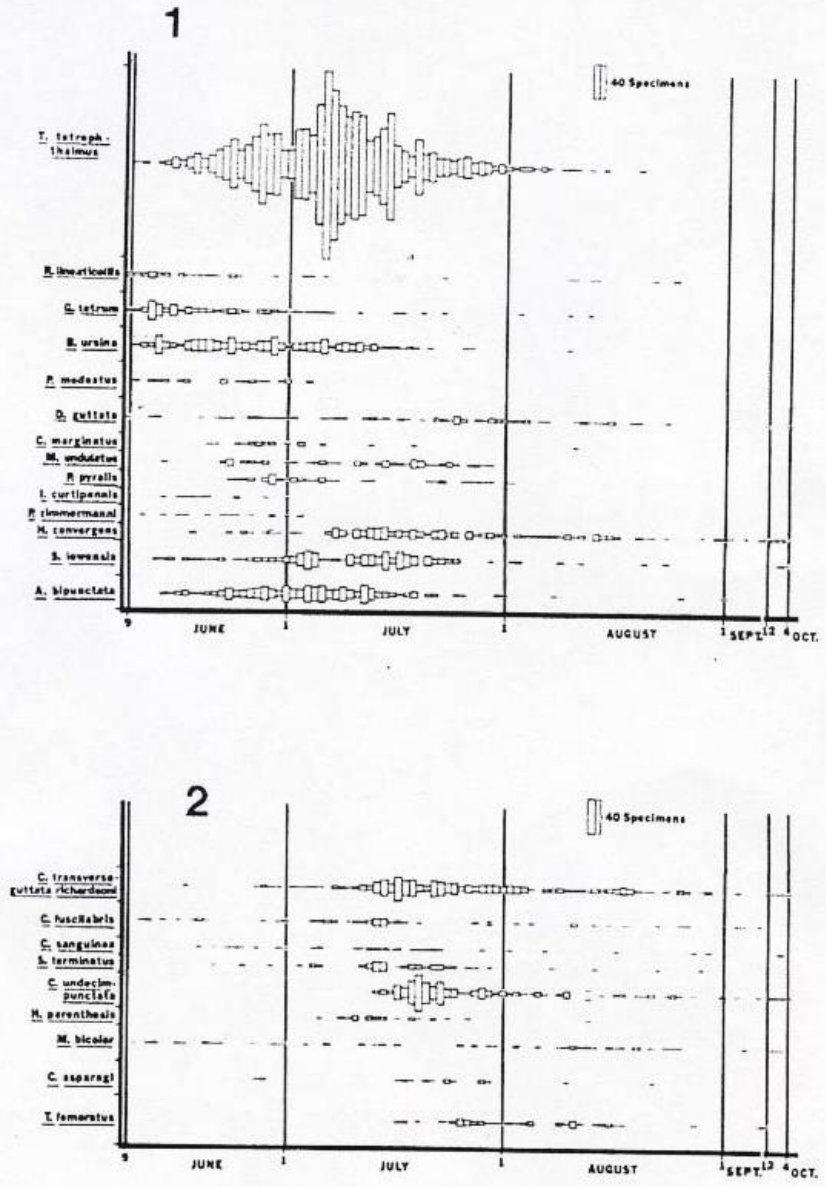

Fig. 1 & 2. Graphs illustrating the numbers of individuals collected during the collecting period.

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Coleoptera

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LIVE INSECTS PROVE BIG U.S. HIT[1]

Today, live insects are the main attractions in scientific activities from junior high exhibits to complex laboratory experiments. The demand for these creatures in their natural state has prompted "bug" enthusiasts to extend their searches across state lines, and even into foreign countries. What these collectors carry, mail, or have shipped home also happens to be of concern to the U. S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). This agency has the job of keeping hundreds of harmful insects out of this country.

To do this, APHIS not only requires special import permits for incoming bugs, but carefully screens them upon arrival at any of about 80 U.S. ports of entry. Intrastate movement of live insects is also restricted by the agency.

[1]Adopted from USDA News Release 2453-76.

SURVEY OF HEMIPTERA COLLECTED ON COMMON MILKWEED, *ASCLEPIAS SYRIACA*, AT ONE SITE IN OHIO.[1]

Patrick J. Dailey[2], Robert C. Graves[2], Jon L. Herring[3]

ABSTRACT: Hemiptera frequenting 337 plants of common milkweed, *Asclepias syriaca* were surveyed by daily collecting for a period of 90 consecutive days. Forty-six species are listed, some of which are probably new Ohio records. Five species were considered to be significantly abundant (more than 50 individuals collected): *Lygaeus kalmii*, *Lygus lineolaris*, *Plagiognathus politus*, *Adelphocoris lineolatus*, and *Cosmopepla bimaculata*. Only *L. kalmii* (1,173 individuals collected) and *Oncopeltus fasciatus*, which was relatively scarce, are host specific.

The common milkweed, *Asclepias syriaca* L. (Asclepiadaceae), is a herbaceous perennial which is widely distributed in eastern United States, and is frequent along roads and in fields. It occurs in large stands or as solitary plants. *A. syriaca* is unusual in that it can reproduce vegetatively and as a result is a highly successful colonist (Wilbur, 1976). The pinkish flowers are borne on large umbels, and the numerous, wind-borne seeds develop in large pods.

Certain species of milkweed-specific Hemiptera such as *Lygaeus kalmii* and *Oncopeltus fasciatus* are readily maintained in the laboratory and have been extensively studied (e.g., Caldwell 1974, Dingle 1968, Feir 1974, Kelton 1975, Ralph 1977, Rothschild 1973).

The only major previous attempt to survey milkweed insects in the United States was that of Weiss and Dickerson (1921). These authors listed 8 species of Hemiptera collected from *A. syriaca* in scattered localities in New Jersey, with no attempt at daily collecting, and no information on numbers of individuals present. The present study lists 45 species of Hemiptera from a single site in Bowling Green, Ohio with numerical data obtained by daily collecting during a 90-day period (Table 1). The daily abundance of 4 common species is shown in Figure 1.

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MATERIALS AND METHODS

The study site, a railroad right-of-way located in Bowling Green, Wood County, Ohio, was chosen because it was neither sprayed nor mowed during the entire season. Within this area (18.29 x 99.4 m.) 337 milkweed plants were investigated. Most plants were randomly distributed throughout the study area, but there were several clumps of 5-15 plants. Flowering began June 15 and continued into early September.

Hemiptera were hand-picked or aspirated from each of these 337 plants daily for 90 consecutive days (June 9-September 6, 1976). In addition four late-season collections were made (Sept. 12, 18, 25, and Oct. 4). Collecting was done between noon and 6:00 PM. Specimens were preserved in 85% ethanol to be sorted, counted and determined as time permitted.

All insects were removed from the plants each day. Therefore those collected the following day were individuals which had moved onto the milkweed plants during the preceding 24-hour period (the only exceptions to this would be the first collection, June 9, and the four late-season collections).

RESULTS AND DISCUSSION

The 45 species of Hemiptera collected on *A. syriaca* are listed in Table 1. Five of these species were each represented by 50 or more individuals and are considered "abundant" (*Lygus lineolaris, Plagiognathus politus, Adelphocoris lineolatus, Lygaeus kalmii*, and *Cosmopepla bimaculata*). All of these species were present throughout the collecting period except for *P. politus* which was not collected from July 17 to August 12.

Adults of *Lygaeus kalmii*, the most abundant species of Hemiptera, overwinter, and emerge from hibernacula near milkweed patches in the spring (Caldwell 1974). Nymphs and adults feed on the juices of green milkweed plants during the growing season (Simanton and Andre 1936). Nymphs

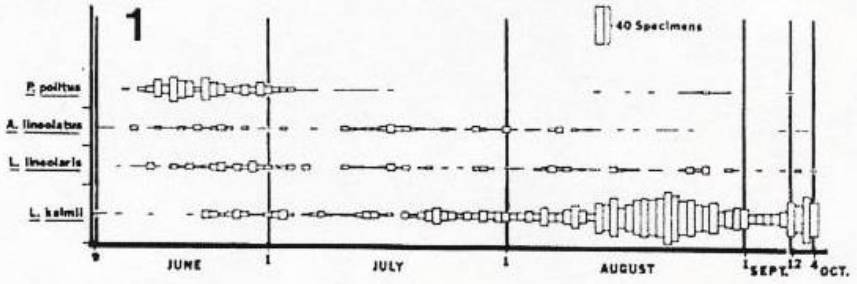

Figure 1. Graph illustrating the number of individuals of the most common species of Hemiptera collected each day from *Asclepias syriaca* plants.

were collected early in the season, most commonly at the base of plants, and seldom near the apex. If disturbed, they quickly dispersed into the gravel bed along the railroad tracks. Although 152 nymphs of various stadia were collected throughout the entire period, they represented only 13% of the total, which would indicate that a large percentage of nymphs were not on the *A. syriaca* plants when collections were made. The population in this area is the eastern subspecies, *L. k. angustomarginatus* Parshley (Slater and Knop 1969).

Another host-specific species, *Oncopeltus fasciatus* was rare at the collecting site in 1976, although in the summer of 1977 an aggregation of nymphs was observed at the study site on 2 milkweed plants (10-20 nymphs per plant). Aggregations of adults were seen in October 1978 at New Rochester, and at Portage, both in Wood County, Ohio.

The tarnished plant bug, *Lygus lineolaris*, is the most common mirid in the eastern United States, frequents many plant species (Knight 1941), and is one of the most widely distributed species in North America where it is found in all agricultural regions at both low and relatively high altitudes (Kelton 1975). Adults overwinter beneath leaves and in mullein rosettes (Watson 1928). Individuals of *L. lineolaris* were most commonly observed in the folded apical leaves where they were apparently feeding.

Adelphocoris lineolatus, the alfalfa plant bug, was also common, frequently on the apical portion of the plants, from which they take flight quickly when disturbed. According to Knight (1941), this species seems to prefer legumes, but may also feed on flower buds and newly formed seeds.

Plagiognathus politus feeds on various weeds, especially ragweed (*Ambrosia* spp.) and goldenrod (*Solidago* spp.), and has been successfully reared on apple (*Pyrus malus*), where the nymphs fed on tender foliage (Watson 1928, Knight 1941).

The last of the "abundant" hemipteran species, *Cosmopepla bimaculata*, is a general feeder and has been recorded from all geographical areas in Ohio between April 27 and October 19 (Furth 1974). Detailed host and biological data for this species are given in Esselbaugh (1948).

Many of the other species listed in Table 1 are considered to be only temporary visitors to *Asclepias syriaca*, and in some instances, these are associated with other plant species. *Podisus maculiventris*, *Phymata fasciata*, *Sinea diadema*, and *Nabis* spp. are all predaceous on other insects and their occurrence on milkweed is incidental to their search for prey. Individuals of *Phymata fasciata* often lie in wait for prey in the flower heads and have been observed to capture flies and small Hymenoptera which visit the flowers.

Of the 45 species collected, 19 were mirids, 7 were lygaeids, and 4 were pentatomids. These three families included all of the most common species; no species in any other families were represented by more than 15 individuals during the entire collecting period.

Table 1. Hemiptera collected on *Asclepias syriaca* in Bowling Green, Ohio

	Total Individuals Collected	Dates Collected
ANTHOCORIDAE 1, 1		
Orius insidiosus (Say)	11	20-VI to 23-VIII
MIRIDAE 16, 19		
Neurocolpus nubilus (Say)	14	17-VI to 10-VIII
Leptopterna dolobrata (Linné)	2	12-VI to 22-VI
Lygus lineolaris (Palisot de Beauvois)	204	12-VI to 4-X*
Reuteroscopus ornatus (Reuter)	30	19-VI to 6-IX
Trigonotylus sp.	2	10-VIII to 14-VIII
Ilnacora sp.	2	26-VI
Criocoris saliens (Reuter)	1	13-VI
Plagiognathus albatus Van Duzee	1	16-VI
Plagiognathus politus Uhler	248	13-VI to 12-IX*
Plagiognathus sp.	1	14-VI
Hyaliodes vitripennis (Say)	1	4-VIII
Chlamydatus sp.	2	6-VII to 12-VII
Ceratocapsus sp.	1	2-VIII
Amblytylus nasutus (Kirschbaum)	12	10-VI to 17-VI
Capsus ater (Linné)	1	18-VI
Taedia scrupeus (Say)	1	10-VIII
Poecilocapsus lineatus (Fabricius)	2	10-VI to 24-VI
Adelphocoris rapidus (Say)	1	28-VII
Adelphocoris lineolatus (Goeze)	137	10-VI to 25-IX*
NABIDAE 1, 3		
Nabis subcoleoptratus (Kirby)	6	9-VI to 3-VII
Nabis roseipennis Reuter	1	23-VI
Nabis americoferus Carayon	8	23-VI to 10-VIII
REDUVIIDAE 1, 1		
Sinea diadema (Fabricius)	17	11-VI to 18-IX
PHYMATIDAE 1, 1		
Phymata fasciata (Gray)	11	19-VI to 25-IX
PIESMATIDAE 1, 1		
Piesma cinereum (Say)	2	13-VI to 14-VI
LYGAEIDAE 7, 7		
Lygaeus kalmii Stål	1,173	9-VI to 4-X*
Oncopeltus fasciatus (Dallas)	4	15-VII to 27-VIII
Phlegyas abbreviatus (Uhler)	10	25-VI to 27-VII
Ortholomus scolopax (Say)	6	9-VIII to 2-IX
Pachybrachius bilobatus (Say)	6	9-VIII to 6-IX

Nysius ericae (Schilling)	1	2-VII
Blissus leucopterus (Say)	1	25-VII
BERYTIDAE 2,2		
Jalysus spinosus (Say)	4	25-VII to 18-IX
Berytinus minor (Herrich-Schäffer)	1	13-VII
RHOPALIDAE 3,3		
Leptocoris trivittatus (Say)	9	18-VII to 4-X
Stictopleurus crassicornis (Linné)	1	18-IX
Harmostes reflexulus (Say)	1	4-VIII
ALYDIDAE 1,1		
Alydus eurinus (Say)	2	20-VI to 18-IX
PENTATOMIDAE 3,4		
Cosmopepla bimaculata (Thomas)	79	17-VI to 4-X
Euschistus variolarius (Palisot de Beauvois)	11	26-VI to 4-X
Euschistus tristigmus (Say)	1	24-VII
Podisus maculiventris (Say)	11	15-VI to 18-IX
Unidentified nymphs	19	20-VI to 12-IX
CYDNIDAE 1,1		
Sehirus cinctus (Palisot de Beauvois)	15	22-VI to 27-VII
TINGIDAE 1,1		
Corythucha marmorata (Uhler)	2	17-VI to 18-VI

*Collecting data represented graphically in Fig. 1.

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ADDENDUM

The Coleoptera portion of this survey is scheduled for publication in December, 1978 as follows:

Dailey, P.J., R.C. Graves and J.M. Kingsolver. 1978. Survey of Coleoptera collected on the common milkweed, *Asclepias syriaca* at one site in Ohio. Coleopt. Bull. 32 (in press).