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INSECT SPECIES ON VEGETATION OF THE
WHITE OAK LAKE BED, OAK RIDGE, TENNESSEE

H. F. Howden
D. A. Crossley, Jr.

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HEALTH PHYSICS DIVISION

INSECT SPECIES ON VEGETATION OF THE WHITE OAK LAKE
BED, OAK RIDGE, TENNESSEE

Henry F. Howden*
D. A. Crossley, Jr.

DATE ISSUED

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OAK RIDGE NATIONAL LABORATORY
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U.S. ATOMIC ENERGY COMMISSION

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INSECT SPECIES ON VEGETATION OF THE WHITE OAK LAKE

BED, OAK RIDGE, TENNESSEE

Abstract

Studies on the insects inhabiting the vegetation on White Oak Lake bed, Oak Ridge, Tennessee, revealed 401 species present during 1956 and 1957. Most numerous were members of the insect Orders Hymenoptera, Diptera, and Coleoptera. In the summer of 1956, the first summer following draining of the lake, there were relatively fewer species of insects represented by large numbers of individuals. In 1957, there were relatively more species of insects but fewer individuals were present. By the end of the summer of 1957, only two years after the lake was drained, the vegetation supported a rich and varied insect fauna.

Introduction

Ecological studies in areas contaminated with radioactive waste products are yielding information on basic biological components and processes, as well as information on the movement of radioactive materials through ecological systems. White Oak Lake bed, Oak Ridge, Tennessee, is such a contaminated area, since the lake received low-level radioactive wastes from the Oak Ridge National Laboratory for 12 years prior to draining in 1955. Studies on the vegetation (1), insects (2), birds (3), and mammals (4) of White Oak Lake bed have been reported.

The present report deals with the species of insects which invaded the vegetation on White Oak Lake bed. During the summers of 1956 and 1957, particular attention was given to a survey of these insects, with the objectives of finding how many species were present and which ones would

develop large populations. This information is valuable in the interpretation of data on the cycling of radioactive fission products from soil to plant to insect and back to soil. Such an evaluation has been made in a further report (2). The bulk of the present report is an appendix, which lists the species collected, the plant association on which these species were found, and their month of occurrence during the summer. These data are a necessary basis for future, more refined work on the population sizes of the insect species and possible effects of ionizing radiation on the insect populations.

Materials and Methods

Sampling of the insects was performed with a sweep net. A series of 10 rapid consecutive sweeps was taken in the top part of the vegetation being sampled. A net with a 4-ft handle and a 14-in. nylon marquisette collecting bag was used. This sample was judged by comparison with other methods to approximate the number of insects found on one square meter of vegetation.

Only the dominant vegetation types were sampled: smartweed (Polygonum spp.), sedge-rush (Carex spp., Juncus spp.), and willow (Salix nigra Marsh). The coverage of these vegetation types is discussed by Crossley and Howden (2). For each of the vegetation types, two replicate areas were sampled: one near White Oak Creek (designated "center") and one closer to the former shoreline (designated "inshore"). Samples were taken in each of the six collecting areas on Mondays for 14 consecutive weeks.

The samples were sorted to major insect groups in the laboratory, counted, and then specimens of each species were sent to various specialists

for identification. Upon return of the identified material, the more easily recognized and common species were counted. It was not possible to attempt identification of every individual in the sample.

Acknowledgements

We are grateful to Doctor S. I. Auerbach and Mr. P. B. Dunaway, Oak Ridge National Laboratory, for aid and advice both in field and laboratory. Mrs. Jane H. Marks and Mr. Madison E. Pryor, both formerly of Oak Ridge National Laboratory, assisted in the collection and preparation of the samples of insects.

The following specialists made identifications of the insect species:

ORTHOPTERA: T. H. Hubbell, Univ. of Michigan. HOMOPTERA: J. P. Kramer, L. M. Russell, K. Sommerman, U. S. National Museum; and D. A. Young, North Carolina State College. HEMIPTERA: R. I. Sailer, U.S.N.M.

ZYGOPTERA: S. Parfin, U.S.N.M. DIPTERA: C. W. Sabrosky, Alan Stone, R. H. Foote, W. W. Wirth, U.S.N.M. HYMENOPTERA: B. D. Burks, K. V. Krombein, C. F. W. Muesebeck, M. R. Smith, L. M. Walkley, U.S.N.M.; T. B. Mitchell, N. C. State College; and H. K. Townes, Univ. of Michigan.

LEPIDOPTERA: J. F. Gates Clarke, E. L. Todd, U.S.N.M. COLEOPTERA: H. F. Howden, Entomology Research Institute, Ottawa. Checking the manuscript with particular reference to the scientific names, was done by the members of the Systematic Unit, Entomology Research Institute, Department of Agriculture, Ottawa, Canada.

Results and Discussion

A total of 401 species of insects were found on the lake bed vegetation in 1956 and 1957. These species are listed in the appendix, and for

1957 the month of collection in each of the six vegetation areas is included. Only the presence or absence of each species in the 1956 samples is indicated. A detailed comparison of the population sizes which developed in the various vegetation types is given elsewhere (2).

The wasps and bees, belonging to the Order Hymenoptera, were the most numerous insects, numbering 108 species. Chalcidoidea, parasites or gall-wasps, were the most common hymenopterans and were found throughout the summer in each of the vegetation areas. Of the other wasps, the braconids were found in most of the collections. Bees were collected in all of the vegetation types but were particularly numerous in the smartweed areas during the blossoming period. Most of the species of Hymenoptera were represented by only a few individuals.

The Diptera were the second most numerous of the insect orders, with 102 species occurring in the collections. Chloropid flies were the most ubiquitous dipterans, occurring throughout the summer in all of the vegetation areas. Midges (Family Tenebrionidae) were also commonly collected. Like the hymenopterans, most of the dipteran species were represented by few individuals.

The Order Coleoptera was the third most numerous, comprising 75 species. The majority of species listed are plant feeders, the predatory groups, such as the Carabidae, being poorly represented. This is perhaps due to the fact that many of the predatory beetles remained on or near the ground and were not collected by sweeping. As for the plant feeders, only a relatively few species could be said to be numerous. Most of these common species were taken on willow in 1957 and are not represented in 1956, since willow was not sampled. Among the willow feeders in order of descending abundance were

Chalcoides fulvicornis (Fab.), Agrilus politus (Say), two species of Orchestes, and Cryptocephalus leucomelas Suffr. On smartweed, Systema frontalis (Fab.) was abundant.

The 53 species of Homoptera were mostly leafhoppers. No one leafhopper species was predominant. Some of the species were restricted to a particular vegetation type, but most occurred in two or three vegetation types, perhaps merely "seeming to" due to "perching" records.

The Orthoptera, 16 species, contained two widespread and abundant ones: Conocephalus spp. in all of the areas and Melanoplus differentialis (Thos.) in all but willow areas. The sampling method may have been less adequate for these grasshoppers than for the smaller, less mobile forms.

For the insects as a whole, as well as for most of the insect orders, there were relatively fewer species represented by more individuals in 1956, and relatively more species represented by fewer individuals in 1957. A shift of this sort is to be expected during the process of ecological succession and, in the case of the insects, may be in part a function of the increasingly diverse flora of the lake bed. The rapidity with which the various insect species became established on the lake bed may not be unusual but is worthy of comment. By the second summer (1957) the diversity of insects on the lake bed vegetation was similar to that which might be found in any area of mixed forbs. Evidently the vagilities of the insect species are such that the presence of suitable host plants almost assures the presence of the associated insects, as long as the area is only moderately distant from other areas supporting the host plants and insects.

Bibliography

- (1) S. I. Auerbach and D. A. Crossley, Jr., "Strontium-90 and Cesium-137 Uptake by Vegetation under Natural Conditions", Paper 401, Proc. 2nd Intern. Conf. Peaceful Uses of Atomic Energy (1958).
- (2) D. A. Crossley, Jr. and H. F. Howden, "Insect-Vegetation Relationships in an Area Contaminated by Radioactive Wastes", Ecology (In press).
- (3) W. K. Willard, "Avian Uptake of Fission Products from an Area Contaminated by Low-Level Atomic Wastes", Science 132, 148-50.
- (4) P. B. Dunaway, HPD Ann. Prog. Rep. July 31, 1959, ORNL-2806, pp. 33-40.

APPENDIX

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| ORDER ORTHOPTERA | | | | | | | |
| FAMILY TETRIGIDAE | | | | | | | |
| <u>Tettigidea lateralis</u> (Say) | | July, Aug | | | | | Yes |
| <u>Paratettix cucullatus</u> (Burm.) | | | | | | | Yes |
| FAMILY TETTIGONIIDAE | | | | | | | |
| <u>Orchelimum agile</u> (DeG.) | | Aug | July | July | | | Yes |
| <u>Conocephalus</u> spp. (<u>brevipennis</u> and <u>fasciatus</u>) | May thru Sept | May thru Sept | June thru Aug | June thru Aug | May thru July | May thru Aug | Yes |
| <u>Microcentrum rhombifolium</u> (Sauss.) | | | Aug | | | | No |
| <u>Scudderia</u> sp. | May thru July | May, June | July | June, July | June, July | June | No |
| FAMILY ACRIDIDAE | | | | | | | |
| <u>Melanoplus differentialis</u> (Thos.) | June thru Aug | June thru Aug | June thru Aug | June, July | May thru July | | No |
| <u>Melanoplus femur-rubrum</u> (DeG.) | Aug | | | | | | Yes |
| <u>Melanoplus bilituratus</u> <u>vulturinus</u> G. and B. | | | Aug | | | | Yes |
| <u>Chortophaga viridifasciata</u> (DeG.) | | | | | | | Yes |
| <u>Metalepta brevicornis</u> (Joh.) | | | | | | | |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Syrbula admirabilis</u> Uhl. | | | | | | | Yes |
| FAMILY MANTIDAE | | | | | | | |
| <u>Stagmomantis carolina</u> (Joh.) | | | | | June | | Yes |
| FAMILY GRYLLIDAE | | | | | | | |
| <u>Oecanthus quadripunctatus</u> (Beut.) | | | June, Aug | June, July | May, July Aug | | Yes |
| <u>Anaxipha exigua</u> (Say) | | | | | | | Yes |
| ORDER HEMIPTERA | | | | | | | |
| FAMILY MIRIDAE | | | | | | | |
| <u>Polymerus venaticus</u> (Uhl.) | | | May | | | | No |
| <u>Poecilopsallus lineatus</u> (F.) | | | | | June | | No |
| <u>Liocoris lineolaris</u> (Beauv.) | May thru Aug | May thru Sept | June thru Aug | June thru Aug | June, Aug | June, Aug | Yes |
| <u>Ceratopsallus pumilus</u> (Uhl.) | | | | July | June, July | June thru Aug | No |
| <u>Orthotylus viridis</u> Van D. | | | | | June | June | No |
| <u>Lepidopsallus rubidus</u> (Uhl.) | | | | | June | | No |
| <u>Phytocoris conspersipes</u> Reut. | June | | | | | | No |
| <u>Prepops rubrovittatus</u> (Stål) | July, Aug | | | | | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| FAMILY ANTHOCORIDAE | | | | | | | |
| <u>Orius insidiosus</u> (Say) | Aug | Aug | July thru Sept | June thru Sept | June | June thru Aug | Yes |
| FAMILY REDUVIIDAE | | | | | | | |
| <u>Sinea spinipes</u> (H. -S.) | Sept | | | | June | | Yes |
| FAMILY PHYMATIDAE | | | | | | | |
| <u>Phymata americana</u> Melin | | | June | July | | | Yes |
| FAMILY TINGIDAE | | | | | | | |
| <u>Corythucha marmorata</u> (Uhl.) | | | | | May | | No |
| <u>Corythucha mollicula</u> O. and D. | | | | | | Sept | No |
| FAMILY LYGAEIDAE | | | | | | | |
| <u>Lygaeus bicrucis</u> Say | May | | | | | | Yes |
| <u>Pachybrachius albocinctus</u> Barber | June, Aug | June thru Aug | June thru Aug | June thru Aug | June | June, July | No |
| <u>Pachybrachius basalis</u> (Dall.) | | June | | | | | No |
| <u>Pachybrachius</u> sp. | | | | | | July | No |
| <u>Paromius longulus</u> (Dall.) | Aug | Aug | | Aug | | | Yes |
| <u>Oedancala crassimanna</u> (F.) | | July | Aug | | | | No |
| <u>Cymus discors</u> Horv. | May, July | May, July | July | | | | Yes |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--|--------------------------|-------------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Cymus angustatus</u> Stål | May, June, July, Sept | May thru Aug | | June | | July | Yes |
| <u>Geocoris punctipes</u> (Say) | | | | Aug | | | Yes |
| <u>Nysius ericae</u> (Schill.) | | | | | | | Yes |
| FAMILY NEIDIDAE | | | | | | | |
| <u>Jalysus wickhami</u> Van D. | | June, Aug | June | | | | Yes |
| FAMILY COREIDAE | | | | | | | |
| <u>Arhyssus lateralis</u> (Say) | Aug, Sept | July thru Sept | June thru Sept | June thru Sept | | May, July | Yes |
| <u>Harmostes reflexulus</u> (Say) | | July | | | | | No |
| FAMILY PENTATOMIDAE | | | | | | | |
| <u>Podops cinctipes</u> (Say) | | | | Aug | | | No |
| <u>Corimelaena pulicaria</u> (Germ.) | May, June | May | June, July | | May | | No |
| <u>Euschistus servus</u> (Say) | | Aug | | Aug | | | Yes |
| <u>Thyanta accerra</u> McA. | | | | June | | | No |
| <u>Brochymena quadripustulata</u> (F.) | | | | | Aug, Sept | | No |
| <u>Stiretrus anchorago</u> var. <u>pimbriatus</u> (Say) | | | | | May | June | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------|-----------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Cosmopepla bimaculata</u> (Thomas) | | | | | Aug | Aug | No |
| <u>Solubea pugnax</u> (F.) | | Aug | | | | | Yes |
| <u>Holcostethus limbolarius</u> (Stål) | | | | | | | Yes |
| <u>Podisus maculiventris</u> (Say) | | | | | | | Yes |
| FAMILY CYDNIDAE | | | | | | | |
| Gen. sp. | | | | | | | Yes |
| FAMILY NABIDAE | | | | | | | |
| <u>Nabis alternatus</u> Parshley | | | | | | | Yes |
| <u>Nabis ferus</u> (L.) | | | | | | | Yes |
| ORDER HOMOPTERA | | | | | | | |
| FAMILY CICADELLIDAE | | | | | | | |
| <u>Graphocephala versuta</u> (Say) | July | July | June thru Aug | June thru Sept | June thru Sept | June, July | Yes |
| <u>Graphocephala coccinea</u> (Forst.) | | | | June, July | Sept | | No |
| <u>Chlorotettix galbanatus</u> Van D. | | | | | Aug | | No |
| <u>Chlorotettix limosus</u> DeL. and Ct. | Aug | Aug | July, Aug | July, Aug | June thru Aug | July, Aug | Yes |
| <u>Chlorotettix viridius</u> Van D. | | | | | | | Yes |
| <u>Chlorotettix</u> sp. | | | | | June | | No |
| <u>Empoasca osborni</u> Hartz. | | | | | Aug | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Empoasca</u> sp. | June, July | June thru Aug | June thru Aug | July | June, July | July | No |
| <u>Macropsis viridis</u> (Fitch) | | | | | July | | No |
| <u>Colladonus clitellarius</u> (Say) | | | | | July, Aug | May, Aug | No |
| <u>Agalliopsis novella</u> (Say) | | | | | June | May | No |
| <u>Scaphytopius acutus</u> (Say) | June | July | May thru Sept | June, July | July, Aug | | No |
| <u>Norvellina seminuda</u> (Say) | | | July | | June, July | | No |
| <u>Draeculocephala portola</u> Ball | May, Aug | May, July | July | June, July | Sept | June | Yes |
| <u>Erythroneura illinoensis</u> (Gill.) | | | | July | | | No |
| <u>Erythroneura aclys</u> McAtee | | | | July | | | No |
| <u>Erythroneura</u> sp. | | | Aug | | Aug | Aug | No |
| <u>Graminella</u> sp. | | | | | | July | Yes |
| <u>Graminella nigrifrons</u> (Forbes) | May thru Aug | May, July Aug | Aug | June thru Aug | May thru July | June, July | Yes |
| <u>Paraphlepsius</u> sp. | | | | | July | Aug | No |
| <u>Stirellus bicolor</u> (Van D.) | June thru Aug | Aug | July | | | July | No |
| <u>Stirellus obtutus</u> (Van D.) | May, Aug | May | June | | | | No |
| <u>Idiocerus</u> sp. | | June | | | July | May, June Aug | No |
| <u>Sanctanus fasciatus</u> (Osborne) | | Aug | | | | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---------------------------------------|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Xerophloea viridis</u> (F.) | | Sept | | | | | No |
| <u>Agallia constricta</u> Van D. | May | May | Aug | | June | | No |
| <u>Aulacizes irrorata</u> (F.) | Aug | | | | | | No |
| <u>Oncometopia undata</u> (F.) | | | Aug | June, July | | | No |
| <u>Xestocephalus</u> sp. | | | July | | | | No |
| <u>Gyponana</u> sp. | | | | | June | June | Yes |
| <u>Macropsis</u> sp. | | | | | July | July | No |
| <u>Balclutha abdominalis</u> (Van D.) | | | | | | | Yes |
| <u>Macrosteles fascifrons</u> (Stål) | | | | | | | Yes |
| FAMILY FULGORIDAE | | | | | | | |
| <u>Acanalonia bivittata</u> (Say) | | | Aug | | Aug | | Yes |
| <u>Oliarus aridus</u> Ball | | | Aug | | | | Yes |
| FAMILY DELPHACIDAE | | | | | | | |
| <u>Liburniella ornata</u> (Stål) | Aug | June thru Aug | June | | | | No |
| <u>Delphacodes basivitta</u> (Van D.) | | Aug | July | Aug | | | No |
| <u>Delphacodes puella</u> (Van D.) | Sept | | | | | | Yes |
| Delphacidae gen. sp. | May thru Aug | June thru Aug | June, Aug | June, July Sept | June, July | June | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------|-----------------|----------------------|---------------------|-------------------|-------------------|----|
| <u>Pissonotus piceus</u> (Van D.) | | | Aug | | | | No |
| FAMILY CIXIIDAE | | | | | | | |
| Cixiidae gen. sp. | | | | June | | | No |
| <u>Myndus pictifrons</u> (Stål) | | | July | June | June, July | June, July | No |
| FAMILY MEMBRACIDAE | | | | | | | |
| <u>Spissistulus festinus</u> (Say) | June, Aug | June, Aug | June | June | July, Aug | June | No |
| <u>Microtalis calva</u> (Say) | | | July, Aug | June, Aug | June, July | June | No |
| <u>Stictocephala bubalus</u> (F.) | | | | July | | June, July | No |
| FAMILY CERCOPIDAE | | | | | | | |
| <u>Lepyronia quadrangularis</u> (Say) | Aug | Aug, Sept | | July | June | May | No |
| <u>Clastoptera xanthocephala</u> Germ. | | Aug, Sept | July, Aug | | Sept | Aug | No |
| <u>Clastoptera achatina</u> Germ. | | | | | Aug | | No |
| FAMILY PSYLLIDAE | | | | | | | |
| <u>Trioza minuta</u> (Crawf.) | | | | June | June thru Sept | June, Aug Sept | No |
| <u>Aphalara simila</u> (Cald.) | July | July | June thru Aug | June thru Aug | | June thru Aug | No |
| <u>Aphalara veaziei</u> Patch | | | June | July | Aug | July | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|-----------------------------------|------------------|-----------------|----------------------|---------------------|-------------------|------------------|----|
| <u>Livia maculipennis</u> (Fitch) | May, June | | | | | | No |
| <u>Livia vernalis</u> Fitch | May | | | | | | No |

ORDER COLEOPTERA

| | | | | | | | |
|--|------|------------|-----|------------|------|------|-----|
| FAMILY CARABIDAE | | | | | | | |
| <u>Leptotrachelus dorsalis</u> (F.) | | | | June | | | Yes |
| <u>Lebia viridis</u> (Say) | July | | | | | | Yes |
| <u>Anadaptus baltimorensis</u> (Say) | | | May | | | | No |
| FAMILY STAPHYLINIDAE | | | | | | | |
| <u>Stenus flavicornis</u> Erichs. | | | | | | June | Yes |
| FAMILY CANTHARIDAE | | | | | | | |
| <u>Chauliognathus marginatus</u> (F.) | | | | June | May | June | Yes |
| FAMILY MALACHIIDAE | | | | | | | |
| <u>Collops quadrimaculatus</u> (F.) | | June, July | | June, July | | | Yes |
| <u>Collops balteatus</u> Lec. | | June | May | | | | Yes |
| <u>Attalus greeni</u> Marshall | | | | June, July | June | | Yes |
| FAMILY CLERIDAE | | | | | | | |
| <u>Ischydnocera curtipennis</u> (Newn.) | | June | May | | | | Yes |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--|------------------|-----------------|----------------------|---------------------|-------------------|------------------|-----|
| FAMILY MORDELLIDAE | | | | | | | |
| <u>Mordellistena nigricans</u> (Melsh.) | | | | | June | | No |
| <u>Mordellistena</u> sp. | | | | June | May | | Yes |
| <u>Mordella</u> sp. | | | | June | | | No |
| FAMILY PEDILIDAE | | | | | | | |
| <u>Macratria murina</u> (F.) | | | | July | | July | No |
| FAMILY ANTHICIDAE | | | | | | | |
| <u>Anthicus cervinus</u> Laf. | | | | | | July | Yes |
| <u>Anthicus floralis</u> (L.) | | | | | | | Yes |
| <u>Notoxus bicolor</u> Say | | | | | | | Yes |
| FAMILY BUPRESTIDAE | | | | | | | |
| <u>Agrilus politus</u> (Say) | | | | July | July, Aug | June, July | No |
| <u>Taphrocerus gracilis</u> (Say) | | June | | | | | Yes |
| FAMILY CUCUJIDAE | | | | | | | |
| <u>Ahasverus advena</u> Waltl. | | | | | | July | No |
| <u>Telephanus velox</u> (Hald.) | July | June | | | | | Yes |
| FAMILY LANGURIIDAE | | | | | | | |
| <u>Acropteroxys gracilis</u> Newm. | | | | July | | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------|--------------------|----------------------|---------------------|-------------------|------------------|-----|
| FAMILY MYCETOPHAGIDAE | | | | | | | |
| <u>Litargus didesmus</u> Say | | | | | Aug | | No |
| FAMILY LATHRIDIDAE | | | | | | | |
| <u>Melanophthalma picta</u> Lec. | June | June | | | | | Yes |
| <u>Melanophthalma pumila</u> Lec. | May | | | | | June | No |
| <u>Melanophthalma</u> sp. | | July | | | July | July, Aug | Yes |
| FAMILY PHALACRIDAE | | | | | | | |
| Gen. sp. | | June, July | June, Aug | June thru Aug | July | June, July | Yes |
| FAMILY COCCINELLIDAE | | | | | | | |
| <u>Brachyacantha ursina</u> (F.) | | | | June | | | Yes |
| <u>Coccinella novemnotata</u> Hbst. | Aug | | | | | June | Yes |
| <u>Pullus loewii</u> Muls. | | | | | June | | Yes |
| <u>Pullus</u> sp. | | | June, Aug | | | | No |
| <u>Hippodamia convergens</u> Guer. | | | | | | | Yes |
| <u>Coleomegilla maculata lengi</u> Timb. | June thru Aug | June, July Sept | Aug | June thru Aug | June thru Aug | June, July | Yes |
| FAMILY MELANDRYIDAE | | | | | | | |
| <u>Allopora lutea</u> (Hald.) | | | | | | June | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--|------------------|-------------------|----------------------|---------------------|-------------------|------------------|-----|
| FAMILY CHRYSOMELIDAE | | | | | | | |
| <u>Pachybrachys femoratus</u> (Oliv.) | | | | | June | June, July | No |
| <u>Cryptocephalus guttulatus</u> Oliv. | | | Aug | June, Aug | Aug | Aug | No |
| <u>Cryptocephalus leucomelas</u> Suffr. | | | | | | Aug | No |
| <u>Cryptocephalus</u> sp. | | | | | June | | No |
| <u>Diachus auratus</u> (F.) | | | Aug, Sept | | May, July | May thru Aug | Yes |
| <u>Nodonota tristis</u> (Oliv.) | | | | June, July | June, July | June, July | No |
| <u>Colaspis brunnea</u> (F.) | | | | July | | | No |
| <u>Paria canella</u> (F.) | July | | June | | | | No |
| <u>Chrysomela scripta</u> F. | | | | | June, July | May, June | No |
| <u>Chrysomela knabi</u> Brown | | | | | | June | No |
| <u>Diabrotica undecimpunctata</u> <u>howardi</u> Barber | July | | | Aug, Sept | | | Yes |
| <u>Altica</u> sp. | | Aug | | | | | No |
| <u>Chalcoides fulvicornis</u> (F.) | Aug | June, Aug Sept | July thru Sept | June thru Aug | May thru Sept | May thru Sept | No |
| <u>Epitrix hirtipennis</u> (Melsh.) | | | | | July | | No |
| <u>Orthaltica copalina</u> (F.) | | | | | | June | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------------|-------------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Chaetocnema pulicaria</u> Melsh. | May, June Aug, Sept | June thru Sept | | | July, Aug | Aug | Yes |
| <u>Chaetocnema denticulata</u> Ill. | | | | | | | Yes |
| <u>Systema hudsonias</u> (Forst.) | | June | June, Aug | June | | | Yes |
| <u>Systema elongata</u> (F.) | | | | July | | July | Yes |
| <u>Systema blanda</u> (Melsh.) | | | | May | | | Yes |
| <u>Systema frontalis</u> (F.) | July thru Sept | June thru Sept | July thru Sept | June thru Sept | Aug | July | Yes |
| <u>Longitarsus subcylindricus</u> Blatch. | | July | Aug | | July | | No |
| <u>Longitarsus subrufus</u> Lec. | May | | | | | | No |
| <u>Phyllotreta zimmermanni</u> (Crotch) | | May | | May | | | Yes |
| <u>Palaeothona picta</u> (Say) | | | | | July | | No |
| <u>Deloyala guttata</u> (Oliv.) | | | | Aug | | | Yes |
| <u>Metriona bicolor</u> (F.) | | | | | | July | Yes |
| FAMILY BRUCHIDAE | | | | | | | |
| <u>Acanthoscelides alboscuteatus</u> (Horn) | Aug | Aug | July | | June | | Yes |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------|-------------------|----------------------|---------------------|-------------------|------------------|----|
| FAMILY ANTHRIBIDAE | | | | | | | |
| <u>Brachytarsus sticticus</u> Boh. | June, July | June thru Sept | July thru Sept | July thru Sept | Aug | Sept | No |
| <u>Anthribulus rotundatus</u> Lec. | | | May | | | | No |
| FAMILY CURCULIONIDAE | | | | | | | |
| <u>Apion</u> sp. | | | July | | | Aug | No |
| <u>Sitona hispidula</u> (F.) | | Aug | | | | | No |
| <u>Endalus ovalis</u> Lec. | | June | May | | | May | No |
| <u>Anthonomini</u> gen. sp. | | | | June | | | No |
| <u>Orchestes ehippiatus</u> (Say) | | | | | May | June | No |
| <u>Orchestes niger</u> Horn | | | | | June, Sept | July, Aug | No |
| <u>Lixus rubellus</u> Rand. | | | | July | | June | No |
| <u>Barini</u> gen. sp. | June | | | | | | No |
| <u>Centrinus picumnus</u> (Hbst.) | Aug | | | Aug | | | No |
| <u>Odontocorynus scutellum-album</u> (Say) | | | | | July | | No |
| <u>Auleutes nebulosus</u> (Lec.) | Aug | July thru Sept | June | | Aug | | No |
| <u>Ceutorhynchus sulcipennis</u> Lec. | Aug | Aug | | Aug | | | No |
| <u>Perigaster cretura</u> (Hbst.) | | July | | | | | No |

1957

1956

Sedge
Inshore

Sedge
Center

Smartweed
Inshore

Smartweed
Center

Willow
Inshore

Willow
Center

ORDER HYMENOPTERA

| FAMILY TENTHREDINIDAE | | | | | | | |
|-------------------------------------|------|-----|------|------|--|------------------|----|
| <u>Pachynematus</u> sp. | | | June | | | | No |
| <u>Pristiphora</u> sp. | | | | | | May, June Aug | No |
| FAMILY BRACONIDAE | | | | | | | |
| <u>Heterospilus</u> sp. | | Aug | | | | | No |
| <u>Urosigalphus femoratus</u> Cwfd. | | | Sept | | | | No |
| <u>Orgilus gelechia</u> Ashm. | June | | | | | | No |
| <u>Chelonus</u> sp. | | | June | July | | | No |
| <u>Ascogaster</u> sp. | | | June | | | | No |
| <u>Aridelus fisheri</u> Vier. | | | July | | | July | No |
| <u>Aridelus melanderi</u> (Brues) | June | | | | | | No |
| <u>Euphorus pallipes</u> (Curt.) | | | | | | Aug | No |
| <u>Rogas stigmator</u> (Say) | | | | | | June | No |
| <u>Tetrasphaeropyx</u> sp. | | | | | | July | No |
| <u>Microctonus</u> sp. | | | | | | May | No |
| <u>Euphoriella incerta</u> (Ashm.) | | | May | | | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Perilitus coccinellae</u> (Schrank) | May | | | | | | Yes |
| <u>Apanteles paleacritae</u> Riley | | | | | | June | No |
| <u>Apanteles ornigis</u> Weed | | | | | | June | No |
| <u>Apanteles rohweri</u> Mues. | July | | | | | | No |
| <u>Apanteles winkleyi</u> Vier. | | | | Aug | | Aug | No |
| <u>Apanteles</u> sp. | May thru Aug | May thru July | July | July | Aug, Sept | July, Sept | Yes |
| <u>Apanteles disputabilis</u> (Ashm.) | | | | | | Sept | No |
| <u>Microgaster epagoges</u> Gah. | | | Aug | July | | | No |
| <u>Agathis gibbosa</u> (Say) | | | July | | | | No |
| <u>Agathis cincta</u> (Cress.) | June | | | | | | No |
| <u>Agathis acrobasidis</u> (Cush.) | | | | Aug | | | No |
| <u>Agathis discolor</u> (Cress.) | | Aug | | | | | No |
| <u>Agathis agilis</u> (Cress.) | July | | | July | | | No |
| <u>Vipio rugator</u> (Say) | | Aug | July, Aug | July, Aug | | | Yes |
| <u>Bracon pygmaeus</u> Prov. | June thru Aug | June | Aug | | | Aug | Yes |
| <u>Bracon caulicola</u> (Gah.) | June | | June | May, June Sept | July | | No |
| <u>Bracon quinnipiacorum</u> (Vier.) | June | | | | | | Yes |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--------------------------------------|------------------|-----------------|----------------------|---------------------|-------------------------|------------------|-----|
| <u>Bracon</u> spp. | June thru Aug | May thru Aug | June thru Aug | June thru Aug | May, June July, Sept | May thru Aug | Yes |
| FAMILY MYMARIDAE | | | | | | | |
| <u>Anagrus armatus</u> (Ashm.) | June | | | | | | No |
| FAMILY EULOPHIDAE | | | | | | | |
| <u>Tetrastichus</u> sp. | | | | June | | | No |
| <u>Auplectrus mellipes</u> Prov. | | | | | | July | No |
| <u>Euplectrus marginatus</u> Ashm. | | | | | | July | No |
| <u>Pediobius sexdentatus</u> (Grlt.) | June | | | | | | No |
| <u>Entedontini</u> gen. sp. | | | | | | Aug | No |
| <u>Euderus rugosus</u> (Cwfd.) | | | July | | | | No |
| <u>Euderus argyresthiae</u> (Cwfd.) | | | | | | | Yes |
| <u>Euderus subopacus</u> (Gah.) | June | | | | | July | No |
| <u>Homalotylus terminalis</u> (Say) | | Aug | | | | | Yes |
| FAMILY ENCYRTIDAE | | | | | | | |
| <u>Chalcaspis phenacocci</u> (Ashm.) | | | | July | | | No |
| FAMILY EUPELMIDAE | | | | | | | |
| <u>Anastatus</u> sp. | Aug | | | | | | No |
| <u>Eupelmus cyaniceps</u> Ashm. | | | June | | Aug | Aug | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|-------------------|-------------------|----------------------|---------------------|-------------------|-------------------|-----|
| FAMILY PERILAMPIDAE | | | | | | | |
| <u>Perilampus hyalinus</u> Say | | | | | | Aug | No |
| <u>Perilampus fulvicornis</u> Ashm. | | | Aug | | | July, Aug | No |
| FAMILY TORYMIDAE | | | | | | | |
| <u>Torymus solidaginis</u> (Huber) | | | | | | Aug | Yes |
| <u>Microdontomerus anthonomi</u> Cwfd. | Aug | | | | | | Yes |
| FAMILY PTEROMALIDAE | | | | | | | |
| <u>Norbanus perplexus</u> (Ashm.) | June | | | | | | No |
| <u>Bruchobius mayri</u> (Masi) | | | | | Aug | | No |
| <u>Heteroschema</u> sp. | | | | | June | | No |
| <u>Pteromalini</u> gen. sp. | | June | | Aug | July | | No |
| <u>Habrocytus piercei</u> Cwfd. | | | | Aug | | | No |
| <u>Eupteromalus tachinae</u> Gah. | July | | | | | | No |
| FAMILY EURYTOMIDAE | | | | | | | |
| <u>Eudecatoma</u> sp. | | | | | | June | No |
| FAMILY CHALCIDIDAE | | | | | | | |
| <u>Brachymeria</u> sp. | | | Aug | | | Sept | Yes |
| "Chalcid" gen. sp. | June thru Sept | June thru Sept | June, July Sept | June thru Sept | June thru Aug | June, Aug Sept | Yes |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--------------------------------------|------------------|-----------------|----------------------|---------------------|-------------------|------------------|-----|
| FAMILY SCELIONIDAE | | | | | | | |
| <u>Hadronotus</u> sp. | | June | | | | | No |
| <u>Macroteleia</u> sp. | June, Aug | July | | July | | | No |
| FAMILY BETHYLIDAE | | | | | | | |
| <u>Perisierola cellularis</u> (Say) | June | | | | | | No |
| <u>Goniozus platynotae</u> Ashm. | | | | | | Sept | No |
| FAMILY MUTILLIDAE | | | | | | | |
| <u>Dasymutilla occidentalis</u> (L.) | | July | | | | | Yes |
| FAMILY SCOLIIDAE | | | | | | | |
| <u>Scolia nobilitata</u> F. | | | | | | | Yes |
| FAMILY FORMICIDAE | | | | | | | |
| <u>Camponotus nearcticus</u> Em. | | | | | July | | No |
| <u>Brachymermyx depilis</u> Em. | | | | July | | | No |
| <u>Brachymermyx</u> sp. | | | June | | | | No |
| <u>Crematogaster clara</u> Mayr | | | | | | June | No |
| <u>Crematogaster</u> spp. | July | June | Aug | | June thru Aug | Sept | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--|------------------|-----------------|----------------------|---------------------|-------------------|------------------|-----|
| FAMILY VESPIDAE | | | | | | | |
| <u>Polistes exclamans</u> Vier. | Aug | | Sept | | | | Yes |
| <u>Polistes annularis</u> (L.) | May | | Aug | Aug | | June | Yes |
| FAMILY POMPILIDAE | | | | | | | |
| <u>Priocnemis cornica</u> (Say) | | | | | | July | Yes |
| <u>Priocnemioides fulvicornis</u> (Cr.) | | | | | | | Yes |
| <u>Psorthaspis legata</u> (Cr.) | | | | Aug | | | No |
| <u>Anoplus v. ventralis</u> (Bks.) | July, Aug | | | | | July | No |
| FAMILY SPECIDAE | | | | | | | |
| <u>Ammophila nigricans</u> Dahlb. | | | June | July | | | No |
| <u>Mimesa longicornis</u> (Fox) | | | | July | | | No |
| <u>Ectemnius paucimaculatus</u> (Pack.) | | | Aug | | | | No |
| <u>Ectemnius comptus</u> (Lep. and Br.) | | | | | | | Yes |
| <u>Astata unicolor</u> Say | | | | | | | Yes |
| <u>Didineis texana</u> (Cress.) | | | | | | | Yes |
| <u>Cereris fumipennis</u> Say | | | | | | | Yes |
| FAMILY COLLETIDAE | | | | | | | |
| <u>Hylaeus modestus</u> Say | | | | Sept | | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------|------------------|----------------------|---------------------|-------------------|-------------------|-----|
| <u>Hylaeus affinis</u> Sm. | | | | July | | | No |
| <u>Heriades v. variolosa</u> (Cr.) | | | | Aug | | | No |
| FAMILY HALICTIDAE | | | | | | | |
| <u>Lasioglossum (Chloralictus)</u> <u>zephyrum</u> (Sm.) | July, Aug | June | July, Aug | July, Aug | Aug | Aug | Yes |
| <u>L. (C.) versatum</u> (Rob.) | | | June thru Aug | July, Aug | | | Yes |
| <u>L. (C.) inconspicuum</u> Sm. | June thru Aug | July thru Aug | June thru Sept | July thru Sept | July thru Sept | June thru Aug | Yes |
| <u>L. (C.) tegularis</u> Rob. | | | | July, Aug | Aug | | No |
| <u>L. (C.) admirandum</u> (Sandh.) | | Aug | | June thru Aug | | May thru Aug | No |
| <u>L. (C.) bruneri</u> Cwfd. | | | Aug | | | | No |
| <u>L. (C.) illinoense</u> Rob. | Aug | | Aug | | | Aug | No |
| <u>L. (C.) pilosum</u> Sm. | | Aug | | | | | No |
| <u>L. (C.) sp.</u> | June, Sept | | Aug | June thru Aug | Aug | June thru Sept | Yes |
| <u>Lasioglossum pectorale</u> Sm. | | | | Aug | | | No |
| <u>Halictus ligatus</u> Say | | | July, Aug | July | | | No |
| <u>Halictus confusus</u> Sm. | | | July | | | | No |
| <u>Augochlora aurata</u> Sm. | | | June | July, Aug | | | No |
| <u>Augochlora striata</u> Prov. | June | | | July | | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|-----------------------------------|------------------|-----------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Augochlora pura</u> Say | | | Aug | Aug | Aug | July | No |
| <u>Augochloropsis cuprea</u> Sm. | | Sept | July | Aug | | | No |
| <u>Agapostemon radiatus</u> Say | | | | | | | Yes |
| FAMILY MEGACHILIDAE | | | | | | | |
| <u>Hoplitis cylindrica</u> Cress. | | May | | | | | No |
| <u>Anthidium maculifrons</u> Sm. | | | | | | | Yes |
| FAMILY APIDAE | | | | | | | |
| <u>Apis mellifera</u> L. | Sept | | Aug | Aug, Sept | Aug | Aug | Yes |
| <u>Ceratina calcarata</u> Rob. | | | | July | | | No |
| <u>Bombus impatiens</u> Cress. | | | | Aug | | | No |

ORDER LEPIDOPTERA

| | | | | | | | |
|--------------------------------------|--|------|------|--|--|--|----|
| FAMILY TORTRICIDAE | | | | | | | |
| <u>Archips</u> sp. | | July | | | | | No |
| <u>Sparganothis sulfureana</u> Clem. | | | July | | | | No |
| FAMILY SCYTHRIDAE | | | | | | | |
| <u>Scythris</u> sp. | | Aug | | | | | No |
| FAMILY GRACILLARIIDAE | | | | | | | |
| <u>Gracillaria</u> sp. | | | | | | | No |

| | <u>1957</u> | | | | <u>1956</u> | | |
|------------------------------------|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
| FAMILY COLEOPHORIDAE | | | | | | | |
| <u>Coleophora</u> sp. | June thru Aug | May thru Aug | Sept | June | July | May, July Aug | Yes |
| FAMILY NOCTUIDAE | | | | | | | |
| <u>Salia interpuncta</u> (Grt.) | | | June | | | | No |
| FAMILY NYMPHALIDAE | | | | | | | |
| <u>Vanessa atalanta</u> L. | | | | | | July | No |
| <u>Basilarchia archippus</u> Cram. | | | | | | July | No |
| ORDER DIPTERA | | | | | | | |
| FAMILY TIPULIDAE | | | | | | | |
| <u>Nephrotoma ferruginea</u> (F.) | | | May | | | | No |
| <u>Symplectra cana</u> (Walk.) | May | May | | | | | No |
| FAMILY TENDIPEDIDAE | | | | | | | |
| (Midges) | May thru Sept | May thru Sept | June, July | June, July | May thru July | May, June | Yes |
| <u>Hydrobaenus</u> sp. | | | | | | May | No |
| <u>Cricotopus</u> sp. | | | | | | | Yes |
| FAMILY ITONIDIDAE | | | | | | | |
| <u>Mycodiplosis</u> sp. | June | | | | | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|-------------------------------------|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Lasioptera</u> sp. | June, July | | | | | | No |
| Poss. <u>Mycophila</u> sp. | | | | | | July | No |
| FAMILY FUNGIVORIDAE | | | | | | | |
| <u>Macrocera formosa</u> Lw. | | | | July | | | No |
| FAMILY STRATIOMYIDAE | | | | | | | |
| <u>Allognosta fuscitarsis</u> (Say) | | Aug | | July, Aug | May, July | | No |
| FAMILY TABANIDAE | | | | | | | |
| <u>Tabanus calens</u> L. | | | | | Aug | | No |
| FAMILY BOMBYLIIDAE | | | | | | | |
| <u>Villa</u> sp. | | | Aug | | Sept | | No |
| FAMILY EMPIDIDAE | | | | | | | |
| <u>Euhybos strumaticus</u> Mel. | | July, Sept | | | May thru July | July, Aug | No |
| <u>Chelipoda</u> sp. | | | | July | | June | No |
| <u>Drapetis</u> sp. | | | | | | July | No |
| FAMILY DOLICHOPIIDAE | | | | | | | |
| <u>Condylostylus</u> sp. | May | June thru Aug | June thru Aug | June thru Aug | June, July | June, July | Yes |
| <u>Dolichopus</u> sp. | | | | | July, Aug | July | Yes |
| <u>Dolichopus comatus</u> Lw. | | | | Aug | | | No |
| <u>Rhaphium</u> sp. | | | | July | | June | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--|------------------|-----------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Chrysotus</u> sp. | July | July, Aug | June, July | June thru Aug | June thru Aug | June, Aug | Yes |
| <u>Paraphrosylus</u> sp. | | | | June | | June, Aug | No |
| FAMILY PIPUNCULIDAE | | | | | | | |
| Gen. sp. | | May, June | | | | June, Sept | No |
| " " <u>Tomosvaryella</u> sp. | Aug | July, Aug | June, Aug | June, July | | July, Aug | Yes |
| FAMILY SYRPHIDAE | | | | | | | |
| <u>Mesograpta geminata</u> (Say) | | | | | | Sept | No |
| <u>Syritta pipiens</u> (L.) | | | | | | | Yes |
| <u>Mesograpta polita</u> (Say) | | | | Aug | | | Yes |
| <u>Metasyrphus wiedemanni</u> (Johnson) | | | | | | | Yes |
| FAMILY OTITIDAE | | | | | | | |
| <u>Chaetopsis fulvifrons</u> (Macq.) | May | Aug, Sept | | | | May, June | Yes |
| <u>Eumetopiella rufipes</u> (Macq.) | Aug | Aug | | July, Aug | | | Yes |
| <u>Euxesta notata</u> (Wied.) | | | | | July | | No |
| FAMILY TEPHRITIDAE | | | | | | | |
| <u>Paroxyna</u> sp. | | | Aug | | | | Yes |
| <u>Trupanea actinobola</u> (Lw.) | | | Aug | | | | No |
| <u>Eutreta rotundipennis</u> (Lw.) | | | July | | July | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|-------------------------------------|------------------|-----------------|----------------------|---------------------|-------------------|------------------|-----|
| FAMILY SEPSIDAE | | | | | | | |
| <u>Sepsis punctum</u> (Fab.) | | | June, July | June | June | | No |
| FAMILY LAUXANIIDAE | | | | | | | |
| <u>Homoneura conjuncta</u> (Johns.) | | | | | May | | No |
| <u>Sapromyza umbrosa</u> Lw. | | | | | May | | No |
| <u>Sapromyza</u> sp. | | | May, June | | | July | No |
| <u>Sapromyza vittigera</u> Coq. | | | | | June | July | No |
| <u>Sapromyza quadrilineata</u> Lw. | | | | | | | Yes |
| <u>Trigonometopus vittatus</u> Lw. | | | | | | Aug | No |
| <u>Minettia valida</u> (Walk.) | | | | | | | Yes |
| FAMILY DROSOPHILIDAE | | | | | | | |
| <u>Scaptomyza adusta</u> (Lw.) | | | | June | | | No |
| <u>Drosophila sigmoides</u> Lw. | | | | | | Sept | No |
| FAMILY ANTHOMYZIDAE | | | | | | | |
| <u>Mumetopia occipitalis</u> Mel. | June | June | | | | | No |
| <u>Stenomicro angustata</u> Coq. | Aug | | | | | | No |
| FAMILY AGROMYZIDAE | | | | | | | |
| <u>Melanagromyza</u> sp. | | | | Aug | | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|--|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| FAMILY MILICHIIDAE | | | | | | | |
| <u>Desmometopa m-nigrum</u> (Zett.) | | | June | Aug | | | No |
| FAMILY CHLOROPIDAE | | | | | | | |
| <u>Eribolus longulus</u> (Lw.) | Aug | July, Aug | | Aug | | Aug | No |
| <u>Monochaetoscinella nigricornis</u> (Lw.) | | | | | | | Yes |
| <u>Elachiptera nigriceps</u> (Lw.) | June | | | | | | No |
| <u>Elachiptera erythropleura</u> (Sabr.) | | | | | | July | Yes |
| <u>Diplotoxa versicolor</u> (Lw.) | | | | | | | Yes |
| <u>Oscinella umbrosa</u> (Lw.) | July | | | | | | No |
| <u>Oscinella neocoxendix</u> Sabr. | | Aug | | | | | Yes |
| <u>Oscinella flavescens</u> (Tuck.) | | | June | | | | No |
| <u>Conioscinella trigramma</u> (Lw.) | | | | | | July | No |
| <u>Siphonella</u> sp. | | | | | Aug | | No |
| <u>Hippelates dissidens</u> (Tuck.) | Aug | Aug | | | | | Yes |
| <u>Hippelates particeps</u> (Beck.) | | | | | | | Yes |
| <u>Chlorops</u> spp. | June thru Aug | June thru Aug | June thru Aug | June thru Sept | May, July Aug | June, July | Yes |
| <u>Meromyza americana</u> Fitch | | Aug | | | | | No |

1957

1956

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|---|------------------|-----------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Thaumatomyia</u> <u>bistriata</u> (Wlk.) | | | | | | Aug | No |
| <u>Thaumatomyia</u> <u>glabra</u> (Mg.) | May, Aug | May, July | June, July | June, July | June, Aug | May, June | Yes |
| <u>Thaumatomyia</u> <u>pulla</u> var. <u>punctum</u> (Beck.) | | July, Aug | | | | | No |
| FAMILY EPHYDRIDAE | | | | | | | |
| <u>Paralimna</u> <u>punctipennis</u> (Wied.) | | Aug | | July | Sept | Aug | Yes |
| <u>Scatella</u> sp. | | | | | | May | No |
| <u>Discocerina</u> sp. | | | | | Aug | | Yes |
| <u>Leptopsilopa</u> sp. | Aug | Aug | | | | | Yes |
| FAMILY SPHAEROCERIDAE | | | | | | | |
| <u>Leptocera</u> <u>fontinalis</u> (F.) | Aug | | | | Aug | | No |
| FAMILY SCIOMYZIDAE | | | | | | | |
| <u>Tetanocera</u> <u>vicina</u> Macq. | | | | | | July | No |
| <u>Limnia</u> sp. | | | | May | | | Yes |
| <u>Dictya</u> <u>expansa</u> Stey. | | | | | May | | No |
| <u>Dictya</u> <u>texensis</u> Cn. | | | | | | | Yes |
| FAMILY PSILIDAE | | | | | | | |
| <u>Loxocera</u> <u>cylindrica</u> Say | Aug | | | | | | No |

1957

1956

| | Sedge Inshore | Sedge Center | Smartweed Inshore | Smartweed Center | Willow Inshore | Willow Center | |
|---|------------------|------------------|----------------------|---------------------|-------------------|------------------|-----|
| FAMILY MUSCIDAE | | | | | | | |
| <u>Limnophora narona</u> (Walk.) | | June | | | | | No |
| <u>Coenosia</u> (<u>Limosia</u>) <u>atrata</u> (Walk.) | June, Aug | June | | June | | | No |
| <u>Lispe</u> sp. | | | | | | | Yes |
| <u>Achaetella varipes</u> (Wlk.) | | | July | | | July | No |
| <u>Pyrellia cyanicolor</u> (Zett.) | | | July | | July | | No |
| FAMILY CALLIPHORIDAE | | | | | | | |
| <u>Callitroga macellaria</u> (Fab.) | | | | | | | Yes |
| FAMILY SARCOPHAGIDAE | | | | | | | |
| <u>Sarcophaga</u> (<u>Helicobia</u>) <u>rapax</u> Walk. | | | | | July, Aug | | Yes |
| <u>Sarcophaga</u> (<u>Chaetoravinia</u>) <u>derelicta</u> Walk. | May, July | June | July, Aug | June, Aug | | July | Yes |
| <u>Sarcophaga ochracea</u> Ald. | | | | | | | Yes |
| <u>Sarcophaga</u> (<u>Oxysarcodexia</u>) <u>ventricosa</u> Wulp. | | | July, Aug | July, Sept | Aug, Sept | July, Aug | Yes |
| <u>Sarcophaga</u> (<u>Acridiophaga</u>) nr <u>acullata</u> Ald. | June | | | | July | | No |
| <u>Sarcophaga</u> (<u>Ravinia</u>) <u>querula</u> Wlk. | | | July | | | | No |
| <u>Sarcophaga</u> sp. | | May, Aug Sept | June, July | July, Aug | May, July | June, July | Yes |

1957

1956

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|--|------------------|-----------------|----------------------|---------------------|-------------------|------------------|-----|
| <u>Hypopelta scrofa</u> Ald. | | | | | | | Yes |
| FAMILY LARVAEVORIDAE | | | | | | | |
| <u>Cylindromyia nana</u> (Tns.) | | | Aug | | | | No |
| <u>Rhodogyne fuliginosa</u> (R.D.) | | | | | | | Yes |
| <u>Sciasma nebulosa</u> Coq. | Aug | Sept | | | | | No |
| <u>Hyalomyiopsis aldrichi</u> (Tns.) | | | | | | | Yes |
| <u>Copecryta nitens</u> (Wd.) | | | | | July | | No |
| <u>Leucostoma simplex</u> (Fall.) | | | | | | | Yes |
| <u>Gonia</u> sp. | | | | Aug | | | No |
| <u>Acroglossa hesperidarum</u> Will. | Aug | | | | | | No |
| <u>Archytas apicifer</u> (Wlk.) | | | | | | | Yes |
| <u>Lydella</u> sp. | | | | June | | | No |
| <u>Chaetophlepsis</u> sp. | Aug | | | | July | | Yes |
| <u>Amedoria luctuosa</u> (Mg.) | | | June | | June, July | July, Aug | No |
| <u>Xanthomelanodes atripennis</u> (Say) | | | | | | | Yes |
| FAMILY HELEIDAE | | | | | | | |
| <u>Dasyhelea</u> sp. | July | | | | | | No |

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