

Insects in the Killbuck Marsh Wildlife Area, Ohio: 1994 Survey¹

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ABSTRACT. These data represent the second year of a two-year survey to inventory a wide range of insect species inhabiting the Killbuck Marsh Wildlife Area. The principal objective was to collect information on insect biodiversity in this wetland area for future reference. Emphasis was focused on aquatic insects including predaceous diving beetles (Dytiscidae), water scavenger beetles (Hydrophilidae), and crawling water beetles (Haliplidae). Butterflies and moths (Lepidoptera) were also included. Blacklight, flight intercept, Nitidulid Inventory Technique, underwater light, and malaise traps were utilized, as well as carrion bait and aquatic netting for collection techniques at five unique habitats. Overall, 477 species in 94 families and subfamilies in 13 orders were identified as a result of this survey.

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INTRODUCTION

In an effort to expand our knowledge of the insect fauna in the Killbuck Marsh Wildlife Area (Wayne and Holmes counties), surveys were conducted in 1993 and 1994 to inventory a wide range of insect species inhabiting this wetland. The principal objective of this survey was to collect information on insect diversity for future reference (Williams et al. 1994a). In addition, a publication listing all species in the 1993 inventory was published by Williams et al. (1994b). This paper reports the results obtained from data gathered in 1994.

As awareness of environmental issues increases, insects may serve as an indicator for measuring changing environmental conditions in the Killbuck Marsh in the future. Several projects have focused on invertebrates and other fauna in the Killbuck Creek. For example, the Ohio EPA has conducted water quality assessments in 1986 (Ohio Environmental Protection Agency 1986), and again in 1994, of the Killbuck Creek along with its tributaries. An independent study compared the degrees of organic pollution on benthic macroinvertebrates (Sommer 1994). These water quality reports in conjunction with the aquatic insects listed herein will certainly be useful indicators of the Killbuck Creek's pollution levels and their impact on the ecosystem in general.

In our 1993 study, the primary insect taxa surveyed were ground and tiger beetles (Carabidae/Cicindellidae), sap beetles (Nitidulidae), and carrion beetles (Silphidae). Surveys were continued in 1994, however emphasis was shifted to cover other groups of insects more thoroughly. For example, we concentrated on aquatic insects including predaceous diving beetles (Dytiscidae), water scavenger beetles (Hydrophilidae), crawling water beetles (Haliplidae), and butterflies and moths (Lepidoptera).

MATERIALS AND METHODS

Five designated sites were surveyed throughout the Killbuck Marsh Wildlife Area which contained a broad

range of habitats. Site 1 was an open meadow surrounding a pond and bordered by dense woods and farmland. Site 2 was on a water-saturated, grassy bank of the marsh adjacent to a corn field and a woodlot. Site 3 was located at the Killbuck Marsh Wildlife Area Headquarters and consisted of an open, grassy meadow bordered by the marsh and sparse woods. Site 4 was a manmade, grassy dike which separated the Killbuck Creek from a small reservoir which is controlled by a valve which drains out of the creek. This site was bordered by dense woods on one side and extensive corn fields on the other. Finally, site 5, an elevated area approximately 5.0 m above the water level, was classified as a dry, upland woods setting adjacent to the marsh.

A novel underwater light trap was used in the 1994 season. We used an economical design presented to us by Miguel Archangelski (an OSU Graduate Student). His design utilized a clear, plastic, 2-liter beverage bottle and a Snaplight chemical lightstick (Omniglow Corporation, Novato, CA 94949). The trap was constructed by removing the tapered top of the bottle and then removing the threaded tip from the top portion of the bottle. The top was then inverted and placed inside the bottom portion to serve as a funnel. To employ the trap, the lightstick was activated and placed in the bottom portion of the trap along with a weight (medium sized rock) to keep the trap submerged. The funnel and trap, with its contents, were then submerged and assembled to prevent buoyancy from trapped air. Once the funnel was inserted underwater, cohesion was sufficient to hold the funnel in place, therefore no glue or other fasteners were needed to hold this trap together. These aquatic light traps were set out one day each week starting on May 11 at around 4:00 PM and operated overnight. They were removed at around 10:00 AM the next morning. The light traps were operated weekly until November 6. The lightsticks were supposed to provide eight hours of light; however, upon retrieval of the traps the following morning, they were still glowing noticeably after 18 hours. Upon collection of the aquatic light traps, specimens were separated using a standard, food strainer and placed in 70% alcohol.

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The standard, general purpose blacklight trap, which was the most successful trap in 1993, was also used in 1994 at sites 2, 3, and 5. The blacklight was again very successful and trapped many species of moths (Lepidoptera) and beetles (Coleoptera). Using a regimen similar to that of the aquatic light traps, these traps were run overnight one night a week and emptied the next morning. The blacklight traps were initially operated on May 4 and run weekly until their removal on November 6. A DDVP (Dichlorvos) strip and a 10-dram, slow-release shell vial of chloroform was used as a killing agent in these traps in order to eliminate damage to moth specimens by beetles and other insects. After removal from the blacklight traps, insects were frozen until they could be separated, at a later date. Some taxa from the blacklight traps, such as the moths, were maintained dry while others were placed in 70% alcohol.

Flight intercept (window) traps were used at all five sites. Our design, similar to Peck and Davies (1980), consisted of a 0.7 m² Plexiglas™ window pane mounted on two 1.0 m long boards which were buried in the ground up to the bottom of the attached pane. Two PVC troughs were set on the ground, one on each side of the window pane, and filled with soapy water to capture and drown the specimens. These flight intercept traps were set out on May 2, and collected weekly until November 6, at which time they were removed. Captured specimens were removed in the field using a food strainer and placed directly in 70% alcohol for later identification.

Nitidulid Inventory Technique (NIT) traps (Williams et al. 1993) were also used at all five sites in 1994. Four traps were placed at each site, two at ground level and two at 1.0 m above the ground mounted on oak stakes. A fermenting brown sugar solution and whole wheat bread dough served as the baits in these pitfall type traps. These traps were set out on May 2 and collected weekly until their removal on November 6. NIT trapped specimens were frozen, then separated and placed in 70% alcohol.

Carrion bait (turkey and roadkill meat) was set out twice during the season at each of the five sites. Each carcass was wrapped in chicken wire to discourage predators and staked to the ground. Carrion baits were set out on June 1 and August 1 and checked fortnightly for insects which were removed and placed directly in 70% alcohol.

Aquatic netting was performed fortnightly from May 11 to November 6. Two Odonata collections were made on June 1 and August 22 with aerial nets. Finally, two malaise traps were set out at site 3 for the month of October.

RESULTS AND DISCUSSION

Table 1, below, lists all species captured in the Killbuck Marsh Wildlife Area in 1994. The list is grouped alphabetically by order, family, and species.

Over the 1994 season, 477 species of insects in 94 families and subfamilies in 13 orders were identified. A few specimens remain with specialists and are still awaiting identification. When all are tallied, the total

TABLE 1

*1994 Killbuck Marsh Wildlife Area insect list.
(477 species, 94 families)*

COLEOPTERA

- Anthicidae:
Malporus formicarius (Laf.)
- Anthribidae:
Euparius marmoreus (Olivier)
- Bostrichidae:
Lichenophanes bicornis (Weber)
Prostephanus punctatus (Say)
Xylobiops basalis (Say)
- Brentidae:
Eupsalis minuta Drury
- Buprestidae:
Acmeodera pulchella (Herbst)
Acmeodera tubulus (F.)
Agrilus anxius Gory
Dicerca divaricata (Say)
Dicerca lurida (Fab.)
- Byrrhidae:
Simplocaria sp.
- Cantharidae:
Cantharis prob. *scitulus* Say
Podabrus flavicollis LeConte
Trypberus latipennis (Germar)
- Carabidae:
Abacicus permundus Say
Agonum mutatum (G & H)
Agonum palustre Goulet
Agonum picicornoides Lind.
Agonum striatopunctatum (Dejean)
Amara angustata Say
Amara avida Say
Amara familiaris Duft
Amara pallipes (Kirby)
Amphasia sericeus Harris
Anisiodactylus agricola Say
Anisiodactylus nigrata Dejean
Anisiodactylus sanctaerucis F.
Bradycellus rupestris Say
Calathus opaculus LeConte
Callida punctata LeConte
Diplocheila impressicollis (Dejean)
Harpalus herbiwagus Say
Notioba picea (LeConte)
Pterostichus luctuosus Dejean
Selenophorus opalimus LeConte
Stenocrepis quatuordecimstriata (Chaud.)
Stenolophus comma F.
Stenolophus lecontei Chaud.
- Cerambycidae:
Acmaeops bivittatus (Say)
Anoploclera canadensis (Olivier)
Anoploclera mutabilis (Newman)
Anoploclera rubrica (Say)
Anoploclera vittata (Swed.)
Gaurotes cyanipennis (Say)
Prionus laticollis (Drury)
Strangalia luteicornis (F.)
- Chrysomelidae:
Bassareus literatus (F.)
Cerotoma trifurcata (Forster)
Chaetocnema confinis Cr.
Chaetocnema denticulata (Ill.)
Chaetocnema pulicaria Melsb.
Colaspia brunnea (F.)
Crepidodera nana (Say)

TABLE 1 (CONTINUED)

<i>Dibolia sinuata</i> Horn
<i>Donacia subtilis</i> Kunze
<i>Epitrix cucumeris</i> (Harris)
<i>Glyphuroplata porcata</i> (Melsh.)
<i>Grabbops pubescens</i> (Melsh.)
<i>Hornaltica bicolorata</i> (Horn)
<i>Longitarsus testaceus</i> (Melsh.)
<i>Luperaltica senilis</i> (Say)
<i>Mantura chrysanthemi floridana</i> Crotch
<i>Nodonata tristis</i> (Olivier)
<i>Paria fragariae</i> Wilc.
<i>Paria scutellaris</i> (Not.)
<i>Phyllotreta aeneicollis</i> (Crotch)
<i>Phyllotreta zimmermanni</i> Crotch
<i>Rhabdopterus praetextus</i> (Say)
<i>Systema hudsonius</i> (Foster)
<i>Glyptina</i> sp.
<i>Longitarsus</i> sp. #1
<i>Longitarsus</i> sp. #2
<i>Cryptocephalus</i> sp.
<i>Tricholochmaea</i> sp.
Cicindelidae:
<i>Cicindela sexguttata</i> (F.)
Coccinellidae:
<i>Hippodamia parentthesis</i> (Say)
<i>Hyperaspis octavia</i> Casey
<i>Hyperaspis undulata</i> (Say)
<i>Scymnus indianensis</i> Weis.
<i>Scymnus rubricaudus</i> Casey
Cupedidae:
<i>Cupes concolor</i> Westwood
Curculionidae:
<i>Cophes fallax</i> (LeC.)
<i>Rhynchaenus pallicornis</i> Say
<i>Tyloderma foveolatum</i> Say
<i>Stenoscelis brevis</i> (Bohe.)
<i>Rhinoncus</i> sp.
<i>Tychius</i> sp.
Dryopidae:
<i>Helichus lithophilus</i> (Germar)
Dytiscidae:
* <i>Acilius fraternus</i> Harris
* <i>Acilius semisulcatus</i> Aube
* <i>Acilius sylvanus</i> Hilsenhoff
<i>Celina hubbelli</i> Young
<i>Copelatus glyphicus</i> (Say)
* <i>Coptotomus interrogatus</i> (F.)
<i>Coptotomus lenticus</i> Hilsenhoff
* <i>Cybister fimbriolatus</i> (Say)
<i>Desmopachria convexa</i> (Aube)
* <i>Dytiscus hybridus</i> Aube
* <i>Graphoderus liberus</i> (Say)
<i>Hydaticus modestus</i> Sharp
* <i>Hydaticus modestus</i> Sharp
* <i>Hydroporus consimilis</i> LeConte
* <i>Hydroporus niger</i> Say
<i>Hygrotus picatus</i> (Kirby)
<i>Hygrotus sayi</i> Balfour-Browne
<i>Ilybius biguttulus</i> Germar
<i>Ilybius oblitus</i> Sharp
* <i>Ilybius oblitus</i> Sharp
<i>Laccophilus maculosus</i> Say
<i>Matus bicarinatus</i> (Say)
<i>Rhantus binotatus</i> (Harris)
* <i>Thermonetus basillaris</i> (Harris)
* <i>Thermonetus nigrofasciatus</i> (Aube)
<i>Uvarus granarius</i> (Aube)
<i>Agabus</i> sp.#1

TABLE 1 (CONTINUED)

<i>Agabus</i> sp.#2
* <i>Agabus</i> sp.
<i>Cybister</i> sp.
* <i>Desmopachria</i> sp.
<i>Hydroporus</i> sp.#1
<i>Hydroporus</i> sp.#2
<i>Hydrovatus</i> sp.#1
<i>Hydrovatus</i> sp.#2
* <i>Hydrovatus</i> sp.
<i>Hygrotus</i> sp.
* <i>Hygrotus</i> sp.
<i>Laccophilus</i> sp.
* <i>Laccophilus</i> sp.
<i>Matus</i> sp.
* <i>Rhantus</i> sp.
Elateridae:
<i>Aeolus mellillus</i> (Say)
<i>Agriotes pubescens</i> Melsheimer
<i>Ampedus areolatus</i> (Say)
<i>Ampedus linteus</i> (Say)
<i>Ampedus melanotoides</i> W. J. Brown
<i>Athous</i> prob. <i>brightwelli</i> (Kirby)
<i>Conoderus bellus</i> (Say)
<i>Conoderus lividus</i> (DeG.)
<i>Denticollis denticornis</i> (Kirby)
<i>Glyphonyx testaceus</i> (Melsheimer)
<i>Hemicrepidius memonius</i> (Herbst)
<i>Melanotus communis</i> (Gyll.)
<i>Melanotus ignobilis</i> Melsheimer
<i>Melanotus similis</i> (Kirby)
<i>Melanotus testaceus</i> (Melsheimer)
<i>Parallelostethus attenuatus</i> (Say)
<i>Dalopius</i> sp.
<i>Limonius</i> sp.
<i>Sericus</i> sp.
Erotylidae:
<i>Tritoma humeralis</i> F.
Eucnemidae:
<i>Deltometopus amoenicornis</i> (Say)
Gyrinidae:
<i>Dineutes nigrior</i> Roberts
Haliplidae:
<i>Haliplus confluentus</i> Roberts
<i>Haliplus fasciatus</i> Aube
<i>Peltodytes lengi</i> Roberts
<i>Peltodytes edentulus</i> (LeConte)
<i>Peltodytes sexmaculatus</i> Roberts
<i>Peltodytes</i> sp.
Hydraenidae:
<i>Hydraena</i> sp.
Hydrophilidae:
<i>Berosus peregrinus</i> (Herbst)
* <i>Enochrus ochraceus</i> (Melsh.)
* <i>Enochrus sayi</i> Gunderson
* <i>Hydrobius melaneus</i> (Germar)
* <i>Hydrochara obtusata</i> (Say)
* <i>Hydrochara soror</i> Smetana
* <i>Hydrophilus triangularis</i> Say
<i>Tropisternus blatchleyi</i> d'Orchymont
* <i>Tropisternus blatchleyi</i> d'Orchymont
* <i>Tropisternus lateralis nimbatus</i> (LeConte)
<i>Tropisternus natator</i> (d'Orchymont)
* <i>Tropisternus natator</i> (d'Orchymont)
<i>Berosus</i> spp.
* <i>Helophorus</i> sp.
<i>Tropisternus</i> sp.
Lagriidae:
<i>Statira gagatima</i> Melsh.

TABLE 1 (CONTINUED)

Lampyridae:
Photinus consanguineus LeConte
Pyractomena angulata (Say)
Pyropyga decipiens (Harris)

Melandyridae:
Enchodes sericea (Haldem.)
Eustrophinus bicolor (F.)
Synbroa punctata Newman

Meloidae:
Meloe angusticollis Say

Mordellidae:
Mordella octopunctata F.

Mycetophagidae:
Mycetophagus pluripunctatus Lec.

Nitidulidae:
Amphicrossus ciliatus (Olivier)
Carpophilus antiquus (Melsheimer)
Carpophilus brachypterus (Say)
Carpophilus corticinus Erichson
Carpophilus freemani Dobson
Carpophilus hemipterus (L.)
Carpophilus lugubris Murray
Carpophilus marginellus Motschulsky
Carpophilus sayi Parsons
Colopterus semitectus (Say)
Conotelus obscurus Erichson
Cryptarcha ampla Erichson
Cryptarcha concinna Melsheimer
Cryptarcha strigatula Parsons
Eपुरaea alternata Parsons
Eपुरaea peltoides Horn
Eपुरaea rufa (Say)
Glischrochilus fasciatus Olivier
Glischrochilus quadrisignatus (Say)
Glischrochilus sanguinolentus (Olivier)
Lobiopa undulata (Say)
Omosita colon (L.)
Phenolia grossa (F.)
Prometopia sexmaculata (Say)
Stelidota geminata (Say)
Colopterus sp.

Noteridae:
Hydrocanthus iricolor Say
**Hydrocanthus iricolor* Say
Suphisellus puncticolis Sharp
Hydrocanthus sp.

Ostomidae:
Thymalus marginicollis Chevrolat

Pedilidae:
Pedilus prob. *elegans* (Henze)
Pedelus sp.

Pselaphidae:
Piloptus sp.

Ptilodactylidae:
Ptilodactyla serricollis (Say)

Pyrochroidae:
Dendroides cyanipennis Latr.

Scarabaeidae:
Ataenius platensis (Blanch.)
Ataenius strigatus (Say)
Pelidnota punctata (L.)
Phyllophaga fuscata (Froelich)
Phyllophaga futilis (LeC.)
Phyllophaga tristis (F.)
Popillia japonica Newman
Onthophagus becate Panzer

Staphylinidae:
Acylophores alternans Smetana

TABLE 1 (CONTINUED)

Carphaeis intrusus (Horn)
Creophilus maxillosus (L.)
Deinopsis illinoisensis Klimaszewski
Lordibon cinctus (Gravenhurst)
Paederus littorarius Smr.
Platydracus maculosus (Gravenh.)
Platydracus vulpinus Nordman
Homaeotarsus sp.
Olophrum sp.
Omalius sp.
Tachyusa sp.

Tenebrionidae:
Alobates pennsylvanica (DeGeer)
Pseudocistela amoena (Say)
Strongylium tenuicolle (Say)
Hymenorus sp.

Trogoitidae:
Tenebroides corticalis (Melsh.)

DIPTERA

Acroceridae:
Larsia sp.

Chironomidae:
Chironomus decorus
Chironomus plumosus group - (1 specimen)
Dicrotendipes modestus (Say)
Parachironomus sp.
Procladius (*Psilotanypus*) *bellus* (Loew)
Procladius sp.

Culicidae:
Anopheles crucians Wiedemann
Anopheles punctipennis (Say)
Anopheles quadrimaculatus Say
Anopheles walkeri Theobald
Aedes aurifer (Croquillet)
Aedes canadensis (Theobald)
Aedes cinereus Meigen
Aedes sticticus (Meigen)
Aedes triseriatus (Say)
Aedes trivittatus (Croquillet)
Aedes vexans (Meigen)
Culex erraticus (Dyar & Kab)
Culex pipiens L.
Culex restuans Theobald
Culex salinarius Croquillet
Culex territans Walker
Culex sp.
Culiseta melanura (Croquillet)
Culiseta minnisotae Barr
Coquillettidia perturbans (Walker)
Psorophora ciliata (F.)
Psorophora ferox (von Humboldt)
Uranotaenia sapphirina (Osten-Sacken)

Phoridae:
Lecanocerus compressiceps Burgmeier

Ceratopogonidae:
3 specimens

Stratiomyidae:
Odontomyia sp.
Stratiomys sp.

Syrphidae:
1 specimen

EPHEMEROPTERA

Baetidae:
Callibaetis sp.

Caenidae:
Caenis sp.

TABLE 1 (CONTINUED)

HETEROPTERA

Belostomatidae:
Belostoma sp.

Nepidae:
 **Nepa apiculata* Uhler

Corixidae:
Hesperocorixa obliqua (Hungerford)
Hesperocorixa lucida (Abbott)
Palmacorixa gillettei Abbott
Sigara alternata (Say)
Trichocorixa naias (Kirkaldy)
Sigara sp.

Notonectidae:
 **Notonecta lunata* Hungerford
 **Notonecta indica* L.
 **Notonecta undulata* Say
Notonecta lunata Hungerford

Naucoridae:
Pelocoris sp.

Pleidae:
Neoplea sp.

HOMOPTERA

Acanaloniidae:
 1 unknown sp.#1

Cercopidae:
 1 unknown sp.#1

Cicadellidae:
Amblysellus curtis (Fitch)
Aphrodes flavostrigata
Colladonus clitellarius (Say)
Draeculacepbela antica (Walker)
Draeculacepbala mollipes (Say)
Empoasca prob. *erigeron*
Empoasca sp.#1
Empoasca sp.#2
Endria inimica (Say)
Erythroneura sp.
Forcipata loca D & C
Forcipata sp.#1
Forcipata sp.#2
Graminella nigrifrons (Forbes)
Graminella fitchi (Van Duzee)
Helochara communis Fitch
Latalus sayi (Fitch)
Macrosteles quadrilineatus (Forbes)
Paraphlepsius irroratus (Say)
Scaphitopius acutus (Say)
Scaphitopius frontalis (Van Duzee)
Scaphoideus elongatus Delong & Beery
Streptanus confinis (Reuter)
Xestocephalus desertorum (Berg.)
 1 unknown sp.#1
 1 unknown sp.#2
 1 unknown sp.#3
 1 unknown sp.#4

Delphacidae:
 1 unknown sp.#1

Membracidae:
 1 unknown sp.#1
 1 unknown sp.#2

HYMENOPTERA

Vespididae:
Dolichovespula arenaria (F.)
Dolichovespula maculata (L.)
Vespula flavopilosa Jacobson
Vespula germanica (F.)

TABLE 1 (CONTINUED)

Vespula maculifrons (Buysson)
Vespula vulgaris (L.)
Polistes sp.

Apidae:
Apis mellifera L.

LEPIDOPTERA

MOTHS

Arctiidae:
Cynia tenera Hbn.
Estigmene acrea (Dru.)
Grammia virgo (L.)
Halysidota tessellaris (J. E. Smith)
Haploa confusa (Lyman)
Hyphantria cunea (Drury)
Lophocampa caryae Harr.
Phragmatobia fuliginosa rubricosa (Harr.)
Pyrrharctia isabella (J. E. Smith)
Spilosoma virginica (F.)

Geometridae:
Biston betularia (L.)
Campaea perlata (Gn.)
Eusarca confusaria Hbn.
Eutrapela clemataria (Smith)
Lomographa vestaliata (Gn.)
Pero hubneraria (Gn.)
Pero honestaria (Wlk.)
Scopula inductata (Gn.)
Synchlora aerata (F.)
Tetracis cachexiata Gn.
Tetracis crocallata Gn.
Xanthotype urticaria Swett

Lasiocampidae:
Tolyte vellea (Stoll)

Noctuidae:
Acronicta basta Gn.
Agrotis gladiaria Morr.
Agrotis ipsilon (Hufn.)
Agrotis venerabilis Wlk.
Autographa precatiois (Gn.)
Bellura gortynoides Wlk.
Caenurgina crassiuscula (Haw.)
Colocasia propinqualis (Grt.)
Crambus laqueatellus Clem.
Euplexia benesimilis McD.
Feltia tricolor (Lint.)
Galgula partita Gn.
Lacinipolia renigera (Steph.)
Leucania lapidaria (Grote)
Lithophane antennata (Wlk.)
Lithophane bethunei (G. & R.)
Luperina passer (Gn.)
Macroclypeus oriferalis Wlk.
Maliattha synochitis (G. & R.)
Nedra ramosula (Gn.)
Nephelodes minians Gn.
Orthodes crenulata (Bltr.)
Papaipema baptisiae (Bird)
Papaipema cerussata (Grt.)
Papaipema nebris (Gn.)
Papaipema necopina (Grt.)
Phusia contexta Grt.
Pseudaletia unipuncta (Haw.)
Rivula propinqualis Gn.
Sunira bicolorago (Gn.)
Tarachidia erastrioides (Gn.)
Xestia badinodis (Grt.)
Zanclognatha pedipilalis (Gn.)

TABLE 1 (CONTINUED)

Notodontidae:
1 unknown sp.#1
Pyrilidae:
Hypsopygia costalis (F.)
Saturniidae:
Actias luna (L.)
Antberaea polyphemus (Cram.)
Hyalophora cecropia (L.)
Sesiidae:
Pennisetia marginata (Harris)
Synanthedon exitiosa (Say)
Synanthedon pictipes (Grote & Robinson)
Synanthedon rileyana (Hy. Edwards)
Sphingidae:
Deidamia inscripta (Harr.)
Paonias excaecatus (J. E. Smith)
Paonias myops (J. E. Smith)
Smerinthus jamaicensis (Dru.)
Tortricidae:
Endopiza viteana Clemens
Yponomeutidae:
Aiteva punctella (Cram.)

BUTTERFLIES

Danaidae:
Danaus plexippus L.
Hesperiidae:
Ancyloxypha numitor F.
Epargyreus clarus Cram.
Erynnis juvenalis juvenalis F.
Pholisora catullus F.
Poanes hobomok hobomok Harris
Lycaenidae:
Celastrina ladon ladon Cram.
Everes comyntas comyntas Godart
Lycaena hylus Cramer
Satyrium calanus falacer Harr.
Nymphalidae:
Euphydryas phaeton phaeton Drury
Limenitis archippus archippus Cr.
Limenitis arthemis astyanax F.
Nymphalis milberti milberti Lat.
Phyciodes tharos tharos Drury
Polygonia interrogattonis F.
Polygonia comma Har.
Speyeria cybele cybele F.
Vanessa atalanta rubria (Fruhstorfer)
Vanessa virginiensis Drury
Papilionidae:
Papilio polyxenes asterius Stoll
Papilio glaucus glaucus L.
Pieridae:
Colias eurytheme Boisd.
Colias philodice philodice Lat.
Pieris rapae L.

MEGALOPTERA

Corydalidae:
Chaulioides sp.

ODONATA

Aeschnidae:
Anax junius Drury
Calopterygidae:
Calopteryx maculata Beauvois
Coenagrionidae:

TABLE 1 (CONTINUED)

Argia apicalis
Argia fumipennis violacea Hagen
Argia moesta
Ischnura posita Hagen
Ischnura verticalis Say
Enallagma civile Hagen
Gomphidae:
Gomphus fraternus
Libellulidae:
Erythemis simplicolus Say
Leucorrhinia intacta Hagen
Libellula luctuosa Burmeister
Libellula lydia Drury
Libellula pulchella Drury
Pachydiplax longipennis Burmeister
Lestidae:
Lestes rectangularis Say
Lestes sp.

ORTHOPTERA

Acrididae:
Melanoplus bivittatus (Say)
Melanoplus confusus Scudder
Melanoplus differentialis differentialis Thomas
Melanoplus femurrubrum femurrubrum (DeGeer)
Melanoplus sanguinipes sanguinipes (F.)
Orphulella pelidna pelidna (Burmeister)
Gryllacrididae:
Ceuthophilus meridionalis Scudder
Gryllidae:
Allonemobius fasciatus (DeGeer)
Anaxipha exigua (Say)
Gryllus pennsylvanicus Burmeister
Oecanthus nigricornis Walker
Tetrigidae:
Nomotettix cristatus compressus Morse
Tetrix ornata (Say)
Tetrix subulata (L.)
Tettigidea lateralis lateralis (Say)
Tettigoniidae:
Atlantiscus americanus (Saussure)

MISCELLANEOUS ARTHROPODA**Crustacea****Amphipoda**

Talitridae:
Hyalella azteca (Saussure)

Arachnoidea

Hydracarina sp.

ANNELIDA**Hirudinea**

Glossiphoniidae:
Glossiphonia complanata (L.)
Helobdella stagnalis L.
Placobdella parasitica (Say)
Hirudinidae:
Haemopsis marmorata (Say)
Macrobodella decora Say
Macrobodella fusca

COELENTERATA

Hydra sp.

*Taken from Foster Purrington's 1987 collections.

species count should near 500 for 1994. When the collections from 1993 and 1994 are combined, the list should contain nearly 1,000 different species from the Killbuck Marsh Wildlife Area. Of course, this is only an initial survey, and we hope it will encourage others to conduct future studies concerning the biodiversity of the Arthropod fauna of this important wetland.

The new trap used in 1994, an aquatic light trap, proved to be very effective in capturing a wide variety of aquatic insects. The Coleoptera collected from this trap include predaceous diving beetles (Dytiscidae), water scavenger beetles (Hydrophilidae), whirligig beetles (Gyrinidae), crawling water beetles (Haliplidae), and long-toed water beetles (Dryopidae). Many true bugs (Heteroptera) were also taken including waterscorpions (Nepidae), giant water bugs (Belostomatidae), water boatmen (Corixidae), toad bugs (Gelastocoridae), creeping water bugs (Naucoridae), and backswimmers (Notonectidae). Also, many dragonfly and damselfly (Odonata), mayfly (Ephemeroptera), and dobsonfly and fishfly (Neuroptera) nymphs were collected with the aquatic light trap. Furthermore, a great number of isopods, amphipods, crustaceans, leeches, etc. were collected with these traps.

The aerial light traps were also very successful again this year. Most of the Lepidoptera, Trichoptera, and several Coleoptera families were taken exclusively with this trap type. Variegated mud-loving beetles (Heteroceridae) were collected by the thousands in these traps as well as several ground beetles (Carabidae), and leaf beetles (Chrysomelidae). Similar to last year, two sap beetles (Nitidulidae) were collected in the light traps; *Prometopota sexmaculata* (Say) was caught exclusively in this trap (three specimens), and *Epuraea rufa* (Say) was numerous in the light traps throughout June. *E. rufa*, however, was also collected with the NIT traps throughout the season.

The window traps captured a wide variety of foraging insects found in the surrounding grass and provided a good way of randomly sampling low flying insects. This trap provided all of our grasshoppers and crickets (Orthoptera). Also, most of the leafhoppers (Homoptera) and true bugs (Heteroptera) were collected from these traps, many of which are yet to be identified. Damselflies (Odonata) seemed particularly vulnerable to this trap and were numerous in some of them in early summer.

The NIT traps, originally designed for capturing sap beetles (Nitidulidae), performed very well as general pitfall traps. Approximately 25 species of sap beetles were taken from these traps. However, they also captured hundreds of yellow jackets, particularly late in the season (October). In addition, the ground traps also yielded ground beetles, ants, and plant bugs.

Sampling the carrion bait was not as successful as anticipated. Turkey, which constituted the bulk of our bait, deteriorated much too quickly after being in cold storage. They simply disintegrated within a week or so.

They did, however attract many carrion beetles (Silphidae), trox beetles (Trogidae), and one species of sap beetle (*Omosita colon* [Nitidulidae]).

Aerial netting was our primary means for capturing adult dragonflies. We made two collections, one early season (June 1) and one late season (August 22). Finally, aquatic sweeping caught several water bugs not encountered in the aquatic light traps, namely backswimmers (Notonectidae) and some predaceous diving beetles (Dytiscidae).

As indicated in Table 1, several insects in the table were collected in 1987, by Foster Purrington. They were included because all were taken from the same fishless pond we surveyed this season (1994) at site 1. The mosquitoes (Culicidae) and all other Diptera were determined by Dr. Richard Berry. When the consolidated list is compiled, these previous collections may prove valuable by indicating trends in the presence of certain species and possibly even new species in the area.

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VIDEO INFORMATION

Accompanying this report is a video production which concentrates on the insects in the Killbuck Marsh Wildlife Area. It is available on loan from the Wayne County Public Library and for loan or purchase from The Ohio State University, Extension Publications, 385 Kottman Hall, 2021 Coffey Road, Columbus, Ohio 43210 (Tel. 614/292-1607). The first video in this series, "An Introduction to the Killbuck Marsh Wildlife Area of Northeast Ohio," was produced in 1993, and is available from the same sources.