

# Insects in the Killbuck Marsh Wildlife Area: 1993 Survey<sup>1</sup>

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**ABSTRACT.** The Killbuck Marsh Wildlife Area was the focus of a seven month survey performed in 1993 to determine the diversity of selected insects. Primary emphasis was focused on three families of Coleoptera: ground beetles, including tiger beetles (Carabidae); sap beetles (Nitidulidae); and carrion beetles (Silphidae). Rare or endangered species within these families were of particular interest and constant vigilance was made to detect them. Five collection methods were used at five sites within the Killbuck Marsh. These included: ultraviolet (black light) traps, flight interception (window) traps, bait traps, carrion bait sampling, and aerial and aquatic sweep netting. In all, 68 ground beetle, 30 sap beetle, and seven carrion beetle species were identified. In addition to these families, beetles from 47 other families (372 species) of Coleoptera were collected and identified. Aside from Coleoptera, several dragonflies and damselflies (Odonata), caddisflies (Trichoptera), butterflies and moths (Lepidoptera), and mosquitoes and midges (Diptera) were also taken. Six ground beetle species considered uncommon were encountered: *Agonum cupripenne* (Say), *Agonum galvestonicum* Casey, *Chlaenius niger* Randall, *Oödes americanum* Dejean, *Blemus discus* (F.), and *Stenocrepis cuprea* (Chaudoir). One hiser beetle (Histeridae), *Anapleus marginatus* LeConte, was also very uncommon for this area.

OHIO J. SCI. 95 (3): 226–232, 1995

## INTRODUCTION

The Killbuck Marsh Wildlife Area, the second largest wetland remaining in Ohio, was the focus of a seven month survey in 1993 to determine its insect fauna. This is the first survey of this magnitude of the Killbuck Marsh which basically lists all of the species we could get identified from several trapping methods. Such benchmark information is necessary in order to measure/compare biodiversity in the future. Should this habitat come under threat by natural or human conditions, this survey will serve as a basis to assess the impact these conditions might have on the local insect fauna.

Additional projects associated with the Killbuck Marsh Wildlife Area have recently been conducted to examine the Killbuck Creek's water quality (Ohio Environmental Protection Agency 1986, unpublished) and the degrees of organic pollution on benthic macroinvertebrates (Sommer 1994).

The Ohio Department of Natural Resources (ODNR) began purchasing land for the Killbuck Marsh Wildlife Area in 1969, and it now encompasses approximately 5,500 acres maintained by the ODNR Division of Wildlife. The marsh is located in a U-shaped glacial outwash valley about 6.5 km southwest of Wooster in Wayne and Holmes counties between State Routes 226 and 83. About 60% of this wetland is flooded during some portion of the season and produces diverse hydrophytic vegetation. Some of the components included are cattail (*Typha latifolia*), button-bush (*Cephalanthus occidentalis*), and arrowhead (*Sagittaria latifolia*).

## MATERIALS AND METHODS

Five sites representing different habitats were chosen in order to capture a broad range of insects. Site one was a fairly isolated, narrow, vegetated island within the marsh, and it yielded most of the aquatic insects such as predacious diving beetles (Dytiscidae), water scavenger beetles (Hydrophilidae), and crawling water beetles (Halipilidae). Site two was located on a bank facing the marsh with access to woods and farmland. Site three was a narrow tree line surrounded by grassland and open fields. A low-lying area on the Killbuck Creek's floodplain served as site four. Finally, site five was a dense upland woodlot adjacent to the marsh approximately 5 m above the level of the river. A detailed map of the Killbuck Marsh Wildlife Area and any additional information about this habitat may be obtained from the Area Manager in Shreve, OH, at (216) 567-3390.

Primary collection emphasis was focused on Coleoptera, especially ground/tiger beetles (Carabidae), sap beetles (Nitidulidae), and carrion beetles (Silphidae). Many other orders and families of insects were collected and, with the aid of specialists, determined to species. Groups of particular interest in this wetland setting were the dragonflies and damselflies (Odonata), caddisflies (Trichoptera), mosquitoes (Diptera), various families of aquatic beetles (Coleoptera), and butterflies and moths (Lepidoptera).

Five collection methods were utilized in the study to optimize the diversity of insects encountered. All traps were set on 7 May 1993, collected weekly unless otherwise noted, and removed on 14 October 1993. Four general purpose "black light" survey traps (O. B. Enterprises, Oregon, WI) (two AC and two DC) were placed, one each, at sites one, two, three, and five. All of the light trap entrances were situated approximately 1 m above ground. The four light traps were run 48 hours continuously per week.

<sup>1</sup>Manuscript received 21 October 1994 and in revised form 6 March 1995 (#94-23).

A flight intercept (window) trap similar to the design used in Peck and Davies (1980) was used at sites one, two, four, and five. The window pane of each trap was about 0.7 m<sup>2</sup> with troughs made of PVC pipe on each side of the pane. The bottom of each trap was at ground level and the PVC troughs were filled with soapy water. Four nitidulid inventory technique (NIT) traps (Williams et al. 1993) were utilized, two with whole wheat bread dough and two with fermenting brown sugar, at each of the five sites. Each bait was used at two levels, ground level and 1 m above ground level, at every site.

In order to survey for carrion insects, unmarketable turkeys and road kills, mostly squirrels, were placed at random around the five sites, secured with chicken wire, and checked every two weeks. Three multiple-plate aquatic macroinvertebrate samplers (Hester and Dendy 1962) were used to capture Elmidae (riffle beetles). Sweep nets were used to survey insects on vegetation, and aquatic sweep nets were used weekly at all five sites.

During weekly collection of all traps, insects were either placed directly in 70% ethanol (NIT traps and sweep net material) or frozen and then placed in ethanol (light and window trap specimens) to preserve them for later identification.

In addition to the present paper, we have produced a short video on the history and public use of the Killbuck Wetlands entitled "An Introduction to The Killbuck Marsh Wildlife Area of Northeast Ohio" which is available through OSU Extension Publications at (614) 292-1607.

## RESULTS AND DISCUSSION

The total number of insects includes nearly 500 species in 85 families belonging to 10 orders (Table 1). Of the five trapping methods used (window trap, light trap, NIT trap, carrion bait, and sweep net sampling), the light traps yielded the greatest number of species comprising an estimated 70% of the total number of species caught. Several ground beetles, water scavenger beetles, and variegated mud-loving beetles (Heteroceridae) were collected in these traps in large numbers. Most of the butterflies and moths, caddisflies, and predacious diving beetles were also taken in the light traps.

All sap beetles, with three exceptions, were caught in the NIT traps baited with fermenting brown sugar or wheat dough. The three exceptions were *Prometopia sexmaculata* (Say), which was collected only in the light traps; *Epuraea rufa* (Say), which was collected frequently in the light and window traps; and *Omosita colon* (L.), which was lured to carrion in large numbers. Connell (1956) reported rarely collecting *E. rufa* in light traps in Delaware. One specimen of *Prometopia bisignata* was collected at a Mercury light on 4 March 1962 (Gillooly 1969). *P. sexmaculata* is normally associated with sap flows, and was among the principal species found associated with oak wilt in West Virginia (True et al. 1960). Several ground beetles were also collected in the NIT traps.

The carrion bait (rodent and turkey carcasses) attracted many carrion beetles, trox beetles (Trogidae), and one

TABLE 1

1993 Killbuck Marsh Wildlife Area insect list.

Species
<b>ODONATA (6 Families; 24 Species)</b>
I Dragonflies
Aeschnidae:
<i>Aeschna mutata</i> Hagen
<i>Aeschna canadensis</i> Walker
<i>Anax longipes</i> Hagen
<i>Anax junius</i> Drury
Gomphidae:
<i>Gomphus lividus</i> Selys
<i>Gomphus villosipes</i> Selys
Libellulidae:
<i>Celithemis elisa</i> Hagen
<i>Celithemis eponina</i> Drury
<i>Erythemis simplicicollis</i> Say
<i>Libellula luctuosa</i> Burmeister
<i>Libellula pulchella</i> Drury
<i>Libellula lydia</i> Drury
<i>Pachydiplax longipennis</i> Burmeister
<i>Perithemis tenera</i> Say
<i>Sympetrum vicinum</i> Hagen
<i>Tramea lacerata</i> Hagen
II Damselflies
Coenagrionidae:
<i>Enallagma aspersum</i> Hagen
<i>Enallagma civile</i> Hagen
<i>Ischnura posita</i> Hagen
<i>Ischnura verticalis</i> Say
Lestidae:
<i>Lestes congener</i> Hagen
<i>Lestes forcipatus</i> Rambur
<i>Lestes rectangularis</i> Say
Calopterygidae:
<i>Calopteryx maculata</i> Beauvois
<b>TRICHOPTERA (5 Families; 20 Species)</b>
Hydropsychidae: Netspinning Caddisflies
<i>Ceratopsyche slossonae</i> (Banks)
<i>Cheumatopsyche campyla</i> Ross
<i>Cheumatopsyche pettiti</i> (Banks)
<i>Hydropsyche betteni</i> Ross
<i>Hydropsyche dicantha</i> Ross
<i>Hydropsyche rossi</i> Fli., Vos., Par.
Leptoceridae: Longhorned Caddisflies
<i>Ceraclaea maculata</i> (Banks)
<i>Ceraclaea tarsipunctata</i> (Vorhies)
<i>Leptocerus americana</i> (Banks)
<i>Oecetis inconspicua</i> (Walker)
<i>Triaenodes injustus</i> Milne
<i>Triaenodes tardus</i> (Hagen)
<i>Nectopsyche</i> sp.
Limnephilidae: Northern Caddisflies
<i>Limnephilus indivisus</i> Walker
<i>Limnephilus submonilifer</i> Walker
<i>Pycnopsyche lepida</i> (Hagen)
Phryganeidae: Large Caddisflies
<i>Agrypnia vestita</i> (Walker)
<i>Phryganea sayi</i> Milne
<i>Ptilostomis postica</i> (Walker)
Rhyacophilidae:
<i>Rhyacophila ledra</i> Ross
<b>LEPIDOPTERA (9 Families; 24 Species)</b>
I Butterflies
Danaiidae: Milkweed Butterflies
<i>Danaus plexippus plexippus</i> L.
Lycaenidae: Blues & Hairstreaks
<i>Lycaena hylus</i> Cramer
Nymphalidae: Brushfooted Butterflies
<i>Limenitis arthemis arthemis</i> Drury

TABLE 1 (Continued)

Species
<i>Nymphalis antiopa antiopa</i> L.
Papilionidae: Swallowtails
<i>Papilio glaucus glaucus</i> L.
<i>Papilio troilus troilus</i> L.
Pieridae: Whites and Sulphurs
<i>Colias eurytheme</i> Boisduval
<i>Colias philodice philodice</i> Godart
Satyridae: Satyrs & Wood Nymphs
<i>Enodia anthedon</i> A. H. Clark
II Moths
Noctuidae: Owlet Moths
<i>Acronicta basta</i> Guenée
<i>Agriopodes fallax</i> (Herr.-Schaff.)
<i>Bellura obliqua</i> (Walker)
<i>Lacanobia subjuncta</i> (Grote & Rob.)
<i>Leucania lapidercea</i> (Grote)
<i>Leucania multilinea</i> Walker
<i>Nedra ramosula</i> (Guenée)
<i>Ochropleura plecta</i> (L.)
<i>Pseudaletia unipuncta</i> (Haworth)
<i>Simyra henrici</i> (Grote)
Saturniidae: Silkworm & Royal Moths
<i>Actias luna</i> L.
<i>Automeris io</i> F.
<i>Eacles imperialis</i> Drury
<i>Hyalophora cecropia</i> L.
Sphingidae: Sphinx Moths
<i>Ampbion floridensis</i> B. P. Clark
<b>COLEOPTERA (50 Families; 372 Species)</b>
Alleculidae: Comb-clawed Beetles
<i>Mycetochara fraterna</i> (Say)
Anobiidae: Deathw. & Drug. Beetles
<i>Stegobium panicum</i> (L.)
Anthicidae: Antlike Flower Beetles
<i>Anthicus cervinus</i> LaFerté-Sénéct.
<i>Notoxus monodon</i> F.
<i>Notoxus murinipennis</i> LeConte
<i>Sapintus fulvipes</i> (Laf.)
Bostrichidae: False Powder. Beetles
<i>Lichenophanes bicornis</i> (Weber)
<i>Xylobiops basilare</i> (Say)
Bruchidae: Seed Beetles
<i>Amblycerus robiniae</i> (F.)
Cantharidae: Soldier Beetles
<i>Cantharis bilineatus</i> Say
<i>Cantharis impressus</i> LeConte
<i>Chauliognathus pennsylvanicus</i> DeG.
<i>Podabrus modestus</i> (Say)
<i>Podabrus rugosulus</i> LeConte
Carabidae: Ground and Tiger Beetles
<i>Agonum cupripenne</i> (Say)
<i>Agonum extensicolle</i> (Say)
<i>Agonum galvestonicum</i> (Casey)
<i>Agonum harrisi</i> LeConte
<i>Agonum lutulentum</i> (LeConte)
<i>Agonum melanarium</i> (Dejean)
<i>Agonum placidum</i> (Say)
<i>Agonum tenue</i> (LeConte)
<i>Amara cupreolata</i> Putzeys
<i>Amara impuncticollis</i> (Say)
<i>Amara pallipes</i> Kirby
<i>Anisodactylus discoideus</i> Dejean
<i>Anisodactylus furvus</i> LeConte
<i>Anisodactylus harrisi</i> LeConte
<i>Anisodactylus kirbyi</i> Lindroth
<i>Bembidion affine</i> Say
<i>Bembidion americanum</i> Dejean
<i>Bembidion bifossulatum</i> (LeConte)
<i>Bembidion impotens</i> Casey
<i>Bembidion patruelle</i> Dejean

TABLE 1 (Continued)

Species
<i>Bembidion rapidum</i> (LeConte)
<i>Bembidion versicolor</i> (LeConte)
<i>Blemus discus</i> (F.)
<i>Bradycellus atrimediis</i> (Say)
<i>Calathus gregarius</i> (Say)
<i>Chlaenius emarginatus</i> Say
<i>Chlaenius impunctifrons</i> Say
<i>Chlaenius lithophilus</i> Say
<i>Chlaenius nemoralis</i> Say
<i>Chlaenius niger</i> Randall
<i>Chlaenius pennsylvanicus</i> Say
<i>Cicindela punctulata</i> Olivier
<i>Cicindela sexguttata</i> F.
<i>Clivina americana</i> Dejean
<i>Clivina bipustulata</i> (F.)
<i>Clivina impressifrons</i> LeConte
<i>Colliuris pensylvanica</i> (L.)
<i>Dyschirius erythrocerus</i> LeConte
<i>Dyschirius haemorrhoidalis</i> (Dej.)
<i>Elaphropus xanthopus</i> (Dejean)
<i>Elaphrus californicus</i> Mannerheim
<i>Elaphrus ruscarius</i> Say
<i>Harpalus caliginosus</i> (F.)
<i>Harpalus pensylvanicus</i> (DeGeer)
<i>Lebia analis</i> Dejean
<i>Lebia atriventris</i> Say
<i>Lebia fuscata</i> Dejean
<i>Lebia grandis</i> Hentz
<i>Lebia solea</i> Hentz
<i>Lebia tricolor</i> Say
<i>Lebia viridis</i> Say
<i>Leptotracheus dorsalis</i> (F.)
<i>Oödes americanus</i> Dejean
<i>Paratachys proximus</i> (Say)
<i>Platynus cincticollis</i> Say
<i>Platynus hypolibus</i> (Say)
<i>Poecilus chalcites</i> (Say)
<i>Poecilus lucublandus</i> (Say)
<i>Pterostichus corvinus</i> (Dejean)
<i>Pterostichus commutabilis</i> (Motsc.)
<i>Pterostichus stygicus</i> (Say)
<i>Schizogenius lineolatus</i> (Say)
<i>Stenocrepis cuprea</i> (Chaudoir)
<i>Stenolophus fuliginosus</i> Dejean
<i>Stenolophus ochropezus</i> (Say)
<i>Badister</i> (s. str.) sp.
<i>Dyschirius</i> sp. 1
<i>Dyschirius</i> sp. 2
Cerambycidae: Longhorned Beetles
<i>Anelaphus villosus</i> F.
<i>Eburia quadrigeminata</i> (Say)
<i>Elaphidion mucronatum</i> (Say)
<i>Eupogonus tomentosus</i> (Halderman)
<i>Gaurotes cyanipennis</i> (Say)
<i>Graphisurus fisciatus</i> (DeGeer)
<i>Megacyllene robiniae</i> (Forster)
<i>Micranophium unicolor</i> (Halderman)
<i>Orthosoma brunneum</i> Forster
<i>Prionus laticollis</i> (Drury)
<i>Smodicum cucujforme</i> (Say)
<i>Xylotrechus colonus</i> (F.)
Chrysomelidae: Leaf Beetles
<i>Acalymma vittatum</i> (F.)
<i>Altica litigata</i> Fall
<i>Calligrapha californica</i> Brown
<i>Chalepus dorsalis</i> Thunberg
<i>Chrysochus auratus</i> (F.)
<i>Diabrotica longicornis barberi</i> S&L
<i>Diabrotica undecimpunctata howardi</i> Barber
<i>Disonycha pennsylvanica</i> (Illiger)
<i>Donacia emarginata</i> Kirby

TABLE 1 (Continued)

Species
<i>Donacia subtilis</i> Kunze
<i>Lema collaris</i> Say
<i>Leptinotarsa decemlineata</i> (Say)
<i>Paria canella</i> (F.)
<i>Phyllotreta striolata</i> (F.)
<i>Trirhabda virgata</i> LeConte
<i>Tymnes tricolor</i> (F.)
<i>Zygogramma suturalis</i> (F.)
Cleridae: Checkered Beetles
<i>Cymatodera undulata</i> Say
<i>Enoclerus nigripes</i> (Say)
<i>Placopterus thoracicus</i> (Olivier)
<i>Zenedosus sanguineus</i> (Say)
Coccinellidae: Lady Beetles
<i>Adalia bipunctata</i> (L.)
<i>Brachyacantha ursina</i> (F.)
<i>Calvia 14-guttata</i> (L.)
<i>Coccinella novemnotata</i> Herbst
<i>Coleomegilla fuscilabris</i> Mulsant
<i>Cycloneda sanguinea</i> (L.)
<i>Diomus terminatus</i> (Say)
<i>Hippodamia glacialis</i> (F.)
<i>Neomysia pullata</i> (Say)
<i>Psyllobora vigintimaculata</i> (Say)
Cryptophagidae: Silk Fungus Beetles
<i>Telmatophilus americanus</i> LeConte
<i>Atomaria</i> (s. str.) <i>pusilla</i> Payk.
<i>Atomaria</i> (s. str.) sp.
<i>Atomaria</i> (Anchicara) sp. 1
<i>Atomaria</i> (Anchicara) sp. 2
<i>Atomaria</i> (Anchicara) sp. 3
Cucujidae: Flat Bark Beetles
<i>Cucujus clavipes</i> F.
Curculionidae: Weevils
<i>Anametis granulata</i> (Say)
<i>Calendra australis</i> (Chittenden)
<i>Ceutorhynchus americanus</i> Buch.
<i>Conotrachelus anaglypticus</i> (Say)
<i>Conotrachelus geminatus</i> LeConte
<i>Cyrtopistomus castaneus</i> (Roelof.)
<i>Dorytomus vagenotatus</i> Csy.
<i>Hypera compta</i> (Say)
<i>Listronotus appendiculatus</i> (Bohe.)
<i>Listronotus porcellus</i> (Say)
<i>Listronotus squamiger</i> (Say)
<i>Lixus concavus</i> Say
<i>Lixus macer</i> LeConte
<i>Odontopus calceatus</i> (Say)
<i>Pelenomus sulcicollis</i> (F.)
<i>Sitona cylindricollis</i> F.
<i>Sphenophorus australis australis</i> (Chittenden)
<i>Stenopelmus rufinasus</i> Gyll.
<i>Tanyssphyrus lemnae</i> (F.)
<i>Tychius picirostris</i> (F.)
<i>Tyloderma aereum</i> (Say)
<i>Smicronyx</i> sp.
Dermestidae: Dermestid Beetles
<i>Anthrenus verbasci</i> (L.)
<i>Dermestes caninus</i> Germar
Dryopidae: Long-toed Beetles
<i>Helicbus</i> sp.
Dytiscidae: Predac. Diving Beetles
<i>Acilius fraternus</i> Harris
<i>Acilius semisulcatus</i> Aubé
<i>Acilius sylvanus</i> Hilsenhoff
<i>Bidessus affinis</i> (Say)
<i>Celina angustata</i> Aubé
<i>Celina hubbelli</i> Young
<i>Coptotomus interrogatus</i> (F.)
<i>Coptotomus lenticus</i> Hilsenhoff
<i>Cybister fimbriolatus</i> Say

TABLE 1 (Continued)

Species
<i>Dytiscus hybridus</i> Aubé
<i>Graphoderus liberus</i> (Say)
<i>Hydaticus modestus</i> Sharp
<i>Hydrobius consimilis</i> LeConte
<i>Hydrocanthus tricolor</i> Say
<i>Ilybius biguttulus</i> (Germar)
<i>Ilybius oblitus</i> Sharp
<i>Laccophilus fasciatus</i> Aubé
<i>Thermonectus basillaris</i> Harris
<i>Thermonectus nigrofaciatus</i> Aubé
<i>Tropisternus lateralis nibatus</i> (LeConte)
<i>Uvarus lacustris</i> (Say)
<i>Agabus</i> sp.
<i>Celina</i> sp.
<i>Copelatus</i> sp.
<i>Hydaticus</i> sp.
<i>Hydroporus</i> sp. 1
<i>Hydroporus</i> sp. 2
<i>Hygrotus</i> sp.
<i>Laccophilus</i> sp. 1
<i>Laccophilus</i> sp. 2
<i>Rhantus</i> sp.
<i>Uvarus</i> sp.
Elateridae: Click Beetles
<i>Aeolus dorsalis</i> (Say)
<i>Ampepus lineus</i> (Say)
<i>Conoderus bellus</i> (Say)
<i>Hemicrepidius memonius</i> (Herbst)
<i>Agriotes</i> sp.
Elmidae: Riffle Beetles
<i>Ancronyx variegata</i> Germar
<i>Dubiraphia vitata</i> (Melsheimer)
<i>Macronychus glabratus</i> (Say)
<i>Optioservus trivittatus</i> (W. Brown)
<i>Stenelmis crenata</i> (Say)
<i>Stenelmis vittipennis</i> Zimm.
<i>Stenelmis</i> sp.
Endomychidae: Handsome Fungus Beetles
<i>Endomychus biguttatus</i> Say
Erotylidae: Pleasing Fungus Beetles
<i>Ischyurus quadripunctatus</i> (Olivier)
<i>Megalodacne fasciata</i> (F.)
Gyrinidae: Whirligig Beetles
<i>Dinuetus assimilis</i> Aubé
<i>Dinuetus discolor</i> Aubé
Haliplidae: Crawling Water Beetles
<i>Haliplus borealis</i> LeConte
<i>Haliplus triopsis</i> Say
<i>Peltodytes duodecimpunctatus</i> (Say)
<i>Peltodytes edentulatus</i> (LeConte)
<i>Peltodytes muticus</i> (LeConte)
Helodidae:
<i>Scirtes tibialis</i> Guerin-Meneville
<i>Cyphon</i> sp. 1
<i>Cyphon</i> sp. 2
Heteroceridae: Mud-loving Beetles
<i>Neoheterocerus pallidus</i> Say
<i>Tropicus pusillus</i> (Say)
<i>Heterocerus</i> sp.
Histeridae: Hister Beetles
<i>Anapleus marginatus</i> LeC.
<i>Euspilotus assimilis</i> (Paykull)
<i>Geomysaprinus obsidianus</i> (Casey)
<i>Hister abbreviatus</i> F.
<i>Pbelister subrotundus</i> Say
<i>Platysoma lecontei</i> Marseul
<i>Saprinus lugens</i> Erichson
Hydrophilidae: Water Scavenger Beetles
<i>Berosus pantherinus</i> LeConte
<i>Berosus peregrinus</i> (Herbst.)
<i>Berosus striatus</i> (Say)

TABLE 1 (Continued)

Species
<i>Cercyon haemorrhoidalis</i> (F.)
<i>Cercyon berceus</i> Smet.
<i>Cercyon mendax</i> Smet.
<i>Cercyon pubescens</i> LeConte
<i>Cercyon roseni</i> Knisch
<i>Cryptopleurum minutum</i> (F.)
<i>Enochrus consors</i> (LeConte)
<i>Enochrus hamiltoni</i> (Horn)
<i>Enochrus ochraceus</i> (Melsh.)
<i>Enochrus sayi</i> Gundersen
<i>Helocombus bifidus</i> (LeConte)
<i>Hydrobius melaneus</i> (Germar)
<i>Hydrochara obtusata</i> (Say)
<i>Hydrochara soror</i> Smetana
<i>Hydrophilus triangularis</i> Say
<i>Sphaeridium lunatum</i> F.
<i>Sphaeridium scarabaeoides</i> (L.)
<i>Tropisternus blanchleyi</i> (Orchym.)
<i>Tropisternus lateralis</i> (F.)
<i>Tropisternus mexicanus</i> LaPorte
<i>Tropisternus natator</i> (Orchymont)
<i>Anacaena</i> sp.
<i>Berosus</i> sp.
<i>Enochrus</i> sp.
<i>Helophorus</i> sp.
<i>Hydrobius</i> sp.
<i>Hydrochus</i> sp.
<i>Laccobius</i> sp.
<i>Paracymus</i> sp.
<i>Tropisternus</i> sp.
Laemophloeidae: (formerly Cucujidae)
<i>Laemophloeus biguttatus</i> (Say)
Lampyridae: Lightningbugs
<i>Ellychnia corrusea</i> (L.)
<i>Photinus pyralis</i> (L.)
<i>Photuris pennsylvanica</i> (DeGeer)
Languriidae: Lizard Beetles
<i>Acropteryx gracilis</i> Newman
<i>Languria mozardi</i> Latrielle
<i>Loberus impressus</i> LeC.
<i>Toramus pulchellus</i> (LeC.)
Lathridiidae: Min. Br. Scav. Beetles
<i>Corticarina cavicolis</i> (Mann.)
<i>Melanophthalma</i> sp.
<i>Corticaria</i> sp.
Leiodidae:
<i>Colon megasetosum</i> Peck & Step. ms.
Lucanidae: Stag Beetles
<i>Pseudolucanus capreolus</i> (L.)
Lycidae: Netwinged Beetles
<i>Caenia dimidiata</i> (F.)
Melandryidae: False Darkling Beetles
<i>Dircaea quadrimaculata</i> (Say)
<i>Synbroa punctata</i> Newman
Meloidae: Blister Beetles
<i>Epicauta pennsylvanica</i> (DeGeer)
Mycetophagidae: Hairy Fungus Beetles
<i>Litargus balteatus</i> LeC.
<i>Typhaea stercorea</i> L.
<i>Mycetophagus punctatus</i> Say
<i>Mycetophagus</i> sp.
Nitidulidae: Sap Beetles
<i>Amphicrossus ciliatus</i> (Olivier)
<i>Carpophilus antiquus</i> (Melsheimer)
<i>Carpophilus brachypterus</i> (Say)
<i>Carpophilus corticinus</i> Erichson
<i>Carpophilus freemani</i> Dobson
<i>Carpophilus hemipterus</i> (L.)
<i>Carpophilus lugubris</i> Murray
<i>Carpophilus marginatus</i> Erichson
<i>Carpophilus marginellus</i> Motsch.

TABLE 1 (Continued)

Species
<i>Carpophilus sayi</i> Parsons
<i>Colopterus niger</i> (Say)
<i>Colopterus semitectus</i> (Say)
<i>Conotelus obscurus</i> Erichson
<i>Cryptarcha ampla</i> Erichson
<i>Cryptarcha concinna</i> Melsheimer
<i>Cryptarcha strigatula</i> Parsons
<i>Epuraea alternata</i> Parsons
<i>Epuraea peltoides</i> Horn
<i>Epuraea rufa</i> (Say)
<i>Epuraea rufida</i> (Melsheimer)
<i>Glischrochilus fasciatus</i> Olivier
<i>Glischrochilus quadrisignatus</i> (Say)
<i>Glischrochilus sanguinolentus</i> (Olivier)
<i>Lobiopa undulata</i> (Say)
<i>Omosita colon</i> (L.)
<i>Omosita</i> sp.
<i>Phenolia grossa</i> (F.)
<i>Prometopia sexmaculata</i> (Say)
<i>Stelidota geminata</i> (Say)
<i>Colopterus</i> sp.
Noteridae:
<i>Suphisellus puncticollis</i> Crotch
Passandridae: (formerly Cucujidae)
<i>Catogenus rufus</i> (F.)
Pselaphidae:
<i>Brachygluta</i> sp.
Psephenidae: Water-penny Beetles
<i>Psephenus herricki</i> DeKay
Pyrochroidae: Fire-colored Beetles
<i>Dendroides concolor</i> Newman
<i>Neopyrochroa flabelata</i> (F.)
Scarabaeidae: Scarab Beetles
<i>Aphodius distinctus</i> (Mhller)
<i>Aphodius rusticola</i> Melsh.
<i>Aphodius stercorosus</i> Melsh.
<i>Ataenius gracilis</i> (Melsh.)
<i>Ataenius imbricatus</i> (Melsh.)
<i>Ataenius platensis</i> (Blanch.)
<i>Ataenius spretulus</i> (Haldeman)
<i>Ataenius strigatus</i> (Say)
<i>Cyclocephala immaculata</i> (Olivier)
<i>Euphoria inda</i> (L.)
<i>Popillia japonica</i> Newman
<i>Pelidnota punctata</i> L.
<i>Serica sericea</i> (Illiger)
<i>Trox foveicollis</i> Harold
<i>Trox hamatus</i> Robinson
<i>Trox scaber</i> L.
<i>Phyllophaga</i> sp.
Silphidae: Carrion Beetles
<i>Nicrophorus orbicollis</i> Say
<i>Nicrophorus pustulatus</i> Hersch.
<i>Nicrophorus tomentosus</i> Weber
<i>Nicrodes surinamensis</i> (F.)
<i>Necrophila americana</i> L.
<i>Oiceoptoma inaequalis</i> F.
<i>Oiceoptoma noveboracensis</i> (Forst.)
Silvanidae: (formerly Cucujidae)
<i>Abasverus advena</i> (Waltl)
<i>Silvanus planatus</i> Germ.
<i>Telephanus velox</i> (Hald.)
Staphylinidae: Rove Beetles
<i>Achenomorpha corticinus</i> Grav.
<i>Anotylus nitidulus</i> Grav.
<i>Creophilus maxillosus</i> (L.)
<i>Homoetarsus bicolor</i> (Grav.)
<i>Hoplandria lateralis</i> (Melsh.)
<i>Lathrobium rubripenne</i> (Csy.)
<i>Lithocharis ochracea</i> (Grav.)
<i>Neobisnius occidentoides</i> Frank

TABLE 1 (Continued)

Species
<i>Neobisnius sobrinus</i> (Er.)
<i>Tachyporus nitidulus</i> (F.)
<i>Philonthus alumnus</i> Er.
<i>Philonthus cyanipennis</i> (F.)
<i>Aleocharinae</i> sp.
<i>Bledius</i> sp. 1
<i>Bledius</i> sp. 2
<i>Carpelimus</i> sp. 1
<i>Carpelimus</i> sp. 2
<i>Carpelimus</i> sp. 3
<i>Carpelimus</i> sp. 4
<i>Carpelimus</i> sp. 5
<i>Lathrobium</i> sp.
<i>Lobrathium</i> sp.
<i>Neohypnus</i> sp.
<i>Philonthus</i> sp.
Tenebrionidae: Darkling Beetles
<i>Alphitobius diaperinus</i> (Panzer)
<i>Cymaeus angustus</i> (LeConte)
<i>Diaperis maculata</i> Olivier
<i>Tenebrio molitor</i> L.
<i>Hymenorus</i> sp. (formerly Alleculidae)
Throscidae:
<i>Trixagus chevrolati</i> (Beauv.)
Trogositidae: Bark-gnawing Beetles
<i>Tenebroides mauritanicus</i> (L.)
<b>DIPTERA (4 Families; 36 Species)</b>
Ceratopogonidae: Biting Midges, Punkies, or No-see-ums
1 pupa
Chaoboridae: Phantom Midges
<i>Coretbrella brakeleyi</i> (Coquillett)
Chironomidae: Midges
<i>Limnophyes</i> sp.
<i>Zaureliella</i> sp.
Culicidae: Mosquitoes
<i>Aedes abserratus</i> (Felt & Young)
<i>Aedes aurifer</i> (Coquillett)
<i>Aedes canadensis</i> (Theobald)
<i>Aedes cinereus</i> Meigen
<i>Aedes grossbecki</i> Dyar & Knab
<i>Aedes sticticus</i> (Meigen)
<i>Aedes stimulans</i> (Walker) group
<i>Aedes triseriatus</i> (Say)
<i>Aedes trivittatus</i> (Coquillett)
<i>Aedes vexans</i> (Meigen)
<i>Anopheles barberi</i> Coquillett
<i>Anopheles crucians</i> Wiedemann
<i>Anopheles punctipennis</i> (Say)
<i>Anopheles quadrimaculatus</i> Say
<i>Anopheles walkeri</i> Theobald
<i>Coquillettidia perturbans</i> (Walker)
<i>Culex erraticus</i> (Dyar & Knab)
<i>Culex pipiens</i> L.
<i>Culex restuans</i> Theobald
<i>Culex salinarius</i> Coquillett
<i>Culex territans</i> Walker
<i>Culiseta inornata</i> (Williston)
<i>Culiseta melanura</i> (Coquillett)
<i>Culiseta minnesotae</i> Barr
<i>Culiseta morsitans</i> (Theobald)
<i>Orthopodomyia alba</i> Baker
<i>Orthopodomyia signifera</i> (Coquil.)
<i>Psorophora ciliata</i> (F.)
<i>Psorophora ferox</i> (von Humboldt)
<i>Psorophora horrida</i> (Dyar & Knab)
<i>Psorophora mathesoni</i> (Belk. & He.)
<i>Uranotaenia sapphirina</i> (Ost.-Sac.)

**HETEROPTERA (HEMIPTERA) (7 Families; 8 Species)**

Corixidae: Water Boatmen

TABLE 1 (Continued)

Species
<i>Hesperocorixa</i> sp.
Gerridae: Water Striders
<i>Gerris</i> sp.
Naucoridae: Creeping Water Bugs
<i>Pelocoris</i> sp.
Nepidae: Waterscorpions
<i>Nepa apiculata</i> Uhler
<i>Ranatra fusca</i> Beauvois
Notonectidae: Backswimmers
<i>Notonecta</i> sp.
Pleidae: Pygmy Backswimmers
<i>Plea striola</i> Fieber
Sáldidae: Shore Bugs
<i>Sáldula</i> sp.
<b>INVERTEBRATES (4 Families; 4 Species)</b>
Phylum—ANNELIDA
Class—CLITELLATA: Worms & Leeches
GNATHOBDELLIDA
Hirudinidae:
<i>Macrobdella decora</i> Say
RHYNCHOBDELLIDA
Glossiphoniidae:
<i>Helobdella stagnalis</i> L.
Class—CRUSTACEA
Subclass—MALACOSTRACA
AMPHIPODA
Gammaridae:
<i>Cratonyx</i> sp.
ISOPODA
Asellidae:
<i>Asellus</i> sp.

species of sap beetle, *Omosita colon*. However, they did not yield any of the rare sap beetles in the genus *Nitidula* or the rare/endangered carrion beetle *Nicrophorus americana* L., which has not been encountered in Ohio since 1974 when it was taken in Hocking County by David Harris.

The macroinvertebrate samplers yielded many immature specimens including three Diptera, two Coleoptera, one Hemiptera, two Odonata, and several other invertebrates. However, no riffle beetles (Elmidae) were collected from these traps.

Sweep net sampling of foliage accounted for most of the leaf beetles (Chrysomelidae), checkered beetles (Cleridae), and lizard beetles (Languriidae). Aquatic sweeping produced several additional predacious diving beetles, one large leech (*Macrobdella decora* Say), and one immature Odonata (*Pachydiplax longipennis* Burm.).

Ground beetle collecting was quite successful. Six species of Carabidae uncommon in Ohio were encountered: *Agonum cupripenne* (Say), *Agonum galvestonicum* (Casey), *Chlaenius niger* Randall, *Oödes americanus* Dejean, *Blemus discus* (F.), and *Stenocrepis cuprea* (Chaudoir).

Many of the species listed were made available by other entomologists who made collections in the Killbuck Marsh Wildlife Area. These include Culicidae and Chaoboridae collected in 1993, by Corinne Rickabaugh and

Doris Troutman, and many of the Carabidae, Dytiscidae, Hydrophilidae, and Heteroptera collected by Foster Purrington in 1987. The Odonata list was provided by Robert Glotzhober of the Ohio Historical Society from collections made by Foster Purrington, also from 1987.

**ACKNOWLEDGEMENTS.** Gratitude is extended to those who assisted in species determinations. They include: Foster Purrington: Carabidae (Coleoptera); Keith Phillips: Cerambycidae (Coleoptera); Peter Kovarik: Histeridae (Coleoptera); Miguel Archangelsky: Dytiscidae and Hydrophilidae (Coleoptera); Dave Shetlar: Scarabaeidae (Coleoptera); George Keeney: Silphidae (Coleoptera); Robert Glotzhober and Susan Heady: Odonata; Charles Triplehorn: Coleoptera; Roy Rings: Lepidoptera; Brian Armitage: Trichoptera; Richard Berry and Robert Restifo: Culicidae (Diptera); Sturgis McKeever: Chaoboridae (Diptera); Jeff DeShon and Mike Bolton: aquatic invertebrates. Additional thanks go to Karl Stephan who, on short notice, painstakingly sorted through the light trap residue and nearly doubled the list of Coleoptera. We especially thank the Division of Wildlife of the Ohio Department of Natural Resources for funding this project on Ohio Wildlife Diversity. Salaries and research support were provided by State and Federal Funds appropriated to the Ohio Agricultural Research and Develop-

ment Center, The Ohio State University. Manuscript number 148-94.

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## The 1994 Paper of the Year Award

was presented at the Annual Meeting of the OAS  
at  
Otterbein College  
on  
29 April 1995  
to:

**Brian C. Reeder**  
and  
**Wendy R. Eisner**

Department of Biological and Environmental Sciences  
Morehead State University  
Morehead, Kentucky  
and  
Byrd Polar Research Center  
The Ohio State University  
Columbus, Ohio

for their paper:

"Halocene Biogeochemical and Pollen History of a Lake Erie, Ohio, Coastal Wetland"

*The Ohio Journal of Science* 94: 87-93