

THE INSECTS OF EAGLE VALLEY PRESERVE
WITH FOCUS ON
LEPIDOPTERA (MOTHS AND BUTTERFLIES)



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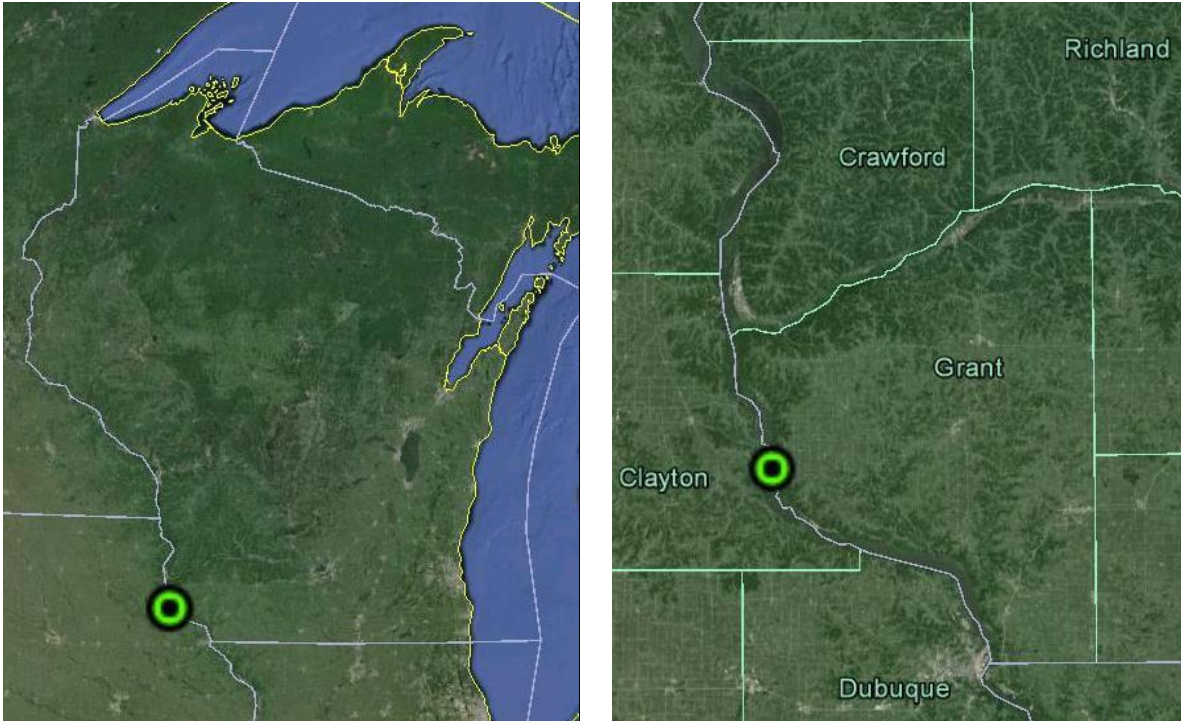
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Overview

I sampled insects (emphasizing Lepidoptera) using a variety of techniques over eight visits during the 2012-2013 field seasons. These efforts yielded 1855 specimens, 1629 of these Lepidoptera. Including seven additional species documented by Andrew Williams the Lepidoptera represent at least 477 species (**see illustrated checklist**) but further identifications would increase this beyond 500 species. These include numerous southerly species at their northern range limit, prairie associated species, and even a surprise boreal disjunct. The baseline provided here is just the beginning as many more species and significant finds are yet to come.

Geography and Vegetation

Eagle Valley Preserve lies along the Mississippi River in Grant County, southwestern Wisconsin. It falls within the Western Coulees and Ridges ecological landscape (see Ecological Landscapes of Wisconsin Handbook), part of a broader region commonly known as the Driftless Area.



Figures 1 & 2. Location of Eagle Valley Preserve (reference point: 42.79619°N 91.06810°W). (Maps created with Google Earth)

Eagle Valley Preserve showcases the rugged character of the Driftless Area with formidably steep hillsides and bluffs with spectacular drops of up to 100m. The preserve borders the Mississippi River to the west, agricultural land to the east, and forested ridges and valleys to the north and south. Two high quality rocky streams run through the site.

Deciduous forests and woodlands make up much of the preserve, ranging from dry-mesic ones (Figure 3) on western/southern slopes to mesic ones (Figures 4-5) on eastern/northern slopes and valley bottoms. Wet floodplain forests occur along the Mississippi River. Extensive dry-mesic tall grass prairie restorations cover the more level terrain along ridgelines (Figure 6). Numerous small dry-mesic to dry bluff prairie remnants with limestone outcrops dot the western ridgeline overlooking the Mississippi River (Figures 7-8).

The plants are for the most part typical of Wisconsin's driftless area but some such as chinkapin oak (*Quercus muehlenbergii*), eastern redbud (*Cercis canadensis*), and Kentucky coffeetree (*Gymnocladus dioica*) add a distinctive southern flavor. There are also numerous rare plant species. Detailed vegetation information can be found in the preserve's vegetation survey report.



Figure 3. Dry-mesic deciduous woodland dominated by white oak (*Quercus alba*) and black oak (*Q. velutina*). Ironwood (*Ostrya virginiana*), hackberry (*Celtis occidentalis*), elm (*Ulmus*), basswood (*Tilia americana*), black cherry (*Prunus serotina*), chinkapin oak (*Quercus muehlenbergii*), shagbark hickory (*Carya ovata*), and white ash (*Fraxinus americana*) are fairly common; red cedar (*Juniperus virginiana*) is locally common along the ridgeline bluff overlook in the background. (29 March 2012)



Figure 4. Mesic deciduous forest dominated by sugar maple (*Acer saccharum*) and red oak (*Quercus rubra*); basswood (*Tilia americana*), white oak (*Quercus alba*), and elm (*Ulmus*) are fairly common, along with limestone outcrops. (24 October 2012)



Figure 5. Valley bottom mesic deciduous forest along Eagle Creek, dominated by walnut (*Juglans nigra*), honey locust (*Gleditsia triacanthos*), hackberry (*Celtis occidentalis*), elm (*Ulmus*), box elder (*Acer negundo*) and silver maple (*Acer saccharinum*); Kentucky coffeetree (*Gymnocladus dioica*- large tree in photo center) is locally common in this area. (11 July 2013)



Figure 6. Dry-mesic tall grass prairie restoration, with wild plum (*Prunus americana*) in flower. (29 March 2012)



Figure 7. Dry-mesic to dry bluff prairie at the Cottonwood Overlook, the largest prairie remnant at the preserve. Leadplant (*Amorpha canescens*) is particularly abundant here. (30 June 2012)



Figure 8. Dry-mesic to dry bluff prairie remnant with scattered limestone outcrops. Paper birch (*Betula papyrifera*) and red cedar (*Juniperus virginiana*) are locally common along the margins. (29 March 2012)

Sampling Effort and Methods

I sampled insects (emphasizing Lepidoptera) over eight visits during the 2012-2013 field seasons (Tables 1-2). Methods included general diurnal/nocturnal searching, UV (ultraviolet) sheets (Figure 12), UV traps, MV (mercury vapor) sheets, rotten banana-brown sugar bait (Figures 13, 14, 25), and sesiid moth pheromone traps. The UV sheets and traps were the most heavily utilized. MV sheets were only used once, as were pheromone traps. Bait was only effective during the late summer/fall visits.

Lepidoptera sampling was essentially synoptic (except general diurnal/nocturnal searching for efficiency sake); i.e. at least one voucher specimen was taken of every species per method per visit. Insects other than Lepidoptera were sampled as able, but the overwhelming Lepidoptera workload prevented anything more than cursory dabbling.

Night sampling was favored since the majority of Lepidoptera are nocturnal. Crepuscular (dawn/dusk) efforts were minimal, although many species are active during these periods.

Sampling was biased to the uplands; in particular the deciduous woodlands, bluff prairies and prairie restorations from the Cottonwood Overlook south 1.2 km along the deciduous forest ridgeline (Figures 9-10). Valley bottom sampling was concentrated along Closing Dam Road by the Eagle Creek crossing and along Good Nuf Hollow Road by the multiple stream crossings (Figures 9, 11).

Sampling covered the basic habitat types except wet forests and other wetlands along the Mississippi River corridor. But since each area was not sampled on every visit (in some cases only once) and with every method the phenological coverage displayed in Tables 1-2 is much weaker when applied to individual areas, habitats, and methods. The sampling gaps at the preserve are therefore larger than they appear.

The 2012 field season was extremely advanced phenologically- by nearly a month ahead of normal with species such as *Papilio glaucus* (Eastern Tiger Swallowtail) on the wing by March 29. Warm and dry weather continued for most of the season, with severe drought prevailing from mid-summer onward. The 2013 field season was essentially the opposite. Phenology was approximately a month behind 2012 during the spring, and heavy rains caused severe flooding and put an abrupt end to the drought. The weather extremes of both seasons undoubtedly affected the sampling efforts and resulting species compositions.

Table 1. Diurnal field sampling efforts with subjective rating of Lepidoptera catch diversity relative to phenology: **blue = low, orange = moderate, red = high**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Uplands			orange		blue	orange	orange	orange	orange	blue		
Valleys					orange	orange	blue	blue				

Table 2. Nocturnal field sampling efforts with subjective rating of Lepidoptera catch diversity relative to phenology: **blue = low, orange = moderate, red = high**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Uplands			orange		red	red	red	red	orange	red		
Valleys					blue		red	red				

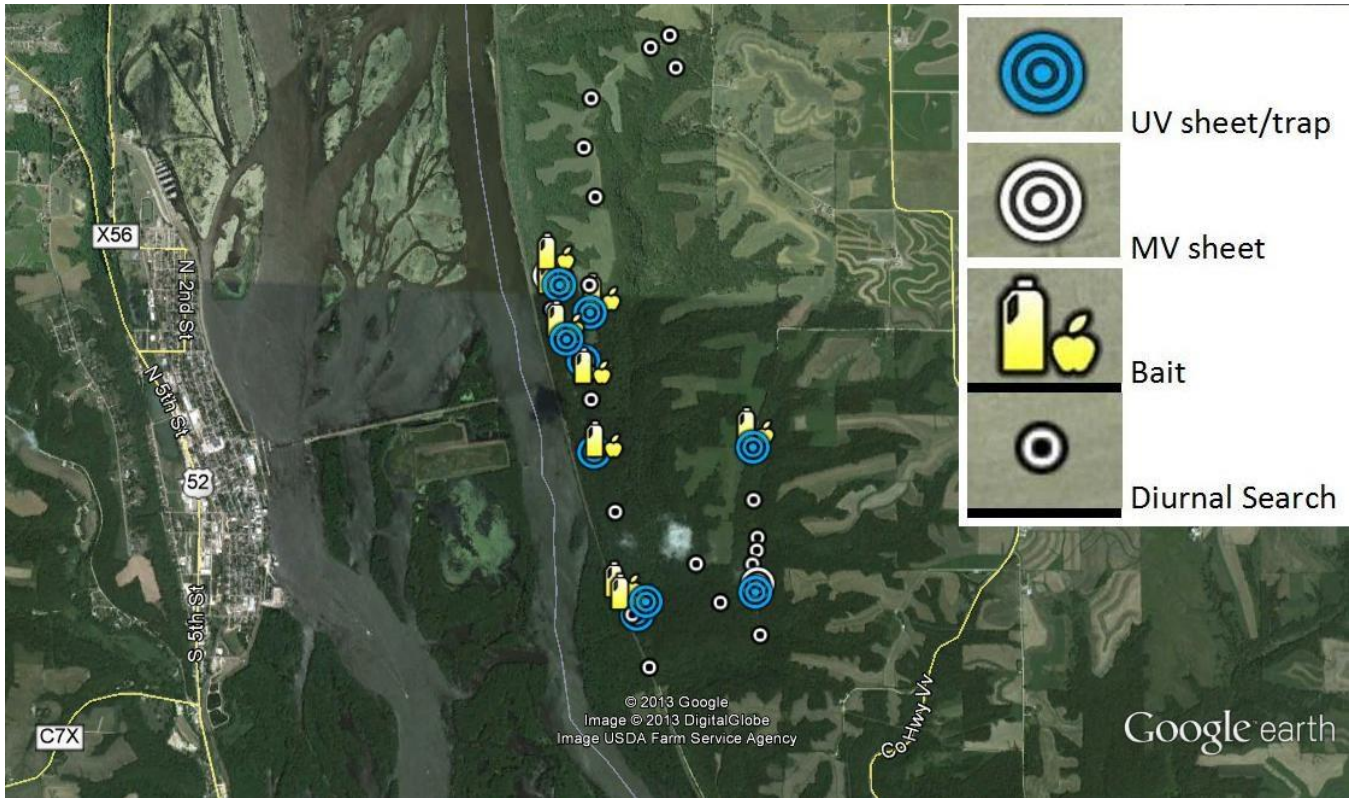


Figure 9. Sampling effort map. The points span 4.3 km.

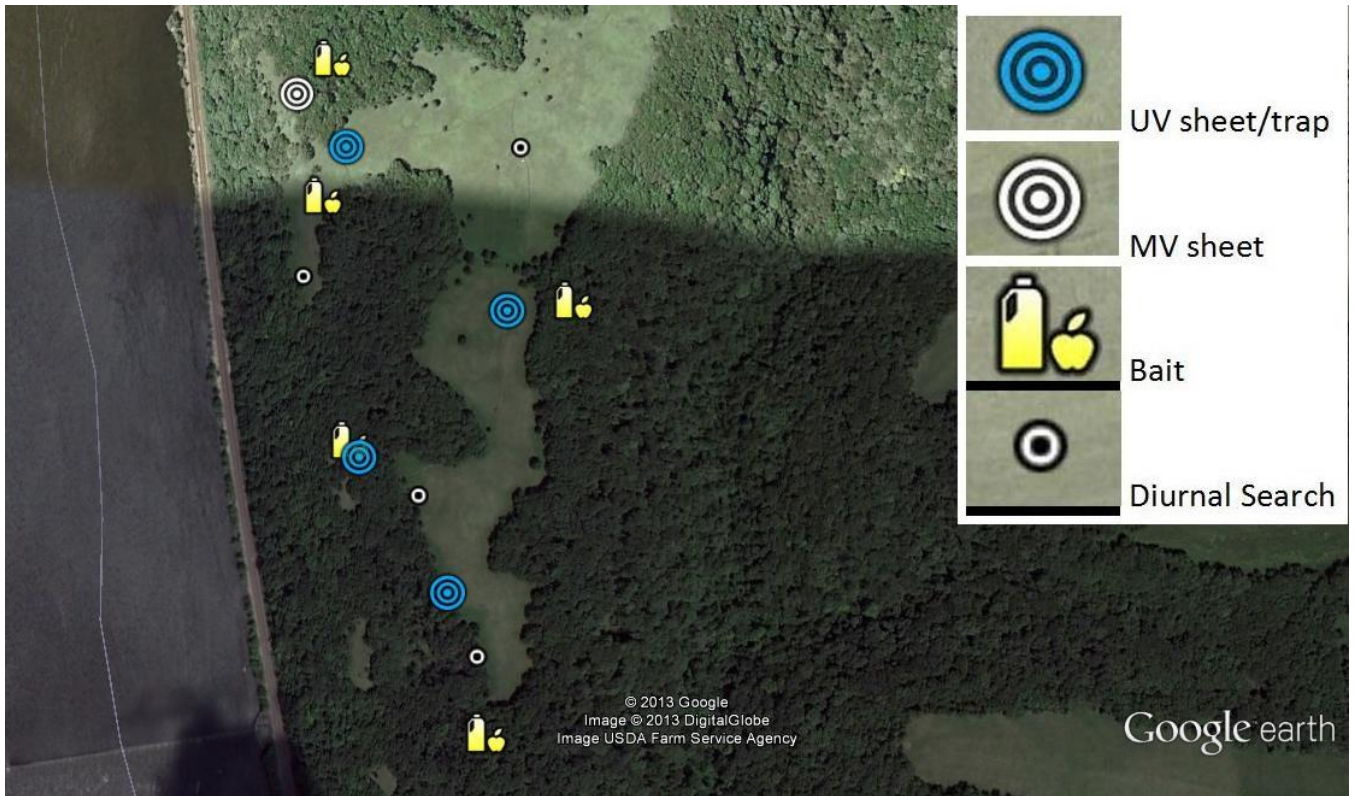


Figure 10. Sampling effort map focused on central portion (Cottonwood Overlook in upper left).

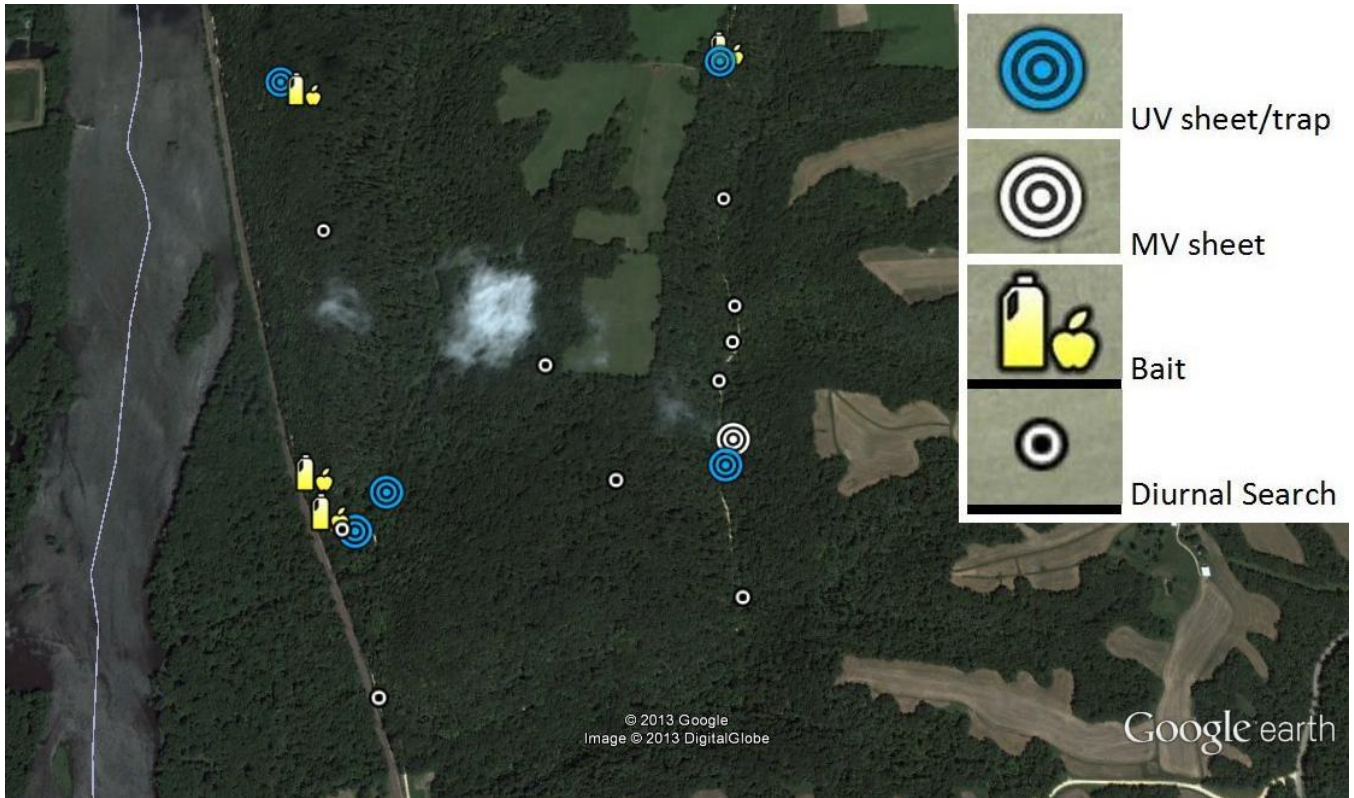


Figure 11. Sampling effort map focused on southern portion (points concentrated along Good Nuf Hollow Road and Closing Dam Road)



Figure 12. UV sheet at Cottonwood Overlook (29 June 2012).



Figure 13. Moths feeding on rotten banana-brown sugar painted on tree trunks (24 October 2012).



Figure 14. Moths feeding on rotten banana-brown sugar painted on tree trunks (24 October 2012). Note the “glowing” reflective eyes.

Results and Discussion

The above efforts yielded 1855 specimens, 1629 of these Lepidoptera. Voucher specimens have detailed data and are fully databased (see accompanying dataset). They are housed in the University of Wisconsin-Madison Insect Research Collection (WIRC), except for a few duplicate records which are housed in other research collections (see dataset).

LEPIDOPTERA

The 1629 specimens represent at least 470 species, and Andrew Williams adds seven species to this. See Table 3, Figures 15-25, and the **illustrated checklist**. Further identifications would push this total well beyond 500 species.

A conservative estimate suggests that 477 species is roughly one third of the actual diversity. At Mosquito Hill Nature Center in Outagamie County Hugo Kons Jr. (pers. comm.) surveyed for macro moths and butterflies intensively over many years; he documented an impressive 782 species. Had micro moths been included this total could almost double as they represent nearly half the ordinal diversity and have great potential for undescribed species. Thus 1500 species is a reasonable estimate for Lepidoptera diversity at a diverse Wisconsin preserve such as Eagle Valley. Thus many more interesting and unusual finds are sure to come.

Although much research is needed on many of the species documented (and analysis of existing data is beyond the scope of this paper) a few generalizations can be made. The fauna is largely representative of the Eastern Deciduous Woodland Biome (i.e. species confined to the biome as well those which range beyond) but also includes notable influence from the Prairie Biome. There is even a small amount of influence from the Boreal Forest Biome. Notable finds include many species at their northern range limit in southern Wisconsin, prairie species of particular conservation interest, and even a surprise boreal disjunct- *Brachionycha borealis* (see Table 3).

Table 3. Lepidoptera species documented at the preserve, with select annotations (author's perceptions based on field experience and discussions with other researchers)

Family	Species	Comments
Eriocraniidae	<i>Dyseriocrania griseocapitella</i>	
Acrolophidae	<i>Acrolophus arcanella</i>	
Acrolophidae	<i>Acrolophus morus</i>	
Tineidae	<i>Monopis dorsistrigella</i>	
Tineidae	Unidentified Tineidae	some are distinctively marked but are clearly not anything that I've seen illustrated before
Psychidae	<i>Siederia walshella</i>	
Bucculatricidae	<i>Philonome clemensella</i>	
Bucculatricidae	<i>Bucculatrix</i> spp.	
Gracillariidae	<i>Povolnya quercinigrella</i>	few WI records
Elachistidae	<i>Agonopterix curvilineella</i>	
Elachistidae	<i>Agonopterix clemensella</i>	
Elachistidae	<i>Agonopterix eupatoriella</i>	
Elachistidae	<i>Agonopterix pulvipennella</i>	
Elachistidae	<i>Agonopterix alstroemeriana</i>	few WI records
Elachistidae	<i>Agonopterix robiniella</i>	
Elachistidae	<i>Semioscopis inornata</i>	
Elachistidae	<i>Depressaria cinereocostella</i>	normally uncommon; abundant at Eagle Valley
Elachistidae	<i>Machimia tentoriferella</i>	
Oecophoridae	<i>Epicallima argenticinctella</i>	
Elachistidae	<i>Elachista</i> spp.	
Glyphidoceridae	<i>Glyphidocera juniperella</i>	few WI records
Coleophoridae	<i>Blastobasis glandulella</i>	
Coleophoridae	Unidentified Blastobasinae	
Coleophoridae	<i>Coleophora</i> spp.	
Cosmopterigidae	<i>Cosmopterix pulchrimella</i>	
Cosmopterigidae	<i>Cosmopterix montisella</i>	possible new state record
Cosmopterigidae	<i>Walshia miscecolorella</i>	

Family	Species	Comments
Cosmopterigidae	Unidentified Cosmopterigidae	
Gelechiidae	<i>Aristotelia roseosuffusella</i>	
Gelechiidae	<i>Aristotelia rubidella</i>	
Gelechiidae	<i>Aristotelia</i> sp.	
Gelechiidae	<i>Coleotechnites quercivorella</i>	
Gelechiidae	<i>Arogalea cristifasciella</i>	
Gelechiidae	<i>Pubitelphusa latifasciella</i>	
Gelechiidae	<i>Gnorimoschema gallaesolidaginis</i>	
Gelechiidae	<i>Chionodes mediofuscella</i>	
Gelechiidae	<i>Chionodes obscurusella</i>	
Gelechiidae	<i>Chionodes soter</i>	
Gelechiidae	<i>Chionodes pseudofondella</i>	
Gelechiidae	<i>Chionodes thoraceochrella</i>	
Gelechiidae	<i>Dichomeris ligulella</i>	
Gelechiidae	Unidentified Gelechiidae	
Carposinidae	<i>Bondia crescentella</i>	few WI records
Glyphipterigidae	<i>Diploschizia impigritella</i>	few WI records; common southward
Plutellidae	<i>Plutella xylostella</i>	
Yponomeutidae	<i>Atteva aurea</i>	
Yponomeutidae	<i>Argyresthia oreasella</i>	
Sesiidae	<i>Albuna fraxini</i>	
Sesiidae	<i>Synanthedon scitula</i>	
Tortricidae	<i>Bactra verutana</i>	
Tortricidae	<i>Endothenia hebesana</i>	
Tortricidae	<i>Phaneta radiatana</i>	
Tortricidae	<i>Phaneta ochrocephala</i>	
Tortricidae	<i>Phaneta raracana</i>	few WI records
Tortricidae	<i>Phaneta ochroterminana</i>	
Tortricidae	<i>Phaneta parmatana</i>	
Tortricidae	<i>Phaneta ornatula</i>	
Tortricidae	<i>Eucosma matutina</i>	
Tortricidae	<i>Eucosma dorsisignatana</i>	
Tortricidae	<i>Eucosma similiana</i>	
Tortricidae	<i>Eucosma derelicta</i>	
Tortricidae	<i>Eucosma sombreana</i>	
Tortricidae	<i>Eucosma cataclystiana</i>	
Tortricidae	<i>Pelochrista womonana</i>	
Tortricidae	<i>Epiblema strenuana</i>	
Tortricidae	<i>Epiblema abruptana</i>	
Tortricidae	<i>Epiblema carolinana</i>	
Tortricidae	<i>Epiblema brightonana</i>	
Tortricidae	<i>Proteoteras moffatiana</i>	
Tortricidae	<i>Pseudexentera spoliata</i>	
Tortricidae	<i>Pseudexentera sepia</i>	
Tortricidae	<i>Pseudexentera hodsoni</i>	
Tortricidae	<i>Corticivora clarki</i>	

Family	Species	Comments
Tortricidae	<i>Cydia latiferreana</i>	
Tortricidae	<i>Acleris nigrolinea</i>	possibly near southern edge of range here; common northward
Tortricidae	<i>Pandemis limitata</i>	
Tortricidae	<i>Argyrotaenia velutinana</i>	
Tortricidae	<i>Argyrotaenia juglandana</i>	
Tortricidae	<i>Diedra cockerellana</i>	
Tortricidae	<i>Choristoneura rosaceana</i>	
Tortricidae	<i>Choristoneura conflictana</i>	
Tortricidae	<i>Archips purpurana</i>	
Tortricidae	<i>Clepsia peritana</i>	
Tortricidae	<i>Xenotemna pallorana</i>	
Tortricidae	<i>Aethes spartinana</i>	
Tortricidae	<i>Cochylis arthuri</i>	
Tortricidae	<i>Cochylis bucera</i>	
Tortricidae	<i>Cochylis hoffmanana</i>	
Tortricidae	<i>Cochylis ringsi</i>	few WI records
Tortricidae	Unidentified Tortricidae	
Hesperiidae	<i>Epargyreus clarus</i>	
Hesperiidae	<i>Erynnis baptisiae</i>	
Hesperiidae	<i>Pholisora catullus</i>	
Hesperiidae	<i>Hylephila phyleus</i>	
Hesperiidae	<i>Anatrytone logan</i>	
Hesperiidae	<i>Problema byssus</i>	in WI only documented from 4 sites in the extreme SW corner; Eagle Valley is currently the northernmost site
Hesperiidae	<i>Euphyes vestris</i>	
Papilionidae	<i>Papilio polyxenes</i>	
Papilionidae	<i>Papilio cresphontes</i>	
Papilionidae	<i>Papilio glaucus</i>	
Pieridae	<i>Pieris rapae</i>	
Pieridae	<i>Colias philodice</i>	
Pieridae	<i>Colias eurytheme</i>	
Pieridae	<i>Pyrisitia lisa</i>	
Pieridae	<i>Nathalis iole</i>	
Lycaenidae	<i>Feniseca tarquinius</i>	usually local in SW Wisconsin; the caterpillars are carnivorous (on aphids)
Lycaenidae	<i>Satyrium titus</i>	
Lycaenidae	<i>Satyrium calanus</i>	
Lycaenidae	<i>Satyrium liparops</i>	
Lycaenidae	<i>Cupido comyntas</i>	
Lycaenidae	<i>Celastrina lucia</i>	
Nymphalidae	<i>Libytheana carinenta</i>	abundant in 2012; usually uncommon in WI but common southward
Nymphalidae	<i>Polygonia interrogationis</i>	
Nymphalidae	<i>Polygonia comma</i>	
Nymphalidae	<i>Nymphalis antiopa</i>	
Nymphalidae	<i>Vanessa virginiensis</i>	

Family	Species	Comments
Nymphalidae	<i>Vanessa atalanta</i>	
Nymphalidae	<i>Junonia coenia</i>	
Nymphalidae	<i>Euptoieta claudia</i>	
Nymphalidae	<i>Speyeria cybele</i>	
Nymphalidae	<i>Phyciodes tharos</i>	
Nymphalidae	<i>Asterocampa celtis</i>	
Nymphalidae	<i>Asterocampa clyton</i>	
Nymphalidae	<i>Cercyonis pegala</i>	
Nymphalidae	<i>Danaus plexippus</i>	
Limacodidae	<i>Tortricidia flexuosa</i>	
Limacodidae	<i>Apoda y-inversum</i>	
Limacodidae	<i>Euclea delphinii</i>	
Crambidae	<i>Scoparia biplagiata</i>	
Crambidae	<i>Elophila obliteralis</i>	
Crambidae	<i>Stegia eripalis</i>	few WI records; common southward
Crambidae	<i>Glaphyria sequistrialis</i>	
Crambidae	<i>Lipocosmodes fuliginosalis</i>	few WI records
Crambidae	<i>Saucrobotys futilalis</i>	
Crambidae	<i>Crocidophora tuberculalis</i>	
Crambidae	<i>Ostrinia penitalis</i>	
Crambidae	<i>Ostrinia nubilalis</i>	
Crambidae	<i>Fumibotys fumalis</i>	
Crambidae	<i>Achyra rantalis</i>	
Crambidae	<i>Sitochroa palealis</i>	
Crambidae	<i>Loxostege cereralis</i>	
Crambidae	<i>Pyrausta inveterascalis</i>	few WI records
Crambidae	<i>Pyrausta laticlavia</i>	few WI records; common southward
Crambidae	<i>Udea rubigalis</i>	
Crambidae	<i>Diacme adipaloides</i>	
Crambidae	<i>Nomophila nearctica</i>	
Crambidae	<i>Anageshna primordialis</i>	
Crambidae	<i>Apogeshna stenialis</i>	possible new state record; southern species at range edge in southern WI
Crambidae	<i>Blepharomastix ranalis</i>	
Crambidae	<i>Palpita arsaltealis</i>	
Crambidae	<i>Pantographa limata</i>	
Crambidae	<i>Lygropia rivulalis</i>	
Crambidae	<i>Herpetogramma abdominalis</i>	
Crambidae	<i>Herpetogramma aeglealis</i>	
Crambidae	<i>Crambus leachellus</i>	
Crambidae	<i>Crambus albellus</i>	
Crambidae	<i>Crambus agitatellus</i>	
Crambidae	<i>Crambus girardellus</i>	uncommon in this part of the state
Crambidae	<i>Neodactria luteolellus</i> (complex)	
Crambidae	<i>Chrysoteuchia topiarius</i>	
Crambidae	<i>Agriphila ruricolellus</i>	
Crambidae	<i>Agriphila vulgivagellus</i>	

Family	Species	Comments
Crambidae	<i>Pediasia trisecta</i>	
Crambidae	<i>Microcrambus biguttellus</i>	few WI records
Crambidae	<i>Microcrambus elegans</i>	
Crambidae	<i>Microcrambus minor</i>	
Crambidae	<i>Fissicrambus mutabilis</i>	
Crambidae	<i>Urola nivalis</i>	
Crambidae	<i>Haimbachia squamulella</i>	few WI records; southern species at range edge in southern WI
Crambidae	<i>Eoreuma densella</i>	
Crambidae	Unidentified Crambidae	
Pyralidae	<i>Aglossa disciferalis</i>	
Pyralidae	<i>Aglossa cuprina</i>	
Pyralidae	<i>Pseudasopia intermedialis</i>	few WI records
Pyralidae	<i>Galasa nigrinodis</i>	
Pyralidae	<i>Tosale oviplagalus</i>	
Pyralidae	<i>Arta statalis</i>	
Pyralidae	<i>Condylolomia participalis</i>	
Pyralidae	<i>Pococera baptisiella</i>	possible new state record
Pyralidae	<i>Pococera</i> spp.	
Pyralidae	<i>Acrobasis juglandis</i>	
Pyralidae	<i>Acrobasis juglanivorella</i>	
Pyralidae	<i>Salebriaria engeli</i>	
Pyralidae	<i>Sciota vetustella</i>	
Pyralidae	<i>Homoeosoma deceptorium</i>	
Pyralidae	<i>Zophodia grossulariella</i>	
Pyralidae	<i>Eulogia ochrifrontella</i>	
Pyralidae	<i>Moodna ostrinella</i>	
Pyralidae	Unidentified Pyralidae	
Pterophoridae	<i>Platyptilia carduidactylus</i>	
Geometridae	<i>Alsophila pometaria</i>	
Geometridae	<i>Mellilla xanthometata</i>	southern species at range edge in southern WI; honey locust feeder
Geometridae	<i>Speranza pustularia</i>	
Geometridae	<i>Speranza ribearia</i>	
Geometridae	<i>Speranza subcessaria</i>	
Geometridae	<i>Macaria aemulataria</i>	
Geometridae	<i>Macaria multilineata</i>	uncommonly encountered; most records from the driftless area
Geometridae	<i>Digrammia ordinata</i>	prairie associated species and leadplant feeder; common at Eagle Valley
Geometridae	<i>Digrammia continuata</i>	
Geometridae	<i>Digrammia ocellinata</i>	
Geometridae	<i>Digrammia gnophosaria</i>	
Geometridae	<i>Iridopsis ephyraria</i>	
Geometridae	<i>Anavitrinella pampinaria</i>	
Geometridae	<i>Cleora sublunaria</i>	southern species at range edge in southern WI
Geometridae	<i>Ectropis crepuscularia</i>	

Family	Species	Comments
Geometridae	<i>Melanolophia canadaria</i>	
Geometridae	<i>Melanolophia signataria</i>	
Geometridae	<i>Hypagyrtis unipunctata</i>	
Geometridae	<i>Erannis tiliaria</i>	
Geometridae	<i>Lomographa glomeraria</i>	
Geometridae	<i>Pero ancetaria</i>	
Geometridae	<i>Pero honestaria</i>	
Geometridae	<i>Ennomos subsignaria</i>	
Geometridae	<i>Plagodis phlogosaria</i>	
Geometridae	<i>Eusarca confusaria</i>	
Geometridae	<i>Eugonobapta nivosaria</i>	
Geometridae	<i>Eutrapela clemataria</i>	
Geometridae	<i>Prochoerodes lineola</i>	
Geometridae	<i>Nematocampa resistaria</i>	
Geometridae	<i>Synchlora aerata</i>	
Geometridae	<i>Pleuroprucha insulsaria</i>	
Geometridae	<i>Haematopsis grataria</i>	
Geometridae	<i>Scopula limboundata</i>	
Geometridae	<i>Eulithis diversilineata</i>	
Geometridae	<i>Hydriomena transfigurata</i>	
Geometridae	<i>Xanthorhoe ferrugata</i>	
Geometridae	<i>Euphyia intermediata</i>	
Geometridae	<i>Orthonama obstipata</i>	
Geometridae	<i>Costaconvexa centrostrigaria</i>	
Geometridae	<i>Disclisoprocta stellata</i>	southern species rarely encountered this far north
Geometridae	<i>Venusia comptaria</i>	
Geometridae	<i>Epirrita autumnata</i>	
Geometridae	<i>Operophtera bruceata</i>	
Geometridae	<i>Eubaphe mendica</i>	
Geometridae	<i>Eupithecia</i> spp.	
Geometridae	<i>Cladara atroliturata</i>	
Geometridae	<i>Lobophora nivigerata</i>	
Geometridae	<i>Heterophleps refusaria</i>	
Geometridae	<i>Heterophleps triguttaria</i>	
Geometridae	Unidentified Geometridae	
Lasiocampidae	<i>Phyllodesma americana</i>	
Lasiocampidae	<i>Malacosoma disstria</i>	
Lasiocampidae	<i>Malacosoma americana</i>	
Saturniidae	<i>Eacles imperialis</i>	
Saturniidae	<i>Sphingicampa bicolor</i>	southern species at range edge in southern WI; honey locust feeder
Saturniidae	<i>Dryocampa rubicunda</i>	
Sphingidae	<i>Ceratomia undulosa</i>	
Sphingidae	<i>Paonias excaecata</i>	
Sphingidae	<i>Paonias myops</i>	
Sphingidae	<i>Laothoe juglandis</i>	
Sphingidae	<i>Pachysphinx modesta</i>	

Family	Species	Comments
Sphingidae	<i>Deidamia inscriptum</i>	
Sphingidae	<i>Hyles lineata</i>	
Notodontidae	<i>Datana integerrima</i>	
Notodontidae	<i>Nadata gibbosa</i>	
Notodontidae	<i>Peridea angulosa</i>	
Notodontidae	<i>Pheosia rimosa</i>	
Notodontidae	<i>Ellida caniplaga</i>	
Notodontidae	<i>Gluphisia septentrionis</i>	
Notodontidae	<i>Gluphisia avimacula</i>	
Notodontidae	<i>Furcula occidentalis</i>	
Notodontidae	<i>Macrurocampa marthesia</i>	
Notodontidae	<i>Heterocampa obliqua</i>	
Notodontidae	<i>Heterocampa subrotata</i>	southern species at range edge in southern WI
Notodontidae	<i>Heterocampa guttivitta</i>	
Notodontidae	<i>Lochmaeus bilineata</i>	
Notodontidae	<i>Schizura ipomoeae</i>	
Notodontidae	<i>Schizura leptinoides</i>	
Noctuidae	<i>Crambidia pallida</i>	
Noctuidae	<i>Hypoprepia miniata</i>	
Noctuidae	<i>Hypoprepia fucosa</i>	
Noctuidae	<i>Clemensia albata</i>	
Noctuidae	<i>Haploa reversa</i>	
Noctuidae	<i>Haploa lecontei</i>	
Noctuidae	<i>Virbia aurantiaca</i>	
Noctuidae	<i>Virbia ferruginosa</i>	
Noctuidae	<i>Pyrrharctia isabella</i>	
Noctuidae	<i>Spilosoma virginica</i>	
Noctuidae	<i>Hyphantria cunea</i>	
Noctuidae	<i>Apantesis phalerata</i>	
Noctuidae	<i>Grammia parthenice</i>	
Noctuidae	<i>Grammia virgo</i>	
Noctuidae	<i>Halysidota tessellaris</i>	
Noctuidae	<i>Cycnia inopinatus</i>	
Noctuidae	<i>Cycnia tenera</i>	
Noctuidae	<i>Euchaetes egle</i>	
Noctuidae	<i>Dasychira basiflava</i>	
Noctuidae	<i>Orgyia leucostigma</i>	
Noctuidae	<i>Idia americalis</i>	
Noctuidae	<i>Idia aemula</i>	
Noctuidae	<i>Idia rotundalis</i>	
Noctuidae	<i>Idia forbesii</i>	uncommonly encountered
Noctuidae	<i>Idia diminuendis</i>	
Noctuidae	<i>Idia lubricalis</i>	
Noctuidae	<i>Phalaenophana pyramusalis</i>	
Noctuidae	<i>Zanclognatha pedipilalis</i>	

Family	Species	Comments
Noctuidae	<i>Zanclonatha jacchusalis</i>	
Noctuidae	<i>Macrochilo orciferalis</i>	
Noctuidae	<i>Phalaenostola metonalis</i>	
Noctuidae	<i>Phalaenostola eumelusalis</i>	
Noctuidae	<i>Phalaenostola larentioides</i>	
Noctuidae	<i>Tetanolita floridana</i>	
Noctuidae	<i>Bleptina caradrinalis</i>	
Noctuidae	<i>Renia factiosalis</i>	
Noctuidae	<i>Renia discoloralis</i>	
Noctuidae	<i>Renia flavipunctalis</i>	
Noctuidae	<i>Renia adspersgillus</i>	
Noctuidae	<i>Renia sobrialis</i>	
Noctuidae	<i>Rivula propinquialis</i>	
Noctuidae	<i>Hypenodes fractilinea</i>	
Noctuidae	<i>Hypena deceptalis</i>	
Noctuidae	<i>Hypena madefactalis</i>	
Noctuidae	<i>Hypena humuli</i>	
Noctuidae	<i>Hypena scabra</i>	
Noctuidae	<i>Spargaloma sexpunctata</i>	
Noctuidae	<i>Metalectra quadrisignata</i>	
Noctuidae	<i>Scolecocampa liburna</i>	southern species at range edge in southern WI; common at Eagle Valley; caterpillars feed in dead logs
Noctuidae	<i>Scoliopteryx libatrix</i>	
Noctuidae	<i>Anticarsia gemmatalis</i>	
Noctuidae	<i>Panopoda rufimargo</i>	
Noctuidae	<i>Phoberia atomaris</i>	
Noctuidae	<i>Cissusa spadix</i>	
Noctuidae	<i>Zale lunata</i>	
Noctuidae	<i>Zale galbanata</i>	
Noctuidae	<i>Zale unilineata</i>	
Noctuidae	<i>Parallelia bistriaris</i>	
Noctuidae	<i>Caenurgina crassiuscula</i>	
Noctuidae	<i>Caenurgina erechtea</i>	
Noctuidae	<i>Celiptera frustulum</i>	
Noctuidae	<i>Spiloloma lunilinea</i>	southern species at range edge in southern WI; honey locust feeder
Noctuidae	<i>Catocala innubens</i>	southern species at range edge in southern WI; honey locust feeder
Noctuidae	<i>Catocala piatrix</i>	
Noctuidae	<i>Catocala serena</i>	
Noctuidae	<i>Catocala obscura</i>	
Noctuidae	<i>Catocala neogama</i>	
Noctuidae	<i>Catocala ilia</i>	
Noctuidae	<i>Catocala cerogama</i>	
Noctuidae	<i>Catocala amatrix</i>	
Noctuidae	<i>Catocala abbreviatella</i>	leadplant feeder and prairie species of particular conservation interest due to fire sensitivity; locally

Family	Species	Comments
		abundant at Eagle Valley
Noctuidae	<i>Catocala coccinata</i>	
Noctuidae	<i>Catocala micronympha</i>	
Noctuidae	<i>Catocala lineella</i>	
Noctuidae	<i>Abrostola urentis</i>	
Noctuidae	<i>Diachrysia balluca</i>	
Noctuidae	<i>Allagrapha aerea</i>	
Noctuidae	<i>Eosphoropteryx thyatyroides</i>	not commonly encountered; perhaps best found by searching flowers at night (as was this record)
Noctuidae	<i>Autographa precatationis</i>	
Noctuidae	<i>Anagrapha falcifera</i>	
Noctuidae	<i>Marathyssa inficita</i>	
Noctuidae	<i>Baileya australis</i>	
Noctuidae	<i>Meganola minuscula</i>	
Noctuidae	<i>Meganola phylla</i>	specimen needs further verification but if correct is probably a new state record; southern species
Noctuidae	<i>Meganola spodia</i>	
Noctuidae	<i>Protodeltote muscosa</i>	
Noctuidae	<i>Maliattha synochitis</i>	
Noctuidae	<i>Ponometia candefacta</i>	
Noctuidae	<i>Raphia frater</i>	
Noctuidae	<i>Acronicta hasta</i>	
Noctuidae	<i>Acronicta spinigera</i>	
Noctuidae	<i>Acronicta morula</i>	
Noctuidae	<i>Acronicta ovata</i>	
Noctuidae	<i>Acronicta tristis</i>	
Noctuidae	<i>Acronicta afflicta</i>	
Noctuidae	<i>Anterastria teratophora</i>	
Noctuidae	<i>Psychomorpha epimenis</i>	see cover photo, bottom left
Noctuidae	<i>Apamea helva</i>	
Noctuidae	<i>Lateroligia ophiogramma</i>	
Noctuidae	<i>Oligia chlorostigma</i>	not commonly encountered
Noctuidae	<i>Mesapamea fractilinea</i>	
Noctuidae	<i>Platypolia mactata</i>	
Noctuidae	<i>Meropleon ambifusca</i>	often considered a prairie species, although not dependent on high quality remnants in our region
Noctuidae	<i>Xylomoia chagnoni</i>	
Noctuidae	<i>Loscopia velata</i>	
Noctuidae	<i>Papaipema arctivorens</i>	
Noctuidae	<i>Papaipema rutila</i>	not commonly encountered
Noctuidae	<i>Papaipema baptisiae</i>	
Noctuidae	<i>Papaipema maritima</i>	
Noctuidae	<i>Papaipema rigida</i>	
Noctuidae	<i>Hydraecia immanis</i>	
Noctuidae	<i>Euplexia benesimilis</i>	
Noctuidae	<i>Enargia infumata</i>	
Noctuidae	<i>Chytonix palliatricula</i>	

Family	Species	Comments
Noctuidae	<i>Dypterygia rozmani</i>	
Noctuidae	<i>Nedra ramosula</i>	
Noctuidae	<i>Phosphila miselioides</i>	
Noctuidae	<i>Magusa divaricata</i>	
Noctuidae	<i>Amphipyra pyramidoides</i>	
Noctuidae	<i>Amphipyra glabella</i>	
Noctuidae	<i>Proxenus miranda</i>	
Noctuidae	<i>Athetis tarda</i>	
Noctuidae	<i>Crambodes talidiformis</i>	
Noctuidae	<i>Spodoptera ornithogalli</i>	
Noctuidae	<i>Elaphria chalcedonia</i>	southern species at range edge in southern WI
Noctuidae	<i>Elaphria grata</i>	
Noctuidae	<i>Galgula partita</i>	
Noctuidae	<i>Azenia obtusa</i>	southern species at range edge in southern WI
Noctuidae	<i>Cosmia calami</i>	
Noctuidae	<i>Lithophane semiusta</i>	
Noctuidae	<i>Lithophane patefacta</i>	
Noctuidae	<i>Lithophane bethunei</i>	
Noctuidae	<i>Lithophane sp. near disposita</i>	associated primarily with the driftless area in WI
Noctuidae	<i>Lithophane hemina</i>	
Noctuidae	<i>Lithophane lanei</i>	uncommon this far south
Noctuidae	<i>Lithophane scottae</i>	seldom encountered species; in WI associated with the driftless area
Noctuidae	<i>Lithophane antennata</i>	
Noctuidae	<i>Lithophane laticinerea</i>	
Noctuidae	<i>Lithophane grotei</i>	
Noctuidae	<i>Lithophane unimoda</i>	
Noctuidae	<i>Eupsilia vinulenta</i>	
Noctuidae	<i>Eupsilia morrisoni</i>	
Noctuidae	<i>Metaxaglaea inulta</i>	
Noctuidae	<i>Epiglaea decliva</i>	
Noctuidae	<i>Eucirroedia pampina</i>	
Noctuidae	<i>Sunira bicolorago</i>	
Noctuidae	<i>Anathix ralla</i>	
Noctuidae	<i>Pachypolia atricornis</i>	seldom encountered species
Noctuidae	<i>Brachionycha borealis</i>	boreal species typically encountered in dry habitats such as jack pine woodlands and pine-oak barrens; the Eagle Valley record is a perplexing southern range extension (southernmost record outside of Appalachia); habitat use at the preserve needs research
Noctuidae	<i>Psaphida electilis</i>	
Noctuidae	<i>Psaphida resumens</i>	
Noctuidae	<i>Copivaleria grotei</i>	
Noctuidae	<i>Cucullia asteroides</i>	
Noctuidae	<i>Orthodes detracta</i>	
Noctuidae	<i>Morrisonia latex</i>	

Family	Species	Comments
Noctuidae	<i>Melanchra adjuncta</i>	
Noctuidae	<i>Lacinipolia meditata</i>	
Noctuidae	<i>Lacinipolia renigera</i>	
Noctuidae	<i>Lacinipolia implicata</i>	
Noctuidae	<i>Dargida diffusa</i>	
Noctuidae	<i>Dargida rubripennis</i>	typically found in prairies in WI; abundant at Eagle Valley
Noctuidae	<i>Mythimna unipuncta</i>	
Noctuidae	<i>Leucania phragmitidicola</i>	
Noctuidae	<i>Leucania lapidaria</i>	
Noctuidae	<i>Leucania commoides</i>	
Noctuidae	<i>Leucania ursula</i>	
Noctuidae	<i>Leucania pseudargyria</i>	
Noctuidae	<i>Orthosia rubescens</i>	
Noctuidae	<i>Orthosia alurina</i>	
Noctuidae	<i>Orthosia hibisci</i>	
Noctuidae	<i>Crocigrapha normani</i>	
Noctuidae	<i>Himella fidelis</i>	southern species at range edge in southern WI
Noctuidae	<i>Egira dolosa</i>	
Noctuidae	<i>Achatia distincta</i>	
Noctuidae	<i>Morrisonia confusa</i>	
Noctuidae	<i>Nephelodes minians</i>	
Noctuidae	<i>Pseudorthodes vecors</i>	
Noctuidae	<i>Orthodes majuscula</i>	
Noctuidae	<i>Agrotis gladiaria</i>	
Noctuidae	<i>Agrotis venerabilis</i>	
Noctuidae	<i>Agrotis ipsilon</i>	
Noctuidae	<i>Feltia subterranea</i>	southern species at range edge in southern WI or just a stray
Noctuidae	<i>Feltia jaculifera</i>	
Noctuidae	<i>Feltia subgothica</i>	
Noctuidae	<i>Feltia tricosia</i>	
Noctuidae	<i>Feltia herilis</i>	
Noctuidae	<i>Euxoa velleripennis</i>	
Noctuidae	<i>Euxoa tessellata</i>	
Noctuidae	<i>Dichagyris grotei</i>	associated with prairies; abundant at Eagle Valley
Noctuidae	<i>Dichagyris acclivis</i>	southern species at range edge in southern WI
Noctuidae	<i>Ochropleura implecta</i>	
Noctuidae	<i>Peridroma saucia</i>	
Noctuidae	<i>Xestia dolosa</i>	
Noctuidae	<i>Xestia normanianus</i>	
Noctuidae	<i>Xestia smithii</i>	
Noctuidae	<i>Agnorisma badinodis</i>	
Noctuidae	<i>Cerastis tenebrifera</i>	
Noctuidae	<i>Noctua pronuba</i>	
Noctuidae	<i>Protolampra brunneicollis</i>	
Noctuidae	<i>Abagrotis alternata</i>	

Family	Species	Comments
Noctuidae	<i>Abagrotis anchocelioides</i>	
Noctuidae	<i>Pyrrhia cilisca</i>	
Noctuidae	<i>Helicoverpa zea</i>	
Noctuidae	<i>Heliothis subflexa</i>	southern species at range edge in southern WI or possibly a stray
Noctuidae	<i>Schinia arcigera</i>	
Noctuidae	<i>Schinia lucens</i>	leadplant feeder and prairie species; locally common at Eagle Valley
Noctuidae	Unidentified Noctuidae	
Unidentified	Unidentified Lepidoptera	



Figure 15. *Dyseriocrania griseocapitella* female 11.5mm (7 May 2013)



Figure 16. *Siederia walshella* male 13.5mm
(7 May 2013)



Figure 17. *Povolnya quercinigrella* male 14.5mm
(7 May 2013)



Figure 18. *Elachista* sp. male 7mm
(7 May 2013)



Figure 19. *Arogalea cristifasciella* male 13mm
(7 May 2013)



Figure 20. *Coleotechnites quercivorella* female 11mm
(7 May 2013)



Figure 21. *Bondia crescentella* female 15mm
(7 May 2013)



Figure 22. *Libytheana carinenta* (30 June 2012)



Figure 23. *Deidamia inscriptum* (8 May 2013)



Figure 24. *Scolecocampa liburna* (13 July 2013)



Figure 25. *Nymphalis antiopa*, *Sunira bicolorago*, and *Noctua pronuba* (and ant) feeding on rotten banana-brown sugar bait; it is quite unusual to see a butterfly feeding at night (25 September 2012)

INSECTS OTHER THAN LEPIDOPTERA

The 226 specimens are primarily Coleoptera (beetles), Diptera (flies), Hymenoptera (wasps and kin), Hemiptera (true bugs), and Trichoptera (caddisflies). Most specimens other than a few distinctive ones are not yet identified to species level (Table 4); therefore total species counts and meaningful discussion are not yet possible. Interesting and unusual species are expected.

As noted above sampling of insects outside of Lepidoptera was cursory at best due to an overwhelming Lepidoptera workload. The vast, vast majority of species await discovery. By extrapolating from the estimated Lepidoptera diversity of 1500 species (see above) 8500 total species of insects at Eagle Valley would be a *conservative* estimate.

Table 4. Non-Lepidoptera insects documented at the preserve.

Order	Family	Species
Coleoptera	Carabidae	Unidentified Carabidae
Coleoptera	Cerambycidae	Unidentified Cerambycidae
Coleoptera	Chrysomelidae	Unidentified Chrysomelidae
Coleoptera	Cleridae	Unidentified Cleridae
Coleoptera	Coccinellidae	<i>Harmonia axyridis</i>
Coleoptera	Coccinellidae	Unidentified Coccinellidae
Coleoptera	Curculionidae	Unidentified Curculionidae
Coleoptera	Elateridae	Unidentified Elateridae
Coleoptera	Erotylidae	<i>Megalodacne heros</i>
Coleoptera	Geotrupidae	Unidentified Geotrupidae
Coleoptera	Heteroceridae	Unidentified Heteroceridae
Coleoptera	Hydrophilidae	Unidentified Hydrophilidae
Coleoptera	Meloidae	<i>Epicauta vittata</i>
Coleoptera	Nitidulidae	<i>Glischrochilus obtusus</i>
Coleoptera	Nitidulidae	Unidentified Nitidulidae
Coleoptera	Scarabaeidae	<i>Osmoderma eremicola</i>
Coleoptera	Scarabaeidae	<i>Phyllophaga</i> spp.
Coleoptera	Scarabaeidae	<i>Serica</i> spp.
Coleoptera	Scarabaeidae	Unidentified Scarabaeidae
Coleoptera	Silphidae	<i>Nicrophorus</i> spp.
Coleoptera	Staphylinidae	Unidentified Staphylinidae
Coleoptera	Tenebrionidae	Unidentified Tenebrionidae
Coleoptera		Unidentified Coleoptera
Diptera	Asilidae	Unidentified Asilidae
Diptera	Chironomidae	Unidentified Chironomidae
Diptera	Phoridae	Unidentified Phoridae
Diptera	Syrphidae	Unidentified Syrphidae
Diptera	Tachinidae	<i>Epalpus signifer</i>
Diptera	Tachinidae	Unidentified Tachinidae
Diptera	Xylophagidae	Unidentified Xylophagidae
Diptera		Unidentified Diptera
Hemiptera	Cicadellidae	Unidentified Cicadellidae
Hemiptera	Cicadidae	<i>Tibicen canicularis</i>
Hemiptera	Membracidae	Unidentified Membracidae
Hemiptera	Pentatomidae	Unidentified Pentatomidae
Hemiptera		Unidentified Hemiptera
Hymenoptera	Andrenidae	Unidentified Andrenidae
Hymenoptera	Apidae	<i>Bombus</i> spp.
Hymenoptera	Crabronidae	<i>Sphecius speciosus</i>
Hymenoptera	Formicidae	Unidentified Formicidae
Hymenoptera	Ichneumonidae	<i>Ophion</i> spp.
Hymenoptera	Ichneumonidae	Unidentified Ichneumonidae
Hymenoptera	Mutillidae	<i>Pseudomethoca frigida</i>
Hymenoptera	Pelecinidae	<i>Pelecinus polyturator</i>
Hymenoptera	Siricidae	<i>Tremex columba</i>

Order	Family	Species
Hymenoptera	Vespidae	<i>Dolichovespula maculata</i>
Hymenoptera	Vespidae	Unidentified Vespidae
Hymenoptera		Unidentified Hymenoptera
Neuroptera	Chrysopidae	Unidentified Chrysopidae
Neuroptera	Hemerobiidae	Unidentified Hemerobiidae
Neuroptera	Mantispidae	<i>Dicromantispa sayi</i>
Orthoptera	Gryllidae	<i>Oecanthus</i> spp.
Orthoptera	Gryllidae	Unidentified Gryllidae
Orthoptera	Tetrigidae	Unidentified Tetrigidae
Orthoptera	Tettigoniidae	Unidentified Tettigoniidae
Phasmida	Diapheromeridae	Unidentified Diapheromeridae
Trichoptera	Leptoceridae	<i>Nectopsyche</i> spp.
Trichoptera	Leptoceridae	Unidentified Leptoceridae
Trichoptera		Unidentified Trichoptera

Future Studies

This study is essentially a baseline on which to build. We are only aware of the minority of species out there, much less their ways of life. The possibilities for further research in the insect realm are essentially limitless.

Preserves are meant to conserve those bits of the world not overly tarnished by our own hands, but to effectively conserve those bits one must understand them- this is a formidable challenge when our knowledge is overshadowed by ignorance. Therefore two of the most important tools in conservation are an insatiable thirst for knowledge and an open mind.