

Insect Diversity on Mount Mansfield

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Abstract

Insects were collected from sites at three different elevations on Mount Mansfield using the same methods and materials as reported in 1991. The 273 species of moths collected in 1991 are listed. Fly, wasp, and beetle families are listed and species identification are included where possible. A total of 58 ground beetle species collected over the period 1991-1992 are listed with respect to elevation. A brief discussion and future plans of this study are mentioned.

Introduction

In 1991 a long term survey program was developed to record the insect biodiversity on Mount Mansfield with respect to taxonomic composition and abundance. Permanent survey traps were established to compare and contrast insect diversity in three forests habitats.

The taxonomic composition of the fauna is presented for the Diptera, Hymenoptera, and Coleoptera combined for malaise and waterpan traps over 1991-1992 collecting season. The species of carabid beetles collected from pitfall traps among the three survey sites are given for 1991 and 1992 respectively, and the Lepidoptera species collected from light traps are tabulated for 1991.

Methods

Sampling sites were established at 400m elevation (Proctor Maple Research Center) in a sugar maple forest, 600m (Underhill State Park) in a mixed hardwood forest, and 1160m (Mt. Mansfield) in a sub-alpine balsam fir forest. At each site five 20m diameter plots were established. A canopy malaise trap was installed in one dominant sugar maple or fir tree (sub-alpine) in each of the four outlying plots. Six pitfall traps were installed around the plots at 60° intervals and one light trap was located in the center plot. A detailed account of field and laboratory methods is outlined in the 1991 VMC Annual Report.

Results

The Diptera species (Table 1) collected represent three suborders. The suborder Nematocera was the least abundant group with only four species of crane flies and two march flies. The Bracycera were represented by six families, with three specimens

identified to genus and four to species. The representation of the suborder Cyclorrhapha comprised two divisions. Two families were present in the division Aschiza with three Syphridae being identified to species and a further 18 specimens unidentified. The division Schizophora was represented by eight families, including Muscidae, Calliphoridae, and Tachinidae.

Two suborders of Hymenoptera are represented. The suborder Symphyta comprised two sawfly families, Argidae and Tenthredinidae. The horntail family Siricidae is represented by the common pigeon tremex (*Tremex columba*). The larger suborder Apocrita comprised 10 families including a number of ichneumonid parasitoids that are not identified to species.

Two suborders of Coleoptera are represented. The Adephaga are limited to the Carabidae (ground beetles) with 58 identified species (Table 1b). The remaining beetles belong to the Polyphaga with twenty-five families represented. The family Staphylinidae (rove beetles) comprise four specimens identified to genus and seven to species. Five specimens of Elateridae (click beetles) were identified to species. Families collected in this study with known forest pest species include Cerambycidae (long-horned beetles), Curculionidae (weevils), and Scolytidae (bark beetles).

In 1991, 34 species and 1900 individuals of Carabidae were collected compared to 49 species and 1550 individuals in 1992. Six species collected in 1991 were not found in 1992. Twenty additional species were collected in 1992. Twenty-seven of 58 species were confined to one site and 15 species were found at all three sites. The highest number of individuals for any one species was 676 (*Synuchus impunctatus*). Only one individual was collected for 5 species in 1991 and 14 species in 1992.

The inventory of moths was extended to include the "micro-Lepidoptera". These records will add to the total number of species for the study areas. The species of macro-Lepidoptera for the 1991 inventory are listed along with a few representatives of the micro-Lepidoptera (Table 2). The table includes specific information on the elevational distribution for each species. Most species are present in the lower sites, but absent from the summit. The results of the 1992 survey are currently being entered into a computer data base.

Discussion

Sixty percent of the necessary identifications required to develop diversity indices to characterize and compare biodiversity at the three sites have been completed. Although comprehensive species identifications are possible for the Carabidae and Lepidoptera, many other groups will require specialist study, and this is beyond the scope of current resources. In these groups the primary emphasis will be to determine family, genus, and number of "species".

Future Plans

Waterpan traps were discontinued in 1993 because they collected relatively few specimens which were also duplicated in malaise traps. Data on the flies, wasps, and ground beetles will be used to calculate the diversity index for species richness and abundance. The malaise trap and light trap material will be represented by their ecological guilds in the same manner as the waterpan trap Diptera previously presented in the 1991 VMC Report.

Acknowledgment

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Table 1b. Carabidae collected in pitfall traps from Mount Mansfield summit site (1160m), Underhill State Park (600m USP), and Proctor Maple Research Center (400m PMRC)

Species	Summit		USP		PMRC	
	1991	1992	1991	1992	1991	1992
<i>Scaphinotus viduus</i>	+ ¹		+	+	+	+
<i>Sphaeroderus canadensis</i>	+		+	+	+	+
<i>Sphaeroderus lecontei</i>	+		+	+	+	+
<i>Sphaeroderus nitidicollis</i>	+					
<i>Carabus seratus</i>						+
<i>Calsoma frigidum</i>				+		
<i>Nebria pallipes</i>				+		
<i>Olisthopus parmatus</i>						+
<i>Notiophilus nemoralis</i>	+	+	+	+	+	
<i>Notiophilus aeneus</i>			+			
<i>Elaphrus clairvillei</i>		+				
<i>Loricera pilicornis</i>		+				
<i>Patrobus longicornis</i>			+		+	
<i>Patrobus foveocollis</i>		+		+		
<i>Trechus apicalis</i>		+		+		+
<i>Bembidion semicinctum</i>				+		
<i>Myas cyanescens</i>					+	+
<i>Pterostichus adoxus</i>			+	+	+	+
<i>Pterostichus adstrictus</i>	+	+	+	+	+	
<i>Pterostichus brevicornis</i>		+				
<i>Pterostichus commutabilis</i>		+				
<i>Pterostichus coracinus</i>	+			+		+
<i>Pterostichus corvinus</i>			+	+	+	+

¹ Species present.

Table 1b -continued.

Species	<u>Summit</u>		<u>USP</u>		<u>PMRC</u>	
	1991	1992	1991	1992	1991	1992
<i>Pterostichus dillgendus</i>			+	+	+	+
<i>Pterostichus honestus</i>	+	+	+	+	+	+
<i>Pterostichus lachrymosus</i>						+
<i>Pterostichus lucublandus</i>						+
<i>Pterostichus melanarius</i>	+		+		+	
<i>Pterostichus mutus</i>						+
<i>Pterostichus patruelis</i>						+
<i>Pterostichus pensylvanicus</i>	+		+	+		
<i>Pterostichus pinguedineus</i>	+	+	+		+	
<i>Pterostichus punctatissimus</i>	+	+				
<i>Pterostichus rostratus</i>			+	+	+	+
<i>Pterostichus stygicus</i>			+	+	+	+
<i>Pterostichus tristis</i>			+	+		+
<i>Calathus ingratus</i>	+	+	+	+	+	
<i>Synuchus impunctatus</i>	+		+	+	+	+
<i>Agonum harrisi</i>	+					
<i>Agonum melanarium</i>				+		
<i>Agonum mutatum</i>		+			+	+
<i>Agonum octopunctatum</i>	+					
<i>Agonum palustre</i>						+
<i>Agonum retractum</i>	+	+	+	+	+	+
<i>Agonum sordens</i>	+					
<i>Agonum superioris</i>				+		
<i>Agonum trigeminum</i>						+
<i>Platynus decentis</i>	+	+	+	+	+	+

Table 1b -continued.

Species	<u>Summit</u>		<u>USP</u>		<u>PMRC</u>	
	1991	1992	1991	1992	1991	1992
<i>Platynus mannerheimi</i>	+	+		+		
<i>Platynus tenuicollis</i>			+	+		
<i>Amara lunicollis</i>	+					
<i>Disamara arenaria</i>	+					
<i>Harpalus caliginosus</i>	+					
<i>Harpalus fulvilabris</i>						+
<i>Harpalus somnulentus</i>				+		
<i>Dicaelus politus</i>						+
<i>Dromius piceus</i>				+		
<i>Cymindus cribricollis</i>	+		+	+	+	+

Table 1. Flies, wasps and beetles collected from Mount Mansfield 1991 - 1992 (all sites combined).

Flies:

Order Diptera

Suborder Nematocera - long-horned flies

Superfamily Tipuloidea

Tipulidae - crane flies
4 species

Superfamily Bibionoidea

Bibionidae - march flies
2 species

Suborder Brachycera - short-horned flies

Superfamily Tabanoidea

Xylophagidae - xyophagid flies
Rachicerus spp.
Xlophagus spp.

Stratiomyidae - soldier flies
Stratiomys spp.

Tabanidae - horse and deer flies
Chrysops sordidus
Stonemyia tranquilla

Rhagionidae - snipe flies
Rhagio mystaceus
Rhagio gracilis

Superfamily Asiloidea

Empididae - dance flies
4 species
Dolichopodidae - long-legged flies
6 species

Suborder Cyclorhapha - circular-seamed flies

Division Aschiza

Superfamily Syrphoidea

Pipunculidae - big-headed flies
Pipunculus spp.
Syrphidae - flower flies
Helophilus latifrons
Spilomyia fusca
Syrphus spp.
Rhingia nasica
18 other species

Division Schizophora

Section Acalyptratae

Superfamily Tephritoidea

Otitidae - picture-winged flies

Superfamily Sciomyzoidea

Dryomyzidae - dryomyzid flies
Sciomyzidae - marsh flies

Unplaced families of Acalyptratae

Heleomyzidae - heleomyzid flies
3 species

Section Calyptratae

Superfamily Muscidae

Muscidae - house flies
Mesembrina latreillii
10 other species

Superfamily Oestroidea

Calliphoridae - blow flies
3 species
Sarcophagidae - flesh flies
Tachinidae - tachinid flies
Epalus signifer
19 other species

Wasps, ants, and bees:

Order Hymenoptera

Suborder Symphyta

Superfamily Tenthredinoidea - sawflies

Argidae
Arge spp.
Tenthredinidae
Tenthredo spp.

Superfamily Siricoidea - hornails

Siricidae
Tremex columba (L.)

Suborder Apocrita

Superfamily Ichneumonidea

Ichneumonidae
26 species

Table 1 -continued.

<p>Superfamily Sphecoidea - spheciod wasps Sphecidae - spheciod wasps Pemphredonidae <i>Stigus fraternus</i> <i>Stigus americanus</i></p> <p>Superfamily Apoidea - bees Halictidae - halictid bees Apidae - bumble bees Subfamily Bombinae 3 species Anthophoridae - digger bees Subfamily Anthoprinae 2 species</p> <p>Superfamily Vespoidea - vespoid wasps Vespidae - paper wasps and hornets 3 species Eumenidae - potter wasps Pompilidae - spider wasps <i>Auplopus archetica</i></p> <p>Superfamily Formicoidea Formicidae - ants</p>	<p>Staphylinidae - rove beetles <i>Quedius perinus</i> <i>Quedius spp.</i> <i>Lathrobium spp.</i> <i>Tachinas fimbriatus</i> <i>Tachinas elongatus</i> <i>Tachinas quebecensis</i> <i>Tachinas spp.</i> <i>Platydracus viridanus</i> <i>Platydracus violaceus</i> <i>Platydracus spp.</i> <i>Philonthus cyanipennis</i> <i>Arpedium spp.</i></p> <p>Superfamily Cantharoidea Cantharidae - soldier beetles Lampyridae - lightning bugs <i>Ellychina corrusa</i></p> <p>Superfamily Elateroidea Elateridae - click beetles <i>Eanus maculipennis</i> <i>Ctenicera vernalis</i> <i>Ctericera triundulata</i> <i>Ctericera spp.</i> <i>Ampedus melanotoides</i> <i>Anthus acanthous</i></p>
<p>Beetles: Order Coleoptera</p> <p>Suborder Adephaga</p> <p> Carabidae - ground beetles 58 species</p> <p>Suborder Polyphaga</p> <p> Superfamily Staphylinoidea Leiodidae - round fungus beetles <i>Anisotoma spp.</i> Leptodiridae - small carrion beetles <i>Catops basilarius</i> <i>Ptomaphagus consobrinus</i> Silphidae - carrion beetles <i>Silpha americana</i> (L.) <i>Nicrophorus spp.</i> Scaphidiidae - shining fungus beetles <i>Baeocera spp.</i> Brathinidae - grass-root beetles <i>Brathinus nitiditus</i></p>	<p>Superfamily Cucujoidea Erotylidae - pleasing fungus beetles <i>Licoperidina spp.</i> Nitidulidae - sap beetles Lathridiidae <i>Lanthridius spp.</i> Byturidae - fruitworm beetles <i>Byturus unicolor</i> Salpingidae <i>Salpingus biresens</i> Pyrochroidae - fire-color beetles <i>Dendroides canadensis</i></p> <p>Superfamily Meloidea Meloidae - blister beetles</p> <p>Superfamily Tenebrionoidea Tenebrionidae - darkling beetles <i>Upis ceranboides</i> Melandryidae <i>Penthe obliquata</i> <i>Dircaea spp.</i></p>

Table 1 -continued.

Superfamily Scarabeoidea

Lucanidae - stag beetles

Scarabaeidae - scarab beetles

5 species

Superfamily Cerambycidae

Cerambycidae - long-horned beetles

Clytus rubricla

Superfamily Chrysomeloidea

Chrysomelidae - leaf beetles

Oedionychis sabuttata

Alticinae

Superfamily Curculionoidea

Curculionidae - snout beetles

Sphenopherous incongruous

8 other species

Scolytidae - bark beetles

Table 2. Lepidoptera collected in 1991 from light traps on Mount Mansfield summit (site 1 - 1160m), Underhill State Park (site 2 - 600m), and Proctor Maple Research Center (site 3 - 600m)

Family	Genus species	Site		
		1	2	3
Arctidae	<i>Clemensia albata</i>		+ ¹	+
	<i>Crambidia pallida</i>			+
	<i>Ctenucha virginica</i>		+	+
	<i>Halysidota tessellaris</i>	+	+	+
	<i>Hapola lecontei</i>		+	+
	<i>Holomelina laeta</i>		+	+
	<i>Hypoprepia fucosa</i>		+	+
	<i>Lophocampa maculata</i>			+
	<i>Orgyia definita</i>		+	+
	<i>Phragmatobia assimilans</i>		+	
	<i>Pyrractia isabella</i>		+	+
	<i>Spilosoma congrua</i>		+	+
	<i>Spilosoma virginica</i>		+	+
Drepanidae	<i>Drepana arcuata</i>		+	+
	<i>Drepana bilineata</i>	+	+	+
	<i>Oreta rosea</i>		+	+
Epermeniidae	<i>Epermenia albapunctella</i>			+
Geometridae	<i>Anacamptodes ephyraria</i>		+	
	<i>Anagoga occiduaria</i>		+	+
	<i>Besma endropiaria</i>		+	+
	<i>Biston betularia</i>	+	+	+
	<i>Cabera erythemaria</i>		+	+
	<i>Campea perlata</i>		+	+
	<i>Caripeta divisata</i>	+	+	+

¹ Species present.

Table 2 -continued

Family	Genus species	Site		
		1	2	3
Geometridae	<i>Dysstroma hersiliata</i>		+	+
	<i>Dystroma truncata</i>		+	+
	<i>Ecliptoptera silaceata</i>		+	+
	<i>Ectropis crepuscularia</i>		+	+
	<i>Ennomos magnaria</i>		+	+
	<i>Epirrita autumnata</i>	+	+	+
	<i>Eubaphe mendica</i>			+
	<i>Euchlaena tigrinaria</i>		+	
	<i>Eugonobapta nivosaria</i>		+	+
	<i>Eulithis destinata</i>	+		
	<i>Eulithis diversilineata</i>			+
	<i>Eulithis explanata</i>			+
	<i>Eulithis propulsata</i>	+	+	
	<i>Euphyia unangulata</i>	+	+	+
	<i>Eupithecia coagulata</i>		+	
	<i>Eupithecia herefordaria</i>			+
	<i>Eupithecia miserulata</i>		+	+
	<i>Euithecia sp.</i>	+		
	<i>Eusarca confusaria</i>	+	+	
	<i>Eutrapela clemataria</i>		+	+
	<i>Heterophleps triguttaria</i>			+
	<i>Homochlodes disconventa</i>		+	
	<i>Homochlodes lactispargari</i>	+	+	+
	<i>Horisma intestinata</i>			+
	<i>Hydreliia inornata</i>		+	

Table 2 -continued

Family	Genus species	Site		
		1	2	3
Geometridae	<i>Hydrelia prunivorata</i>		+	+
	<i>Hypagyrtis piniata</i>		+	+
	<i>Hypagyrtis unpunctata</i>		+	
	<i>Iridopsis larvaria</i>		+	+
	<i>Itame coortaria</i>		+	+
	<i>Itame pustularia</i>		+	+
	<i>Lambdina fiscellaria</i>	+	+	+
	<i>Lomographa glomeraria</i>	+		+
	<i>Lomographa vestaliata</i>		+	+
	<i>Melanolophia signataria</i>	+		
	<i>Melanolophia sp.</i>	+		
	<i>Mesoleuca ruficillata</i>		+	+
	<i>Metanema inatomaria</i>		+	+
	<i>Nacophora quernaria</i>			
	<i>Nematophora limbata</i>		+	+
	<i>Nemoria mimosaria</i>		+	+
	<i>Nemoria rufifrontaria</i>			+
	<i>Nemoria sp.</i>			+
	<i>Operopthera bruceata</i>		+	+
	<i>Orthonama centrostrigaria</i>			+
	<i>Orthonama obstipata</i>		+	+
	<i>Paonias excaecatus</i>	+	+	+
	<i>Perizoma basaliata</i>		+	
	<i>Pero honestaria</i>			+
	<i>Pero hubneraria</i>			+
	<i>Pero sp.</i>	+	+	+

Table 2 -continued

Family	Genus species	Site		
		1	2	3
Geometridae	<i>Plagodis alcoolaria</i>		+	+
	<i>Plagodis fervidaria</i>		+	
	<i>Plagodis phlogosaria</i>			+
	<i>Plagodis serinaria</i>		+	+
	<i>Probole alienaria</i>		+	+
	<i>Prochoerodes transversata</i>		+	+
	<i>Rheumaptera hastata</i>			+
	<i>Scopula limboundata</i>		+	+
	<i>Selenia kentaria</i>	+		
	<i>Semiothisa aemulataria</i>		+	+
	<i>Semiothisa bisignata</i>	+	+	+
	<i>Semiothisa minorata</i>			+
	<i>Semiothisa pinistrobata</i>	+	+	+
	<i>Semiothisa ulserata</i>	+		+
	<i>Sicya macularia</i>		+	+
	<i>Stannodes gibbicotata</i>			+
	<i>Tetracis cachexiata</i>		+	+
	<i>Tetracis crocallata</i>		+	+
	<i>Trichodezia albovittata</i>		+	+
	<i>Venusia cambrica</i>	+	+	+
<i>Xanthorhoe ferrugata</i>		+		
<i>Xanthorhoe labradorensis</i>	+	+		
<i>Xanthotype urticaria</i>		+	+	
Hepialidae	<i>Korscheltellus gracilis</i>	+	+	+
	<i>Sthenopsis auratus</i>		+	
Lasiocampidae	<i>Malacosoma americanum</i>		+	+

Table 2 -continued

Family	Genus species	Site		
		1	2	3
Lasiocampidae	<i>Malacosoma disstria</i>		+	+
	<i>Orgyia definata</i>		+	
	<i>Tolyte vellea</i>			+
Limaodidae	<i>Euclea delphinii</i>			+
	<i>Tortricidia testacea</i>		+	+
Lymantriidae	<i>Dasychira dorsipennata</i>		+	
	<i>Lymantria dispar</i>		+	+
Noctuidae	<i>Abagrotis alternata</i>			+
	<i>Achatodes zeae</i>		+	+
	<i>Acronicta americana</i>		+	+
	<i>Acronicta fragilis</i>	+	+	+
	<i>Acronicta innotata</i>	+	+	+
	<i>Acronicta superans</i>	+		+
	<i>Acronista hasta</i>		+	+
	<i>Agroperina dubitans</i>	+		+
	<i>Agrotis ipsilon</i>	+	+	+
	<i>Amphipoea americana</i>			+
	<i>Amphipyra pyramidoides</i>		+	+
	<i>Amphipyra tragopoginis</i>	+		
	<i>Anaplecoides prasina</i>		+	+
	<i>Anathix puta</i>			+
	<i>Anthix rulla</i>		+	+
	<i>Anomogyna dilucida</i>			+
	<i>Anomogyna fabulosa</i>	+		+
<i>Anomogyna homogena</i>	+			
<i>Anticarsia gemmatalis</i>			+	

Table 2 -continued

Family	Genus species	Site		
		1	2	3
Noctuidae	<i>Apamea finitima</i>	+		
	<i>Autographa precationis</i>	+	+	+
	<i>Baileya dormitans</i>		+	+
	<i>Baileya ophthalmica</i>			+
	<i>Balsa labecula</i>			+
	<i>Balsa tristrigella</i>			+
	<i>Bomolocha abalienalis</i>			+
	<i>Bomolocha baltimoralis</i>			+
	<i>Bomolocha deceptalis</i>		+	
	<i>Bomolocha edictalis</i>	+	+	+
	<i>Bomolocha sp.</i>			+
	<i>Caenurgina crassiuscula</i>			+
	<i>Callopietria cordata</i>		+	
	<i>Callopietra mollissima</i>		+	+
	<i>Catacola amatrix</i>			+
	<i>Catacola blandula</i>			+
	<i>Catacola mira</i>		+	+
	<i>Catacola subnata</i>		+	
	<i>Catacola ultronia</i>		+	
	<i>Charadra deridens</i>	+	+	+
	<i>Chytolita morbidalis</i>		+	
	<i>Chytonix palliatricula</i>		+	
	<i>Colocasia propinguilinea</i>		+	+
	<i>Conservula anodonta</i>			+
	<i>Diachrysia aeroiodes</i>		+	+
	<i>Diarsia jucanda</i>		+	

Table 2 -continued

Family	Genus species	Site		
		1	2	3
	<i>Elaphria festivoidea</i>			+
	<i>Elaphria versicolor</i>			+
	<i>Eosphoropteryx thyatyroid</i>	+		
	<i>Euplexia benesimillis</i>	+	+	+
	<i>Eurois astricta</i>		+	+
	<i>Euxoa tessellata</i>	+		
	<i>Faronta diffusa</i>	+		
	<i>Feltia herilis</i>			+
	<i>Feltia tricola</i>		+	
	<i>Feralia comstocki</i>		+	+
	<i>Graphiphora haurispica</i>		+	+
	<i>Helotropha reniformis</i>			+
	<i>Homoglaea hircina</i>		+	
	<i>Homorthodes furfurata</i>			+
	<i>Hypena humuli</i>		+	+
	<i>Idia americalis</i>		+	+
	<i>Idia conesia</i>		+	
	<i>Idia lubricalis</i>		+	+
	<i>Idia rotundalis</i>		+	+
	<i>Lacinipolia olivacea</i>			+
	<i>Lacinipolia renigera</i>	+		+
	<i>Lacinipolia lorea</i>		+	+
	<i>Lithacodia carneola</i>		+	+
	<i>Lithacodia concinnimacula</i>		+	+
	<i>Lithacodia muscosula</i>		+	+
	<i>Lithacodia synochitis</i>		+	+

Table 2 -continued

Family	Genus species	Site		
		1	2	3
Noctuidae	<i>Lithophane grotei</i>		+	
	<i>Lithophane hemina</i>			+
	<i>Lithophane patefacta</i>	+		+
	<i>Melanchra adjuncta</i>			+
	<i>Morrisonia confusa</i>			+
	<i>Nedra ramosula</i>			+
	<i>Nephalodes minians</i>	+	+	+
	<i>Ochropleau plecta</i>	+	+	+
	<i>Oligia illocata</i>	+	+	+
	<i>Oligia mactata</i>	+	+	+
	<i>Orthodes crenulata</i>			+
	<i>Orthodes cynica</i>	+	+	+
	<i>Orthosia hibisci</i>			+
	<i>Pachypolia atricornis</i>			+
	<i>Palthis angulalis</i>		+	+
	<i>Papaipema impecuniosa</i>		+	+
	<i>Papaipema inquaesita</i>			+
	<i>Papaipema sp.</i>		+	+
	<i>Papaipema unimoda</i>		+	
	<i>Parallelia bistris</i>		+	+
	<i>Peridroma saucia</i>	+		
	<i>Phlogophora periculosa</i>	+	+	+
	<i>Platypena scabra</i>			+
	<i>Platypolia anceps</i>	+		+
	<i>Platysenta videns</i>	+		
	<i>Plusia putnamia</i>	+	+	+

Table 2 -continued

Family	Genus species	Site		
		1	2	3
Noctuidae	<i>Polia detracta</i>		+	
	<i>Polia imbrifera</i>		+	+
	<i>Polia latex</i>		+	+
	<i>Polia nimbose</i>		+	+
	<i>Pseudaletia unipuncta</i>	+		
	<i>Pseudaletia vecors</i>		+	+
	<i>Renia sobrialis</i>			+
	<i>Rivula propinqualis</i>		+	+
	<i>Spaelotis cladestina</i>			+
	<i>Suneria bicolorago</i>	+	+	+
	<i>Syngrapha rectangula</i>	+	+	
	<i>Trichoplusia</i>	+		
	<i>Xanthia togata</i>			+
	<i>Xestia adela</i>	+	+	+
	<i>Xestia bicarnea</i>		+	+
	<i>Xestia dolosa</i>		+	+
	<i>Xestia normaniana</i>		+	+
	<i>Xestia smithii</i>	+	+	+
	<i>Xylena nupera</i>	+		
	<i>Zale minerea</i>		+	+
	<i>Zanclognatha cruralis</i>			+
	<i>Zanclognatha laevigata</i>		+	+
	<i>Zanclognatha ochreipennis</i>	+	+	+
<i>Zanclognatha protumnusali</i>		+	+	
<i>Zanclognatha sp.</i>			+	
Notodontidae	<i>Clostera albosigma</i>		+	+

Table 2 -continued

Family	Genus species	Site		
		1	2	3
Notodontidae	<i>Clostera strigosa</i>		+	
	<i>Dasylophia anguina</i>		+	
	<i>Dasylophia thyatiroides</i>		+	
	<i>Ellida caniplaga</i>		+	
	<i>Furcula borealis</i>			+
	<i>Gluphiia septentrionis</i>		+	+
	<i>Heterocampa biundata</i>			+
	<i>Heterocampa guttivitta</i>	+	+	+
	<i>Nadata gibbosa</i>		+	+
	<i>Nerice bidentata</i>		+	
	<i>Odontosia elegans</i>		+	
	<i>Oligocentra semirufescens</i>		+	+
	<i>Peridea ferruginea</i>		+	+
	<i>Peridea basitriens</i>		+	+
	<i>Perridea sp.</i>		+	
	<i>Perizoma basiliata</i>		+	
	<i>Phlogophora iris</i>	+	+	+
	<i>Phoesia rimosa</i>		+	
	<i>Schizura ipomoeae</i>		+	+
	<i>Schizura leptinodes</i>		+	+
<i>Schizura unicornis</i>		+	+	
<i>Symmerista albifrons</i>		+	+	
Pyrilidae	<i>Herpetogramma theseusalis</i>			+
	<i>Pyrausta bicoloralis</i>		+	+
Saturniidae	<i>Actias luna</i>	+	+	+
	<i>Antheraea polyphemus</i>		+	+

Table 2 -continued

Family	Genus species	Site		
		1	2	3
Saturniidae	<i>Dyrocampa rubicunda</i>	+	+	+
	<i>Synanthedon acerni</i>		+	
Sphingidae	<i>Laothoe uglandis</i>	+		
	<i>Lapara bombycoides</i>	+		
	<i>Pachysphinx modesta</i>		+	+
	<i>Paonias myops</i>		+	+
Thyatridae	<i>Habrosyne scripta</i>	+	+	+
	<i>Pseudothyatira cymatophor</i>		+	+
Tineidae	<i>Acrolophus morus</i>		+	+
Tortricidae	<i>Clepsis melaleucana</i>	+	+	+
	<i>Clepsis persicana</i>	+	+	+
	<i>Eulia ministrana</i>			+
	<i>Olethreutes quadrifidus</i>		+	
	<i>Phaneta ochroterminana</i>		+	
	<i>Rhyacionia buoliana</i>			+
	<i>Sparganothis tristriata</i>		+	