

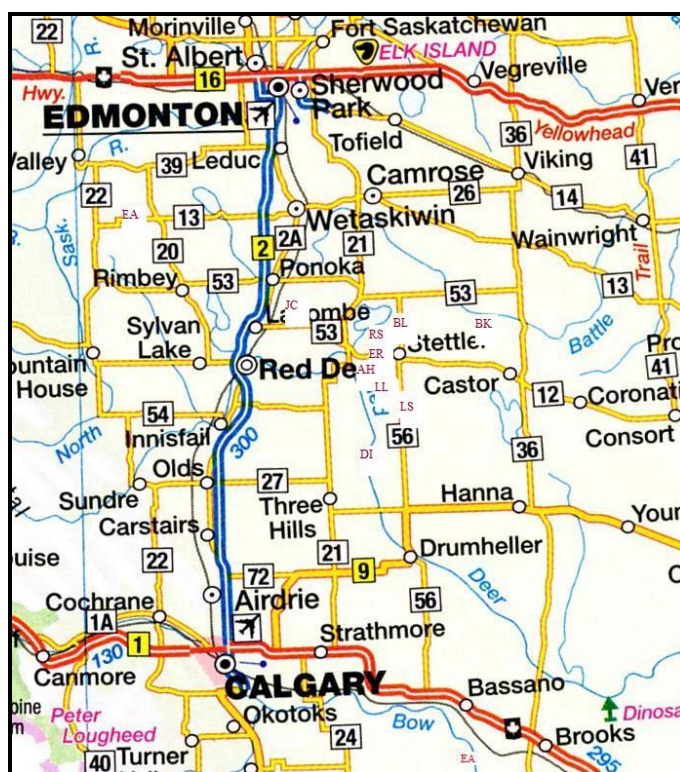
## MOTH INVENTORIES OF ELEVEN MAJOR STUDY AREAS IN SOUTH-CENTRAL ALBERTA: ANALYSIS

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Inventory research, starting in 1999 and continuing through 2007, has been carried out on the moths of eleven major study areas in south-central Alberta. With the exception of a semi-urban site in Erskine, all sites were in areas where the vegetation had been relatively undisturbed. Realizing that about 95% of the Aspen Parkland has been disturbed by agriculture or other activities, and some of the remainder will soon be disturbed, the purpose of the research was to document the native moth biodiversity while there was still time to do so. It is strongly recommended that government and other agencies like the Alberta Conservation Association, Ducks Unlimited and Nature Conservancy Canada continue to protect the undisturbed areas (Parks, Conservation Areas, Natural Areas, etc.) under their care and also that more areas be selected for preservation.



The eleven study areas are marked in red on the above map. The areas are: AH – the former Allan Hall Acreage, 3 km S of Nevis; BK – Big Knife Provincial Park, N of Halkirk; BL – Buffalo Lake Conservation Area, N of Stettler; DI – Dry Island Buffalo Jump Provincial Park, E of Huxley; EA – East Arrowwood Coulee, NE of Arrowwood; EP the Bird quarter on East Poplar Creek, NW of Winfield; ER – Bird residence, 5 Maple Close, Erskine; LL – the former Lloyd Lohr farm, SE of Erskine; LS – Lowden Springs Conservation Area, S of Stettler; and RS – Rochon Sands Provincial Park, N of Erskine. One area (ER) is in a semi-urban setting in Erskine, one (EP) is in mixed woods NW of Rimbey, and one (EA) is in the Prairies south of Bassano; all of the remainder are in Aspen Parkland. It wasn't until now that enough sampling had been done to warrant the present analysis. It is hoped that more research will be carried out in 2008.

## HABITATS

In simple terms, the Aspen Parkland is a mosaic of aspen groves surrounded by areas of grassland. However, there is much diversity when one looks in detail at the habitats found in each area and each habitat has its own characteristic plant species. Due to topography, soil type, soil moisture and exposure few sites have exactly similar habitats. The following table illustrates the various habitats present in the study areas.

### HABITATS IN STUDY AREAS

1999-2007, South-central  
Alberta

Habitats	AH	BK	BL	DI	JC	EA	EP	ER	LL	LS	RS
Acer negundo								x			
Artemisia spp.		x	x	x		x				x	
Badlands				x							
Chokecherry/saskatoon	x	x	x	x	x	x	x	x			x
Creek/river		x		x		x	x				
Elaeagnus commutata	x	x	x	x						x	
Garden/lawn								x			
Marsh	x		x								
Mesic prairie/grassland	x	x	x	x	x	x				x	
Mixed woods		x		x	x		x				
Old fields			x				x			x	
Picea glauca				x	x		x	x			
Pinus contorta					x		x				
Populus balsamifera woods						x	x				
Populus tremuloides woods	x	x	x	x	x		x	x	x		x
Riverine forest				x		x	x				
Salix spp.		x	x		x		x		x		x
Short grass prairie				x		x					
Steep N-facing slope				x							
Steep S-facing slope				x							
Steep W-facing slope						x					
Symphoricarpos occidentalis	x	x	x	x	x	x	x			x	
<b>Totals (22)</b>	<b>6</b>	<b>9</b>	<b>9</b>	<b>14</b>	<b>8</b>	<b>9</b>	<b>11</b>	<b>5</b>	<b>2</b>	<b>5</b>	<b>3</b>

Moths with one or a small number of food plants (oligophagy) tend to be found in fewer areas than those that have a wider range of foodplants (polyphagy). Areas with many habitats tend to have many species/greater biodiversity, similarly areas with few habitats tend to have few species/lesser biodiversity.

### SIMILARITY OF THE STUDY AREAS

The study areas have been compared on the basis of simple Percentage Similarity as seen in the following table.

**PERCENTAGE SIMILARITY\* OF MAJOR STUDY AREAS**

	<i>AH</i>	<i>BK</i>	<i>BL</i>	<i>DI</i>	<i>EA</i>	<i>EP</i>	<i>ER</i>	<i>JC</i>	<i>LL</i>	<i>LS</i>	<i>RS</i>
<i>AH</i>		54.39%	62.26%	49.62%	40.15%	40.30%	56.17%	34.62%	38.35%	41.94%	53.23%
<i>BK</i>	54.39%		55.61%	47.74%	36.47%	44.97%	53.19%	38.21%	35.05%	36.74%	53.45%
<i>BL</i>	62.26%	55.61%		49.17%	38.33%	46.11%	59.29%	35.51%	37.32%	39.18%	55.25%
<i>DI</i>	49.62%	47.74%	49.17%		38.70%	37.41%	48.69%	31.56%	28.43%	33.33%	43.15%
<i>EA</i>	40.15%	36.47%	38.33%	38.70%		27.37%	36.80%	27.33%	27.87%	36.56%	40.46%
<i>EP</i>	40.30%	44.97%	46.11%	37.41%	27.37%		50.40%	36.46%	31.07%	23.31%	44.88%
<i>ER</i>	56.17%	53.19%	59.29%	48.69%	36.80%	50.40%		36.55%	36.08%	33.73%	58.52%
<i>JC</i>	34.62%	38.21%	35.51%	31.56%	27.33%	36.46%	36.55%		36.93%	24.71%	39.29%
<i>LL</i>	38.35%	35.05%	37.32%	28.43%	27.87%	31.07%	36.08%	36.93%		28.425	39.66%
<i>LS</i>	41.94%	36.74%	39.18%	33.33%	36.56%	23.31%	33.73%	24.71%	28.42%		32.62%
<i>RS</i>	53.23%	53.45%	55.25%	43.15%	40.46%	44.88%	58.52%	39.29%	39.66%	32.62%	

\* number of species common to both sites/total species in site 1 + total species in site 2

The study areas have also been compared on the basis of the Simpson Coefficient. This coefficient reduces the differences in size between the two samples and is widely used in biotic comparisons.

**SIMPSON COEFFICIENT\* OF MAJOR STUDY AREAS**

	<i>AH</i>	<i>BK</i>	<i>BL</i>	<i>DI</i>	<i>EA</i>	<i>EP</i>	<i>ER</i>	<i>JC</i>	<i>LL</i>	<i>LS</i>	<i>RS</i>
<i>AH</i>		75.94	84.43	76.65	64.81	70.05	79.48	59.87	72.98	74.91	70.05
<i>BK</i>	75.94		70.02	67.31	66.98	66.54	67.70	71.57	77.02	75.64	75.06
<i>BL</i>	84.43	70.02		67.62	70.99	67.81	73.52	69.23	81.85	81.55	77.83
<i>DI</i>	76.65	67.31	67.62		75.62	53.27	67.24	65.55	70.16	76.01	69.05
<i>EA</i>	64.81	66.98	70.99	75.62		61.42	68.83	42.14	47.98	57.20	71.30
<i>EP</i>	70.05	66.54	67.81	53.27	61.42		72.00	79.26	81.05	60.89	74.83
<i>ER</i>	79.48	67.70	73.52	67.24	68.83	72.00		70.90	79.44	72.69	80.12
<i>JC</i>	59.87	71.57	69.23	65.55	42.14	79.26	70.90		52.24	39.48	66.89
<i>LL</i>	72.98	77.02	81.85	70.16	47.98	81.05	79.44	52.24		44.35	75.00
<i>LS</i>	74.91	75.65	81.55	76.01	57.20	60.89	72.69	39.48	44.35		67.34
<i>RS</i>	70.05	75.06	77.83	69.05	71.30	74.83	80.12	66.89	75.00	67.34	

\*C/N1 x 100, where C = number of taxa common to both and N1 = total number of taxa in the smaller sample.

**SPECIES ENCOUNTERED**

The following table shows the species encountered in each area.

**SPECIES ENCOUNTERED IN THE AREAS****MONA**

#	Name	AH	BK	BL	DI	EA	EP	ER	JC	LL	LS	RS
5	Eriocrania semipurpurella						x	x				
6	Acanthopteroctetes bimaculata			x								
19	Sthenopis purpurascens	x	x	x	x		x	x				
23	Gazoryctra hyperboreus						x					
29	Gazoryctra novigannus	x	x	x	x		x	x	x	x	x	x
184	Lampronia aenescens	x					x					
185	Lampronia sublustris		x				x					
186	Lampronia humilis						x?					
334	Amydria effrentella	x	x	x	x						x	
399	Tinea irrepta	x	x	x	x	x	x	x	x		x	x
412	Niditinea orleansella						x					x
420	Monopis rusticella					x	x					
421	Monopis spilotella	x	x	x	x	x	x	x		x	x	x
471	Lyonetia saliciella						x					
587	Caloptilia alnivorella			x	x		x	x	x			
589	Caloptilia anthobaphes				x		x	x				x
594.1	Caloptilia betulivora		x		x		x	x				
595	sp. nr. Caloptilia bimaculatella		x		x							
639	Caloptilia stigmatella			x	x		x	x	x			
640	Caloptilia strictella						x					
645	sp. nr. Caloptilia syringella									x		
645	Caloptilia syringella						x					
647	Micrurapteryx salicifoliella						x					
669	Parornix conspicuella		x	x	x		x	x	x			x
692	Acrocercops astericola		x	x	x		x					
798	Phyllonorycter apparella?		x	x			x					
855	Agonopterix gelidella						x					
876	Agonopterix rosaciliella		x				x	x	x			
878	Agonopterix canadensis			x		x	x	x			x	
889	Agonopterix argillacea		x	x	x		x	x	x			x
908	Depressariodes ciniflonella	x	x	x	x		x	x	x	x		x
910	Martyrhilda fulva	x		x	x	x			x		x	
911	Bibarrambra allenella						x					
912	Semioscopis packardella	x	x	x	x		x	x	x			x
913	Semioscopis merricella		x						x			
914	Semioscopis inornata	x	x	x			x	x	x	x		x
915	Semioscopis megamicrella		x	x	x		x	x	x	x		x
916	Semioscopis aureolla	x	x	x	x		x	x	x	x		x

**MONA**

<b>#</b>	<b>Name</b>	<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
918	Depressaria atrostrigella			x	x	x					x	
922	Depressaria pastinacella		x			x			x			x
926	Depressaria alienella	x		x	x		x	x				x
944	Nites betulella						x					
987	Ethmia monticola					x						
1055	Brymblia quadrimaculella						x					
1056	Denisia haydenella						x					
1058	Polix coloradella			x	x			x				
1077	Perittia cygnodiella											x
1088.01	Elachista virgatula				x							
1113	Elachista maritimella						x					
1138.1	Glyphidocera hurlberti	x	x	x	x	x	x	x		x	x	x
1156	Hypatopa titanella		x		x		x					x
1271	Coleophora pruniella	x					x	x	x			x
1283	Coleophora cretaticostella	x	x	x								
1313	Coleophora rosaevorella				x							
1316	Coleophora rosacella	x	x	x		x		x				
1321	Coleophora mcdunnoughiella					x						
1352	Coleophora sparsipulvella				x			x				
1367	Coleophora brunneipennis			x				x				x
1385	Coleophora maritella											x
1387	Coleophora mayrella						x					
1388	Coleophora trifolii	x	x	x	x	x	x	x	x		x	x
1399	Batrachedra praeangustata			x	x		x	x				
1423	Mompha albalpella			x			x					
n.n.	Mompha raschkiella						x					
1457	Mompha tricristatella		x	x			x					
1458	Mompha unifasciella			x				x				
1461	Blastodacna curvilineella						x					x
1515	Limnaecia phragmitella	x		x	x	x	x	x				x
1615	Walshia miscecolorella	x			x	x		x				
1655	Scythris eboracensis				x							
1662	Asymmetrura impositella						x					
1665	Scythris mixaula			x								
1734	Aristotelia devexella	x		x	x	x						
1738	Aristotelia fungivorella						x	x		x	x	
1761	Aristotelia roseosuffusella				x		x					
1762	Aristotelia rubidella				x							
1771	Evippe prunifoliella					x?						
1792	Coleotechnites atrupictella				x		x	x	x			

**MONA**

<b>#</b>	<b>Name</b>
1796	Coleotechnites blastovora
1826	Coleotechnites picaella
1865	Neotelphusa praefixa
1875	Xanolechia aethiops
1880	Xenolechia velatella
1898	Lita sexpunctella
1902	Lita variabilis
1946	Gelechia lynceela
1985	Gnorimoschema gallaeasterella
1986	Gnorimoschema gallaesolidaginis
	Gnorimoschema septentrionella
2008	Gnorimoschema vastificum
2040	Caryocolum cassella
2069.11	Chionodes sattleri
2071.1	Chionodes landryi
2090	Chionodes lugubrella
2093	Chionodes mediofuscella
2099	Chionodes obscurusella
2111	Chionodes psilopterus
2117	Chionodes terminimaculella
2123	Chionodes viduella
2127	Filatima abactella
nr 2193	Aroga near paraplutella
2235	Anacampsis fragariella
2243	Anacampsis niveopulvella
2267	Helcystogramma fernaldella
2291	Dichomeris bilobella
2300	Dichomeris levisella
2302	Dichomeris setosella
2303	Dichomeris simplicella
2308	Dichomeris purpureofusca
2313	Alucita montana
2313	Alucita adriendenisi
2318	Bondia comonana
2319	Bondia crescentella
n.n.	Wockia asperipunctella
2334	Ochromolopis ramapoella
2360	Rhizognothis interrupta
2363	Plutella porectella
2365	Plutella (Greya) vanella

<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
	X	X	X	X	X	X	X	X		X
			X		X	X				
					X					
					X					
	X	X	X	X	X	X	X		X	X
							X			
	X	X	X			X			X	
X	X	X	X	X	X	X	X	X		X
X	X	X			X			X		
	X	X								X
X	X								X	
	X	X	X				X			
X	X		X							
X	X	X	X	X	X	X	X		X	X
X	X	X	X		X	X	X			X
		X	X							
X	X	X	X	X	X	X	X	X	X	X
			X							
			X				X			
	X		X		X		X	X		X
	X		X	X		X				
X	X	X	X						X	
X	X	X	X	X		X		X	X	X
	X						X			
			X	X	X	X				
					X					
X	X	X	X	X	X					X
					X					
X	X					X				
					X					

**MONA**

#

**Name**

2366 *Plutella xylostella*  
 2371 *Ypsolopha canariella*  
 2376 *Ypsolopha dentiferella*  
 2380 *Ypsolopha falciferella*  
 2392 *Ypsolopha senex*  
 2413 *Swammerdamia caesiella*  
 2426 *Euhyponomeutoides gracilariella*  
 2449 *Argyresthia conjugella*  
 2467 *Argyresthia oreasella*  
 2474 *Argyresthia pygmaeella*  
 2509 *Schreckensteinia festaliella*  
 2513 *Pennisetia marginata*  
 2555 *Synanthedon fatifera*  
 2581 *Synanthedon polygoni*  
 nr 2629 *Prochoreutis* sp. nr *myllerana*  
 2635 *Caloreas occidentella*  
 2651 *Choreutis diana*  
 2675 *Acosus centerensis*  
 2676 *Acosus populi*  
 2693 *Prionoxystus robiniae*  
 2706 *Bactra furfurana*  
 2707 *Bactra verutana*  
 2743a *Endothenia nubilana*  
 2745 *Endothenia albolineana*  
 2753 *Apotomis capreana*  
 2755 *Apotomis funerea*  
 2765 *Apotomis deceptana*  
 2766 *Apotomis dextrana*  
 2769 *Pseudosciaphila duplex*  
 2770 *Orthotaenia undulana*  
 2788 *Olethreutes inornatana*  
 2794 *Olethreutes quadrifidus*  
 2821 *Olethreutes appendicea*  
 2835 *Olethreutes galaxana*  
 2839 *Olethreutes puncticostana*  
 2848 *Olethreutes bipartitana*  
 2860 *Hedya separatana*  
 2861 *Hedya ochroleucana*  
 2900 *Petrova burkeana*  
 2905 *Barbara mappana*

	AH	BK	BL	DI	EA	EP	ER	JC	LL	LS	RS
x	x	x	x	x	x	x	x	x		x	x
x	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x	x	x
	x	x	x			x	x	x			x
							x				
x						x					
						x		x			
x				x	x	x	x				x
			x	x		x	x		x		
	x					x					
						x					
							x				
				x							
						x					
						x					
						x		x			
						x				x	
	x				x	x					x
						x					
			x							x	
x		x					x			x	x
	x	x	x	x	x	x	x	x	x	x	x
				x		x	x				x
x	x	x	x	x	x	x	x	x	x	x	x
						x	x	x			
						x	x	x	x	x	
x	x	x	x	x	x	x	x	x	x	x	x
						x	x	x			
	x				x	x					
x	x	x	x			x	x	x	x	x	x
	x					x	x				
x		x				x	x				
	x				x	x					
x	x	x	x			x	x	x	x	x	x
	x			x		x	x				
						x					

**MONA**

<b>#</b>	<b>Name</b>
2911	Phaneta awemeana
2913	Phaneta umbrastriana
2916	Phaneta formosana
2926	Phaneta verna
2929	Phaneta ochroterminana
2933	Phaneta marmontana
2937	Phaneta parmatana
2940	Phaneta convergana
2947	Phaneta influana
2949	Phaneta lapidana
2952	Phaneta elongana
2956	Phaneta tarandana
2965	Phaneta fertoriana
2969	Phaneta indagatricana
2972	Phaneta dorsiatomana
2973	Phaneta striatana
2977	Phaneta modicellana
2980	Phaneta pallidicostana
2983	Phaneta salmicolorana
2984	Phaneta artemisiana
2985	Phaneta infimbriana
2986	Phaneta octopunctana
3005	Phaneta offectalis
	Eucosma n. sp. 1 Wright
3014	Eucosma ridingsana
3031	Eucosma serpentana
3032	Eucosma ophonana
3035	Eucosma morrisoni
3037	Eucosma agricolana
nr 3039	Eucosma nr barbara
3042	Eucosma vagana
3049	Eucosma serapicana
3104	Eucosma mediostriata
3116	Eucosma dorsisignatana
3116a	Eucosma similiana
3119	Eucosma juncteciliana
3133	Eucosma consobrinana
3142	Eucosma cataclystana
3149	Pelochrista argenteana
3151a	Pelochrista scintillana

<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
x	x				x					
x		x								
					x	x				x
	x	x			x					
	x									x
x	x	x			x				x	x
x		x	x		x				x	
	x	x								
			x			x				
x					x					x
				x	x					
	x	x	x	x					x	x
x	x	x	x	x	x	x	x		x	
x	x		x				x		x	
x		x	x						x	
			x			x				
x										
x										
x	x	x	x	x		x	x	x		
		x	x							
	x	x	x	x		x			x	x
									x	
				x				x		
			x							
			x	x						
			x							
x		x	x	x		x			x	
	x		x	x						
	x		x	x						
			x						x	



**MONA**

<b>#</b>	<b>Name</b>
3156	Pelochrista occipitana
3161	Pelochrista fuscosparsa
3185	Epiblema benignatum
3205	Epiblema resumptana
3209	Notocelia purpurissitana
3211	Notocelia culminana
nr 3218	Sonia n. sp.
3223	Gypsonoma fasciolana
3227	Gypsonoma substitutionis
3228	Gypsonoma salicolana
3229	Gypsonoma adjuncta
3230	Proteoteras aesculana
3232	Proteoteras willingana
3240	Zeiraphera canadensis
3242	Zeiraphera fortunana
3248	Pseudexentera oregonana
3269	Griselda radicana
3276	Rhopobota naevana
3283	Epinotia solandriana
3288	Epinotia castaneana
3296	Epinotia albicapitana
3302	Epinotia rectiplicana
3306	Epinotia nisella
3307	Epinotia criddleana
3310	Epinotia transmissana
3324	Epinotia columbia sensu R.L. Brown
3342	Epinotia lomonana
3344	Epinotia medioplagata
3345	Epinotia cruciana
3351	Epinotia lindana
3354	Ancylis nubeculana
3355	Ancylis subaequana
3358	Ancylis discigerana
3366	Ancylis laciniana
3374	Ancylis comptana
3379	Ancylis diminutana
3382	Ancylis unguicella
3384	Ancylis mediofasciana
3386	Ancylis tineana
3391	Hystriophora stygiana

<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
			x							
			x?	x?						
			x						x	
									x	
		x	x			x				
x	x	x	x	x	x	x	x	x	x	
				x						
x	x	x	x		x	x	x	x		x
					x		x			
			x		x	x				x
			x			x				
						x				
					x	x				
x	x	x	x	x	x	x	x	x		x
			x		x	x				
		x	x		x					
x	x	x	x		x	x		x	x	x
			x							x
					x	x				
x	x	x	x	x	x	x	x	x		x
x	x			x	x					
			x							
x	x	x	x	x		x		x		x
			x							
	x		x		x	x				x
x	x	x	x		x		x			x
			x		x					
	x		x				x			
x	x	x	x		x		x			x
			x		x					
x	x	x	x	x						

**MONA**

<b>#</b>	<b>Name</b>
3396	Hystrichophora ochreicostana
3399	Hystrichophora vestaliana
3404	Dichrorampha simulana
3406	Dichrorampha bittana
3412	Dichrorampha sedatana
3428	Grapholita packardi
3437	Grapholita lunatana
3455	Cydia strobilella
3460	Cydia ingrata
3463	Cydia populana
3465	Cydia flexiloqua
3466	Cydia youngana
3467	Cydia nigricana
3476	Cydia prosperana
3480	Cydia lautiuscula
3502	Croesia albicomana
3504	Croesia curvalana
3506	Acleris macdunnoughi
3508	Acleris caliginosana
3514	Acleris cervinana
3518	Acleris braunana
3520	Acleris obligatoria
3521	Acleris semiannula
3522	Acleris implexana
3525	Acleris forbesana
3529	Acleris oxycoccana
3531	Acleris hastiana
3533	Acleris celiana
3534	Acleris walkerana
3536	Acleris robinsoniana
3537	Acleris maximana
3540	Acleris logiana
3548	Acleris variana
3549	Acleris maccana
3552	Acleris scabrana
3553	Acleris bowmanana
3556	Acleris nigrolinea
3557	Acleris maximana
3559	Acleris emargana
3561	Acleris hudsoniana complex

<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
			x							
			x							
			x							
			x							
			x							
					x	x				
					x	x	x			
			x		x					
			x		x		x			x
x			x			x				x
x		x	x	x	x	x		x		x
	x					x		x		
			x		x			x		
					x					
						x				x
x	x	x	x	x	x	x		x	x	x
	x									
		x			x			x		
					x	x				
		x			x					x
						x				
						x				
						x				
		x	x		x	x			x	
	x	x			x	x	x			
	x?				x?					
		x			x	x				x
x	x	x			x	x	x			x
					x	x	x			
		x	x		x	x				x
	x	x			x	x	x	x		



**MONA**

#	Name
3760	Platphalonidia felix
<i>n.n.</i>	Platphalonidia poss. albertae
3764	Cochylis nana
3769	Thyralia bunteana
<i>n.n.</i>	Phtheochroa near vulneratana
3787	Phtheochroa vitellinana
3792	Phtheochroa fulviplicana
3794	Phtheochroa aureoalbida
3796	Phtheochroa waracana
3834	Platphalonidia prob lavana
3844	Aethes promptana
3858	Cochylis nr voxcana
3910	Thorybes pylades
3945	Erynnis icelus
3961	Erynnis persius
3966	Pyrgus communis
3982	Carterocephalus palaemon
4007	Oarisma garita
4012	Thymelicus lineola
4018	Hesperia uncas
4041	Polites themistocles
4043	Polites mystic
4059	Poanes hobomok
4078	Euphyes vestris
4165a	Papilio machaon dodii
4176a	Papilio glaucus canadensis
4194	Pontia occidentalis
4195d	Pieris oleracea
4197	Pieris rapae
4200	Euchloe ausonides
4209	Colias philodice
4211e	Colias christina
4275	Harkenclenus titus
4324	Incisalia polia
4362b	Everes amyntula
4363	Celastrina ladon
4372a	Glaucopsyche lygdamus couperi
4375	Lycaeides melissa
4376	Plebejus saepiolus
4379	Icaricia shasta

AH	BK	BL	DI	EA	EP	ER	JC	LL	LS	RS
		x		x		x				x
						x?				
	x									
					x?					
x	x	x			x	x?				
x	x	x	x	x	x	x?				
	x?		x?							
x	x	x		x	x	x	x			x
	x								x	x
	x?									
						x?				x?
			x		x			x		
	x	x			x		x			
					x		x			
			x	x						
					x		x			
			x							
					x					
			x					x		
			x					x		
			x							
	x		x		x	x	x			
	x		x	x			x	x	x	
		x	x			x				
			x							
	x		x		x		x	x		
		x	x	x						
		x	x	x						
			x							

**MONA**

<b>#</b>	<b>Name</b>
4380	Icaricia acmon
4384d	Plebejus rusticus rusticus
4422	Polygonia satyrus
4423	Polygonia faunus
4427	Polygonia gracilis
4429	Polygonia progne
4430	Nymphalis j-album
4432	Nymphalis antiopa
4433	Aglais milberti
4435	Vanessa cardui
4437	Vanessa atalanta
4447	Euptoieta claudia
4450c	Speyeria cybele pseudocarpenteri
4451	Speyeria aphrodite
4457	Speyeria callippe
4459b	Speyeria atlantis hollandi
4459r	Speyeria electa beani
4459s	Speyeria electa lais
4464	Boloria selene
4465b	Boloria bellona
4475	Boloria chariclea
4481	Phyciodes tharos
4481i	Phyciodes cocyta
4482	Phyciodes batesii
4493	Chlosyne acastus
4522	Basilarchia arthemis
4583b	Coenonympha inornata benjamini
4587	Cercyonis pegala
4596	Erebia discoidalis
4599	Erebia epISODEA
4605	Oeneis macounii
4608	Oeneis alberta
4614	Danaus plexippus
4652	Tortricidia testacea
4703	Gesneria centuriella
4716	Scoparia biplagiialis
4727	Eudonia albertalis
4748	Munroessa icciusalis
4755	Synclita oblitalis
4759	Paraponyx maculalis

<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
			x							
			x						x	
	x				x					
	x						x			
			x							
					x			x		
					x					
	x			x	x		x			
			x		x		x	x		
	x	x	x		x					
			x							
			x							
	x		x		x		x			
			x					x		
	x				x		x		x	
			x							
			x							
			x							
	x								x	
		x	x		x		x			
	x	x	x	x	x	x	x	x	x	x
					x					
					x					
	x	x			x	x				x
		x			x					

**MONA**

<b>#</b>	<b>Name</b>
4773	Petrophila kearfottalis
4826	Mimoschinia rufofascialis
4897	Evergestis pallidata
4922	Cornifrons actualis
4935	Saucrobotys fumoferalis
4950	Fumibotys fumalis
4951	Perispasta caeculalis
4953	Phlyctaenia coronata
4957	Mutuuraia mysippusalis
4958	Anania funebris
4987	Sitochroa chortalis
4995	Loxostege lepidalis
5004	Loxostege sticticalis
5017	Loxostege cereralis
5032	Pyrausta nicalis
5034	Pyrausta signatalis
5056	Pyrausta generosa
5058	Pyrausta orphisalis
5065	Pyrausta scurralis
5068	Pyrausta unifascialis
5074	Pyrausta fodinalis
5075	Pyrausta socialis
5079	Udea rubigalis
5099	Udea itysalis
5128	Choristostigma plumbosignalis
5135	Mecyna submedialis
5137	Mecyna mustelinalis
5156	Nomophila nearctica
5255	Diastictis ventralis
5276	Herpetogramma abdominalis
5299	Acentria ephemerella
5316	Donacaula melinella
5319	Donacaula longirostrella
5339	Crambus pascuellus
5343a	Crambus perlellus innotatellus
5344	Crambus unistriatellus
5345a	Crambus whitmerellus browni
5347	Crambus awemellus
5352	Crambus trichusalis
5354	Crambus ainsliellus

<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
x		x	x			x	x		x	x
			x	x						
x	x				x	x				
x				x						x
					x					
x	x	x		x						x
x	x	x	x	x	x	x	x			x
					x	x	x			x
		x	x	x	x					x
					x			x		
x	x	x	x			x		x	x	x
	x									
x	x	x	x	x	x	x	x		x	x
x		x	x	x			x		x	
x			x		x	x				x
			x							
	x	x	x		x				x	
x		x	x			x	x	x	x	x
x	x	x	x	x		x	x		x	x
	x		x	x	x	x		x	x	x
			x							
	x									x
x	x		x				x		x	x
x	x	x		x	x	x			x	
	x	x							x	
x				x	x					
x		x	x		x	x			x	
					x					
	x		x							
x	x	x	x	x	x	x	x		x	x

**MONA**

<b>#</b>	<b>Name</b>
5365	Crambus girardellus
5379	Neodactria luteolella
5391	Chrysoteuchia topiaria
5394	Platytes vobisne
5395	Agriphila biarmica
5399	Agriphila ruricolella
5403	Agriphila vulgivagella
5404	Agriphila attenuata
5408	Catoptria latiradiella
5413	Pediasia trisecta
5415	Pediasia ericella
5416	Pediasia abnaki
5417	Pediasia dorsipunctella
5439b	Thaumatopsis pexella coloradella
5441a	Thaumatopsis fernaldella nortella
5453	Tehama bonifatella
5455	Euchromius californicalis
5474	Acigona comptulatis
5510	Pyralis farinalis
5518	Aglossa cuprina
n.n.	Aglossa n. sp.
5529	Herculia thymetusalis
5585	Toripalpus trabalis
5606	Tetralopha asperatella
5655	Acrobasis tricolorella
5718	Myelopsis subtetricella
5719	Myelopsis minutularia
5721	Apomyelois bistratella
5751	Pima prob. fulvirugella
5759	Ambesa laetella
5764	Catastia actualis
5783	Ortholepis pasadamia
5787	Meroptera pravella
5792	Nephopterix fernaldella
5799	Nephopterix basilaris
5812	Telethusia ovalis
5824	Pyla aequivoca
5827	Pyla aenigmatica
5829	Pyla fusca (Haw.)
5831	Pyla hanhamella

<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
x		x			x					
x	x	x	x			x	x		x	x
x	x	x	x	x	x	x	x	x	x	x
			x							
					x					
x	x	x	x	x	x	x	x	x	x	x
	x	x	x	x	x				x	x
	x			x	x				x	
			x		x					
x	x	x	x	x	x	x	x	x	x	x
x	x	x			x				x	
					x		x			
			x							
x	x	x	x	x	x	x	x	x	x	x
	x		x							
			x							
					x			x		
x	x	x	x	x	x	x	x			x
x	x	x	x			x			x	x
x	x	x	x			x	x	x		x
			x	x		x				x
x	x	x	x			x	x	x		x
x			x	x		x				
	x		x							
			x							
					x			x		
x	x	x	x	x	x	x	x			x
			x	x					x	
x	x	x	x			x	x			x
x			x			x	x			
x	x	x	x			x	x			
	x		x	x	x	x	x			x
			x							

**MONA**

#

**Name**

5841	Dioryctria abietivorella
5843	Dioryctria reniculelloides
5844	Dioryctria pseudotsugella
5870	Sarata caudelella
5886	Lipographis fenestrella
5918	Hulstia undulatella
5936	Homoeosoma stipiticellum
5946	Phycitoides mucidellum
5968	Zophodia grossulariella
5971	Melitara dentata
5999	Eulogia ochrifrontella
6007c	Vitula seratilineella
6014	Caudellia nigrella
6038	Anerastia lotella
6053	Peoria approximella
6092	Geina tenuidactyla
6094	Capperia ningoris
6102	Dejongia lobidactyla
6107	Gillmeria pallidactyla
6109	Platyptilia carduidactyla
6118	Platyptilia pica
6130	Paraplatyptilia albiciliata
6149	Stenoptilia coloradensis
6166	Oidaematophorus mathewianus
6170	Oidaematophorus phaceliae
6171	Oidaematophorus grisescens
6185	Hellinsia brucei
6203	Hellinsia homodactylus
6205	Hellinsia pectodactylus
6213	Hellinsia lactodactylus
6232	Hellinsia arion
6234	Emmelina monodactyla
6235	Habrosyne scripta
6237	Pseudothyatira cymatophoroides
6240	Euthyatira pudens
6248	Ceranemota albertae
6251	Drepana arcuata
6252	Drepana bilineata
6253	Eudeilinea herminiata
6255	Oreta rosea

AH	BK	BL	DI	EA	EP	ER	JC	LL	LS	RS
					x	x				
	x		x	x	x	x				
	x									
		x	x							
	x		x						x	
x		x	x	x		x			x	x
			x							
x	x		x	x	x	x			x	x
x	x	x	x	x	x	x	x	x	x	x
x			x							
x			x		x	x		x		x
x	x		x	x	x	x				
					x					
	x	x	x			x	x	x		x
	x		x	x						
	x									
						x				
x	x	x	x		x	x			x	
					x					
		x		x	x					
x	x	x	x	x		x	x		x	x
	x				x		x			
	x		x	x	x		x			
					x	x				x
x	x		x		x					x





**MONA**

#

**Name**

6740 Xanthotype urticaria  
 6743 Xanthotype sospeta  
 6753 Pero honestaria  
 6755 Pero morrisonaria  
 6796 Campaea perlata  
 6797 Ennomos magnaria  
 6798 Ennomos subsignaria  
 6799 Spodolepis substriaria  
 6817 Selenia alciphearia  
 6818 Selenia kentaria  
 6819 Metanema inatomaria  
 6820 Metanema determinata  
 6822 Metarranthis duaria  
 6836 Anagoga occiduaria  
 6837 Probole alienaria  
 6838 Probole amicara  
 6842 Plagodis phlogosaria  
 6844 Plagodis alcoolaria  
 6860 Neoterpes trianguliferata  
 6863 Caripeta divisata  
 6885 Besma quercivoraria  
 6888 Lambdina fiscellaria  
 6906 Nepytia canosaria  
 6912 Sicya macularia  
 6926 Plataea trilinearia  
 6954 Synaxis jubararia  
 6963 Tetracis crocallata  
 6964 Tetracis cachexiata  
 6982 Prochoerodes transversata  
 7009 Nematocampa resistaria  
 7018 Nemoria unitaria  
 7048 Nemoria mimosaria  
 7058 Synchlora aerata  
 7065 Chaetoscelis bistriaria  
 7085 Mesothea incertata  
 7125 Idaeia rotundopennata  
 7139 Cyclophora pendulinaria  
 7159 Scopula limboundata  
 7162 Scopula ancellata  
 7164 Scopula junctaria

	<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
x			x	x		x	x				
		x	x	x	x	x	x	x	x	x	x
					x						
x	x	x	x	x	x	x	x	x		x	x
x	x	x	x			x	x	x	x		
x	x	x	x	x	x	x	x		x		x
					x						
								x			
x	x	x				x	x	x	x		x
		x	x			x	x	x	x		x
x	x	x	x			x	x	x			x
x	x	x	x	x	x	x	x	x	x		x
x	x	x	x	x	x	x	x		x		x
x	x	x	x	x	x	x	x				x
x	x	x	x			x	x	x	x		x
						x		x			
					x						
x	x	x	x	x	x	x	x	x	x	x	x
		x	x			x	x	x	x		
x	x	x	x				x			x	x
											x
x	x	x	x				x			x	x
		x				x					
x	x		x				x	x	x		x
x	x		x				x	x	x		x
x		x	x	x	x	x			x		x



**MONA**

#

**Name**

7395	Epirrhoe plebeculata
7396	Epirrhoe sperryi
7399a	Euphyia intermediata
7408	Zenophleps alpinata
7414	Orthonama obstipata
7415	Orthonama evansi
7423	Hydrelia albifera
7425	Venusia cambrica
7429	Venusia pearsalli
7430	Trichodezia albovittata
7433	Epirrita autumnata
7437	Operophtera bruceata
7440	Eubaphe mendica
7445	Horisme intestinata
7446	Horisme incana
7449	Eupithecia palpata
7459	Eupithecia columbiata
7476	Eupithecia misturata
7483	Eupithecia regina
7487	Eupithecia subfuscata
7488	Eupithecia tripunctaria
7489	Eupithecia lariciata
7494	Eupithecia sheppardata
7520c	Eupithecia satyrata dodata
7522	Eupithecia nimbicolor
7524	Eupithecia cimicifugata
7527	Eupithecia ammonata
7528	Eupithecia assimilata
7539	Eupithecia multistrigata
7543	Eupithecia annulata
7548	Eupithecia lachrymosa
7551a	Eupithecia interruptofasciata
7564	Eupithecia stellata
7574	Eupithecia albicapitata
7575	Eupithecia mutata
7594	Eupithecia anticaria
7605	Eupithecia ravocostaliata
7637	Cladara limitaria
7639	Cladara atroliturata
7640	Lobophora nivigerata

AH	BK	BL	DI	EA	EP	ER	JC	LL	LS	RS
					x	x		x		
					x		x		x	
x	x	x	x		x	x	x			x
x	x	x	x	x	x	x	x	x		x
	x	x				x				
					x					
		x				x				
					x					
	x				x		x			
					x					
		x			x					
					x	x		x		x
x			x		x	x		x		x
x	x	x	x	x	x	x	x			x
		x	x	x						
					x					
	x				x	x	x			x
				x	x					
x			x					x	x	
x	x	x	x	x	x	x				x
					x		x			
					x		x			
					x					
			x			x				
			x							
		x								x
	x									
			x							
x		x				x		x	x	
x	x	x	x		x	x	x	x		x
					x		x			
	x				x		x			
x	x	x	x		x	x	x			x



**MONA**

#

**Name**

8051	Crambidia casta
8089	Hypoprepia miniata
8098	Clemensia albata
8111	Haploa lecontei
8123	Holomelina ferruginosa
8127	Parasemia plantaginis
8129	Pyrrharctia isabella
8131	Estigmene acraea
8134	Hyphantria congrua
8136	Spilosoma dubia
8137	Spilosoma virginica
8144	Hypercompe permaculata
8158	Phragmatobia assimilans
8162	Platarctia parthenos
8166	Arctia caja
8175	Grammia virguncula
8186	Grammia williamsii
8196	Grammia parthenice
8197	Grammia virgo
8214	Lophocampa maculata
8262	Ctenucha virginica
8267	Cisseps fulvicollis
8294	Dasychira vagans
8304	Dasychira plagiata
8308	Orgyia antiqua
8322	Idia americalis
8323	Idia aemula
8323.1	Idia sp. nr. aemula
8334	Idia lubricalis
8338	Phalaenophana pyramusalis
8354	Zanclognatha lotalba
8356	Chytolita petrealis
8359	Macrochilo bivittata
8362	Phalaenostola metonalis
8365	Phalaenostola hanhami
8370	Bleptina caradrinalis
8397	Palthis angulalis
8404	Rivula propinquialis
8413	Mycterophora inexplicata
8421	Hypenodes fractilinea

AH	BK	BL	DI	EA	EP	ER	JC	LL	LS	RS
x	x	x	x	x					x	x
x	x	x	x				x		x	
x	x	x	x		x		x	x		x
		x			x					x
x	x	x	x		x	x	x	x	x	x
					x			x		
x	x	x	x			x			x	
x	x	x	x	x				x	x	
x	x	x	x				x	x		x
					x		x			
	x		x	x	x		x		x	x
			x	x						
x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x		x
x		x			x	x				
x	x	x			x				x	x
x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x		x
x	x	x	x		x	x			x	x
			x							
	x					x			x	x
x	x	x	x	x	x	x		x	x	x
					x					
	x	x	x	x						
x	x	x	x		x	x	x			x
x	x	x			x	x		x		x
x		x						x		
	x		x		x					x

**MONA**

#

**Name**

8446	Hypena deceptalis
8450	Bomolocha atomaria
8452	Bomolocha edictalis
8455	Lomanaltes eductalis
8461	Hypena humuli
8462	Hypena californica
8555	Scoliopteryx libatrix
8632	Drasteria hudsonica
8635	Drasteria perplexa
8636	Drasteria adumbrata
8697	Zale minerea
8731	Euclidea cuspeida
8738	Caenurgina crassiuscula
8739	Caenurgina erechtea
8803	Catocala relictia
8805	Catocala unijuga
8812	Catocala hermia
8817	Catocala briseis
8821	Catocala semirelictia
8822	Catocala meskei
8867	Catocala blandula
8881	Abrostola urentis
8887	Trichoplusia ni
8896	Diachrysia aeroides
8899	Pseudeva purpurigera
8901	Polychrisia esmeralda
8905	Eosphoropteryx thyatyroides
8909	Autographa rubida
8910	Autographa sansoni
8911	Autographa bimaculata
8912	Autographa mappa
8913	Autographa pseudogamma
8914	Autographa californica
8916	Autographa flagellum
8923	Autographa ampla
8924	Anagrapha falcifera
8926	Syngrapha octoscripta
8939	Syngrapha alias
8950	Plusia putnami
8953	Plusia venusta

AH	BK	BL	DI	EA	EP	ER	JC	LL	LS	RS
					x					
						x				
	x	x			x	x				x
					x					
	x		x	x	x	x				x
						x				
	x		x		x	x			x	
		x	x	x						
			x							
x	x	x	x	x	x	x				x
x	x		x		x		x			
x	x	x	x	x	x	x	x	x	x	
x		x	x	x					x	
x	x	x	x	x	x	x	x			x
x		x	x	x	x	x	x	x		x
			x	x						
x	x	x	x	x	x	x	x			
x	x	x	x	x	x	x			x	x
		x	x	x	x	x				
					x					
x	x	x			x	x				
x	x	x	x	x	x	x			x	x
	x		x			x				
					x					
x	x	x		x	x	x			x	x
x	x	x			x	x			x	





**MONA**

<b>#</b>	<b>Name</b>	<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
9374	Apamea niveivenosa	x	x	x	x			x			x	x
9382	Apamea devastator	x	x	x	x	x	x	x		x	x	x
9383	Apamea longula				x							
9391	Luperina passer	x	x			x	x	x			x	x
9396	Eremobina claudens	x		x	x		x	x				x
9412.1	Oligia subjuncta	x		x			x	x	x		x	x
9417	Oligia egens	x		x	x	x		x			x	x
9419	Oligia mactata	x	x	x	x		x	x	x	x		x
9420	Oligia illocata	x	x	x	x		x	x	x	x		x
9431	Parastichtis suspecta	x	x	x			x	x			x	x
9434	Spartiniphaga includens	x	x	x	x		x	x			x	x
9437	Chortodes inquinata	x		x			x	x				x
9439	Chortodes basistriga	x					x	x				
9440	Chortodes rufostrigata	x	x	x	x	x		x			x	x
9443	Chortodes defecta			x			x	x				
9450	Archanara subflava	x	x	x		x	x	x		x	x	x
9453	Celaena reniformis		x	x		x	x	x		x	x	x
9456	Amphipoea interoceanica			x								
9457	Amphipoea americana	x	x	x	x	x	x	x	x	x		x
9472	Papaipema harrisii		x	x		x	x					x
9515	Hydraecia perobliqua	x	x	x		x		x				x
9525	Bellura obliqua	x	x	x	x			x			x	x
9543	Aseptis characta				x							
9545	Euplexia benesimilis			x			x					
9547	Phlogophora periculosa						x	x				
9549	Enargia decolor	x	x	x	x	x	x	x	x			x
9550	Enargia infumata	x	x	x	x		x	x	x	x	x	x
9555	Ipimorpha pleonectusa	x	x	x	x		x	x	x	x		x
9556	Chytonix palliatricula				x							x
9564	Andropolia contacta		x	x	x							
9579	Hyppa contrasta			x			x		x	x		x
9626	Trachea delicata							x				
9647	Proxenus miranda	x	x	x	x	x	x	x	x	x	x	x
9649	Proxenus mendosa	x	x		x	x			x			x
9654	Platyperigea meralis				x	x						
9656	Platyperigea montana	x	x	x	x	x	x	x	x	x	x	x
9681.1	Elaphria alapallida				x							x
9832	Escaria homogena										x	
9873	Xylena nupera				x	x	x	x				x
9874	Xylena curvimacula	x	x	x	x		x	x	x	x		x

**MONA**

#

**Name**

9875 Xylena thoracica  
 9876 Xylena cineritia  
 9878 Lithomoia germana  
 9881 Homoglaea hircina  
 9884 Litholomia napaea  
 9888 Lithophane innominata  
 9889 Lithophane petulca  
 9891 Lithophane amanda  
 9909 Lithophane tepida  
 9913 Lithophane georgii  
 9915 Lithophane grotei  
 9917 Lithophane fagina  
 9922 Lithophane pexata  
 9933 Eupsilia vinulenta  
 9935 Eupsilia tristigmata  
 9939 Eupsilia devia  
 9952 Eucirroedia pampina  
 9957 Sunira bicolorago  
 9960 Sunira verberata  
 9962 Anathix puta  
 9963 Anathix aggressa  
 9965 Xanthia tatago  
 9967 Hillia iris  
 9970 Fishia discors  
 9976 Platypolia anceps  
 9980 Xylotype acadia  
 9987 Mniotype ducta  
 9988 Mniotype tenera  
 9990 Sutyna profunda  
 9993 Brachylomia populi  
 9998 Brachylomia algens  
 9999 Brachylomia discinigra  
 10008 Feralia comstocki  
 10011 Brachylomia borealis  
 10028 Pleromelloida conserta  
 10035 Noctua pronuba  
 10055 Apharetra dentata  
 10059 Homohadena badistriga  
 10062 Homohadena stabilis  
 10065 Homohadena infixa

AH	BK	BL	DI	EA	EP	ER	JC	LL	LS	RS
x	x	x			x	x				x
x	x	x		x	x	x	x	x		x
	x	x	x		x	x				x
x	x	x			x	x	x		x	x
x	x	x	x		x	x	x	x	x	x
	x	x			x	x				x
					x					
					x	x				x
			x		x		x			
			x						x	
	x									
				x	x		x			
					x					
	x					x				
	x	x		x	x	x			x	x
					x					
x	x	x	x	x	x	x	x			x
	x	x			x	x				
	x	x			x	x				x
x	x	x	x		x	x	x	x		x
		x								
x	x	x	x		x	x			x	x
		x	x							
					x		x			
	x									
x	x		x				x	x	x	x
		x	x							
			x	x						
			x							
	x		x		x					
x	x	x	x			x			x	
x	x	x	x		x	x		x		x

**MONA**

<b>#</b>	<b>Name</b>	<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
10067	Adita chionanthi	x		x		x		x	x			x
10099	Oncocnemis saundersiana			x								
10108	Oncocnemis viriditincta			x								
10124	Oncocnemis cibalis	x		x	x							x
10130.1	Oncocnemis pallidior				x							
10135	Oncocnemis riparia				x							
10140	Oncocnemis poliochroa		x	x								x
10143	Oncocnemis mackiei	x	x	x	x	x		x				
10190	Cucullia speyeri					x						
10194	Cucullia intermedia	x		x	x	x	x	x			x	x
10198	Cucullia postera		x									
10223	Discestra trifolii	x	x	x				x			x	x
10224	Discestra mutata		x	x		x		x				x
10228c	Discestra oregonica montanica				x	x						
10232	Discestra farnhami	x	x	x	x	x		x		x	x	x
10233	Discestra crotchi				x	x					x	
10238	Scotogramma submarina				x	x						
10265	Sideridis rosea	x	x	x	x	x		x			x	x
10271	Mamestra configurata	x		x	x	x	x	x			x	
10272	Mamestra curialis	x										
10273	Polia discalis				x	x		x			x	
10275	Polia nimbosa	x	x	x	x		x	x	x	x		x
10276	Polia imbrifera	x	x	x	x		x	x	x	x	x	x
10280	Polia purpurissata	x	x	x	x	x	x	x	x	x	x	
10281	Polia nugatis				x							
10288	Polia detracta	x	x	x	x	x	x		x	x	x	x
10289	Polia goodelli		x	x	x	x		x				
10290	Orthodes obscura	x	x	x	x	x						
10292	Melanchra adjuncta			x			x			x		x
10293	Melanchra picta					x						
10295	Melanchra assimilis	x	x	x				x		x		
10296	Lacanobia nevadae						x					
10297	Lacanobia atlantica	x	x	x		x	x	x	x	x	x	x
10298	Lacanobia radix		x	x	x	x	x	x	x		x	x
10299	Lacanobia subjuncta	x			x	x		x				
10300	Spirameter grandis				x	x						
10301	Spiramater lutra			x			x			x		x
10303	Trichordestra tacoma					x						
10305	Trichordestra dodii	x	x		x						x	x
10307	Trichordestra lilacina		x		x						x	

**MONA**

<b>#</b>	<b>Name</b>
10308	Trichordestra liquida
10310	Papestra quadrata
10312	Papestra cristifera
10322	Hadena circumvadis
10324	Hada sutrina
10368	Lacinipolia meditata
10370	Lacinipolia lustralis
10372	Lacinipolia anguina
10381	Lacinipolia naevia
10394	Lacinipolia vicina
10397	Lacinipolia renigera
10405	Lacinipolia lorea
10406	Lacinipolia olivacea
10428	Dargida procincta
10431	Faronta diffusa
10436	Aletia oxygala
10438	Pseudaletia unipuncta
10442	Leucania anteoclara
10446	Leucania multilinea
10447	Leucania commoides
10449	Leucania insueta
10471	Stretchia plusiaeformis
10490	Orthosia revicta
10493	Orthosia segregata
10495	Orthosia hibisci
10501	Crocigrapha normani
10513	Egira dolosa
10523	Tholera americana
10524	Nephelodes minians
10530	Anhimella contrahens
10532	Homorthodes furfurata
10547	Protorthodes utahensis
10563	Protorthodes oviduca
10641	Agrotis vetusta
10645	Agrotis orthogonia
10650	Agrotis robustior
10651	Agrotis venerabilis
10652	Agrotis vancouverensis
10658	Agrotis stigmosa
10659	Agrotis volubilis

<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
x	x	x	x			x		x	x	
			x				x			
	x?		x							
x		x	x							
x					x					
x	x	x			x	x		x	x	
x	x	x	x	x		x	x	x		x
x	x		x	x	x	x	x			x
			x							
x		x	x		x	x			x	x
x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x	x
x			x			x				x
x	x	x	x	x		x		x	x	x
x	x	x	x	x	x	x	x	x	x	x
x						x				
x	x	x	x	x	x	x		x	x	x
x	x	x	x	x	x	x		x	x	
x	x	x		x		x		x	x	x
x	x	x	x	x	x	x	x	x		x
				x						
x	x	x	x	x	x	x	x	x	x	x
			x							
x	x	x	x	x	x	x	x		x	x
	x									x
x	x		x			x				
			x							
x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x			x	x
	x									x
						x				

**MONA**

<b>#</b>	<b>Name</b>
10660	Agrotis obliqua
10663	Agrotis ipsilon
10670	Feltia jaculifera
10676	Feltia herilis
10698.2	Trichosilia mollis
10701.1	Euxoa adumbrata
10701.2	Euxoa auxiliaris
10702	Euxoa divergens
10705	Euxoa messoria
10715	Euxoa scandens
10723	Euxoa tristicula
10728	Euxoa pestula
10738	Euxoa mimallonis
10749	Euxoa intrita
10755	Euxoa declarata
10756	Euxoa campestris
10769	Euxoa nevada
10777	Euxoa aequalis
10780	Euxoa comosa
10794	Euxoa setonia
10798	Euxoa basalis
10801	Euxoa ochrogaster
10804	Euxoa plagigera
10805	Euxoa tessellata
10807	Euxoa albipennis
10813	Euxoa medialis
10817	Euxoa obeliscoides
10826	Euxoa idahoensis group
10826.1	Euxoa castanea
10830	Euxoa quadridentata
10833	Euxoa olivalis
10836	Euxoa dargo
10838	Euxoa detersa
10845	Euxoa difformis
10852	Euxoa auripennis
10854	Euxoa servita
10861	Euxoa ridingsiana
10861.1	Euxoa maimes
10864	Euxoa flavicollis
10891	Ochropleura implecta

<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
			X	X		X				X
				X		X				
X	X	X	X	X	X	X		X	X	X
X	X	X		X	X	X	X	X	X	X
			X		X					
		X				X				X
X	X	X	X	X		X			X	
X	X	X	X	X	X	X	X		X	X
X	X	X	X			X		X		X
		X				X				
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X		X	X		X		X
			X							
X		X	X			X				
	X		X							
X	X	X	X	X		X			X	X
X	X	X	X	X	X	X	X	X	X	X
			X				X			
X	X		X	X		X				
X	X	X	X			X				X
			X	X						
X		X	X		X	X				
			X							
			X							
X	X	X	X		X	X	X		X	X
		X			X					X
X									X	
X	X	X	X		X	X				



<b>MONA #</b>	<b>Name</b>	<b>AH</b>	<b>BK</b>	<b>BL</b>	<b>DI</b>	<b>EA</b>	<b>EP</b>	<b>ER</b>	<b>JC</b>	<b>LL</b>	<b>LS</b>	<b>RS</b>
11047	Parabagrotis exertistigma					x						
11051	Ufeus satyricus	x			x		x	x				x
11064	Pyrrhia exprimens						x					
11072	Heliothis phloxiphagus										x	
11077	Heliothis ononis			x								
11164	Schinia florida	x		x								
11175	Schinia meadi		x								x	
11192	Schinia cumatilis			x	x	x						
	<b>TOTALS (1086 overall)</b>	<b>424</b>	<b>517</b>	<b>525</b>	<b>597</b>	<b>324</b>	<b>646</b>	<b>525</b>	<b>299</b>	<b>248</b>	<b>271</b>	<b>433</b>
	<b>Study days/nights (TOTAL 650)</b>	<b>42</b>	<b>25</b>	<b>40</b>	<b>41</b>	<b>14</b>	<b>167</b>	<b>189</b>	<b>17</b>	<b>40</b>	<b>29</b>	<b>46</b>

### SPECIES RICHNESS

Species richness is defined as the number of species within a region. Based on the totals in the above table the area with the greatest species richness is EP, followed in descending order by DI, BL, ER, BK, RS, AH, EA, JC and LS. There is, of course, a more or less direct correlation between species richness and the number of habitats present in a given area, i.e. the greater the species richness, the greater the number of habitats. It follows that the greater the number of habitats therefore the greater the number of food plants, hence the greater the potential for an area to be suitable for a larger number of moth species.

### STUDY DAYS/NIGHTS

The number of study days/nights involved in each study area is shown in the last line of the above table. One would logically expect that the greater number of species will have been found in the areas with the greatest number of study nights and vice versa the least number of species will have been found in the areas with the least number of study day/nights. This has generally been found to be the case. It is clear, however, that more study of EA and JC would be beneficial and it is hoped that this will be done in 2008. In doing so, it will be important to be in the areas at times of the year when previous work may have been under-sampled.

### COMMON OR WIDESPREAD SPECIES

Species can be common or widespread for many reasons, but mainly because they are polyphagous or are able to utilize a wide range of food plants.

Of the 1086 moth species encountered in this study, 40, or 3.68%, were found in all of the 11 areas - *Filatima abactella*, *Ypsolopha canariella*, *Y. dentiferella*, *Apotomis dextrana*, *Orthotaenia undulana*, *Choristoneura rosaceana*, *Clepsis persicana*, *C. clemensiana*, *Scoparia biplagiata*, *Crambus perlellus innotatellus*, *Chrysoteuchia topiaria*, *Agriphila ruricolella*, *Pediasia dorsipunctella*, *Zophodia grossulariella*, *Cabera erythemaria*, *Euchlaena tigrinaria*, *Smerinthus jamaicensis*, *S. cerisyi*,

*Phragmatobia assimilans*, *Grammia virgo*, *Lithacodia albidula*, *Raphia frater*, *Apamea commoda*, *A. inficita*, *Proxenus miranda*, *Platyperigea montana*, *Lacinipolia renigera*, *L. lorea*, *Aletia oxygala*, *Orthosia segregata*, *Egira dolosa*, *Protorthodes oviduca*, *Agrotis venerabilis*, *Euxoa tristicula*, *E. ochrogaster*, *Spaelotis clandestina*, *Xestia smithii*, *Agnorisma bugrai*, *Paradiarsia littoralis* and *Protolampra rufipectus*.

Of the 1086 moth species encountered in this study, 63, or 5.8%, have been found in 10 out of the 11 areas - *Gazoryctra novigannus*, *Tinea irrepta*, *Monopis spilotella*, *Glyphidocera hurlberti*, *Coleophora trifolii*, *Gelechia lynceela*, *Chionodes mediofuscella*, *C. psilopterus*, *Plutella xylostella*, *Endothenia nubilana*, *Hedya ochroleucana*, *Notocelia culminana*, *Pseudexentera oregonana*, *Epinotia nisella*, *Croesia albicomana*, *Pandemis canadana*, *Choristoneura conflictana*, *Crambus ainsliellus*, *Macaria occiduaria*, *M. loricaria*, *Lycia ursaria*, *Cabera variolaria*, *Euchlaena johnsonaria*, *Xanthotype sospeta*, *Pero morrisonaria*, *Metanema determinata*, *Metarranthis duaria*, *Sicya macularia*, *Dysstroma citrata*, *Zenophleps alpinata*, *Phyllodesma americana*, *Antheraea polyphemus*, *Clostera albosigma*, *Pheosia rimosa*, *Notodonta simplaria*, *Schizura unicornis*, *Holomelina ferruginosa*, *Platarctia parthenos*, *Grammia parthenice*, *Lophocampa maculata*, *Dasychira vagans*, *Idia americalis*, *Caenurgina crassiuscula*, *Apamea sordens*, *A. scoparia*, *A. devastator*, *Amphipoea americana*, *Energia infumata*, *Litholomia napaea*, *Brachylochia populi*, *Polia imbrifera*, *P. purpurissata*, *P. detracta*, *Lacanobia atlantica*, *Leucania commoides*, *Orthosia revicta*, *Nephelodes minians*, *Feltia jaculifera*, *F. herilis*, *Euxoa divergens*, *Eurois occulta*, *E. astricta* and *Xestia c-nigrum*.

### SPECIES ENCOUNTERED IN ONLY ONE AREA

Species can be seldom encountered for many reasons, including their food plants being infrequent, their habitats being scarce, past climatic conditions, predators, etc. Some of these species may even be rare or endangered.

Of the 1086 species encountered in the present study, 229, or 21.07%, have been found in only one area - *Acanthopteroctetes bimaculata*, *Gazoryctra hyperboreus*, *Lampronia humilis*, *Lyonetia saliciella*, *Caloptilia strictella*, *Micrurapteryx salicifoliella*, *Agonopterix gelidella*, *Bibarrambula allenella*, *Nites betulella*, *Ethmia monticola*, *Brymbia quadrimaculella*, *Denisia haydenella*, *Perittia cygnodiella*, *Elachista virgatula*, *Elachista maritimella*, *Coleophora rosaevorella*, *Coleophora mcdunnoughiella*, *Coleophora maritella*, *Coleophora mayrella*, *Mompha raschkiella*, *Scythris eboracensis*, *Asymmetrura impositella*, *Scythris mixaulla*, *Aristotelia rubidella*, *Evippe prunifoliella*, *Neotelphusa praefixa*, *Xanolechia aethiops*, *Lita sexpunctella*, *Chionodes lugubrella*, *Aroga near paraplutella*, *Bondia comonana*, *Wockia asperipunctella*, *Rhizognothis interrupta*, *Plutella (Greya) vanella*, *Ypsolopha senex*, *Schreckensteinia festaliella*, *Pennisetia marginata*, *Synanthedon fatifera*, *Synanthedon polygoni*, *Prochoreutis sp. nr myllerana*, *Caloreas occidentella*, *Prionoxystus robiniae*, *Barbara mappana*, *Phaneta salmicolorana*, *P. artemisiana*, *Eucosma nr barbara*, *E. serapicana*, *E. mediotriata*, *E. similiana*, *Pelochrista occipitana*, *Epiblema resumptana*, *Sonia n. sp.*, *Proteoteras willingana*, *Epinotia columbia sensu R.L. Brown*, *E. medioplagata*, *E. cruciana*, *Ancylis nubeculana*, *Hystrichophora ochreicostana*, *H. vestaliana*, *Dichrorampha simulana*, *D. bittana*, *D. sedatana*, *Cydia prosperana*, *Croesia curvalana*, *Acleris braunana*, *A. semiannula*, *A. implexana*, *A. celiana*, *A. maximana*, *Decodes mcdunnoughi*, *Archips striana*, *A. alberta*, *Lozotaenia hesperia*, *Adoxophyes negundana*, *Xenotemna pallorana*, *Sparganothis violaceana*, *Aethes prob sexdentata*, *A. prob heleniana*, *A. prob monera*, *Platphalonidia poss. albertae*, *Cochylis nana*, *Thyralia bunteana*, *Aethes promptana*, *Eudonia albertalis*, *Munroessa icciusalis*, *Saucrobotys fumoferalis*, *Loxostege lepidalis*, *Pyrausta orphisalis*, *P. scurralis*, *Diastictis ventralis*, *Crambus awemellus*, *Platytes vobisne*, *Agriphila biarmica*, *Tehama bonifatella*, *Aglossa cuprina*, *Catastia actualis*, *Pyla aequivoca*, *P. hanhamella*, *Dioryctria pseudotsugella*, *Homoeosoma stipiticellum*, *Caudellia nigrella*, *Geina tenuidactyla*, *Paraplatyptilia albiciliata*, *Stenoptilia coloradensis*, *Oidaematophorus phaceliae*, *O.*



grisescens, *Hellinsia lactodactylus*, *Emmelina monodactyla*, *Archiearis infans*, *Macaria brunneata*, *Semiothisa ulsterata*, *M. unipunctaria perplexa*, *Digrammia decorata*, *Orthofidonia exornata*, *Ematurga amitaria*, *Eufidonia discospilata*, *Pero honestaria*, *Ennomos subsignaria*, *Spodolepis substriaria*, *Neoterpes trianguliferata*, *Besma quercivoraria*, *Lambdina fiscellaria*, *Nepytia canosaria*, *Plataea trilinearia*, *Tetracis cachexiata*, *Nemoria mimosaria*, *Chaetoscelis bistrariaria*, *Scopula ancellata*, *Eustroma semiatrata*, *Thera juniperata*, *T. otisi*, *Rheumaptera hastata*, *Anticlea multiferata*, *Xanthorhoe iduata*, *Orthonama evansi*, *Trichodezia albovittata*, *Eupithecia palpata*, *E. sheppardata*, *E. ammonata*, *E. multistrigata*, *E. annulata*, *E. interruptofasciata*, *E. albicapitata*, *E. mutata*, *Ceratomia undulosa*, *Sphinx poecila*, *Hemaris diffinis*, *Hyles lineata*, *Schizura ipomeae*, *Dasychira plagiata*, *Idia lubricalis*, *Phalaenophana pyramusalis*, *Hypena deceptalis*, *Bomolocha atomaria*, *Lomanaltes eductalis*, *Hypena californica*, *Drasteria perplexa*, *D. adumbrata*, *Catocala meskei*, *Trichoplusia ni*, *Polychrisia esmeralda*, *Eosphoropteryx thyatyroides*, *Autographa sansoni*, *A. mappa*, *A. flagellum*, *Syngrapha alias*, *Leuconycta lepidula*, *Conocharis arizonae*, *Acronicta radcliffei*, *A. quadrata*, *A. sperata*, *Apamea longula*, *Amphipoea interoceanica*, *Aseptis characta*, *Trachea delicata*, *Escaria homogena*, *Lithophane petulca*, *L. grotei*, *L. pexata*, *Eupsilia devia*, *Anathix aggressa*, *Fishia discors*, *Xylotype acadia*, *Mniotype tenera*, *Brachylomia borealis*, *Apharetra dentata*, *Oncocnemis saundersiana*, *O. viriditincta*, *O. pallidior*, *O. riparia*, *Cucullia speyeri*, *C. postera*, *Mamestra curialis*, *Polia nugatis*, *Melanchnra picta*, *Lacanobia nevadae*, *Trichordestra tacoma*, *Lacinipolia naevia*, *Pseudaletia unipuncta*, *Leucania anteoclara*, *Crocigrapha normani*, *Tholera americana*, *Homorthodes furfurata*, *Protorthodes utahensis*, *Agrotis robustior*, *A. volubilis*, *Euxoa pestula*, *E. nevada*, *E. castanea*, *E. olivalis*, *E. dargo*, *E. difformis*, *E. auripennis*, *E. servita*, *Protopygia querula*, *Euagrotis exuberans*, *Diarsia dislocata*, *Xestia oblata*, *Coenophila opaciformis*, *Aplectoides condita*, *Abagrotis trigona*, *A. alternata*, *A. orbis*, *A. nanalis*, *A. reedi*, *A. cupida*, *Pyrrhia exprimens*, *Heliopsis phloxiphagus* and *H. ononis*.

### SPECIES FOUND ONLY IN AREAS EP AND ER

Area reports have not yet been prepared for EP and ER, but as the species encountered in each of these areas have been mentioned above and the areas have been compared to the other areas, it has been felt important to mention below the species that have been found only in these two areas.

#### EP - the Bird quarter on East Poplar Creek, 8 km NW of Winfield

Moth species found only at EP (80) - *Gazoryctra hyperboreus*, *Lampronia humilis*, *Lyonetia saliciella*, *Caloptilia strictella*, *Micrurapteryx salicifoliella*, *Agonopterix gelidella*, *Bibarrambla allenella*, *Nites betulella*, *Brymbia quadrimaculella*, *Denisia haydenella*, *Elachista maritimella*, *Coleophora mayrella*, *Mompha raschkiella*, *Asymmetrura impositella*, *Neotelphusa praefixa*, *Xanolechia aethiops*, *Wockia asperipunctella*, *Rhizognothis interrupta*, *Plutella (Greya) vanella*, *Schreckensteinia festaliella*, *Synanthedon fatifera*, *Prochoreutis sp. nr myllerana*, *Caloreas occidentella*, *Prionoxystus robiniae*, *Barbara mappana*, *Epinotia medioplugata*, *Epinotia cruciana*, *Cydia prosperana*, *Acleris braunana*, *Acleris celiana*, *Decodes mcdunnoughi*, *Archips striana*, *Archips alberta*, *Lozotaenia hesperia*, *Aethes prob sexdentata*, *Thyralia bunteana*, *Eudonia albertalis*, *Munroessa icciusalis*, *Saucrobotys fumoferalis*, *Crambus awemellus*, *Agriphila biarmica*, *Tehama bonifatella*, *Caudellia nigrella*, *Geina tenuidactyla*, *Stenoptilia coloradensis*, *Oidaematophorus phaceliae*, *Archiearis infans*, *Macaria brunneata*, *Semiothisa ulsterata*, *Macaria unipunctaria perplexa*, *Orthofidonia exornata*, *Eufidonia discospilata*, *Besma quercivoraria*, *Lambdina fiscellaria*, *Eustroma semiatrata*, *Rheumaptera hastata*, *Anticlea multiferata*, *Xanthorhoe iduata*, *Orthonama evansi*, *Trichodezia albovittata*, *Eupithecia palpata*, *Eupithecia annulata*, *Sphinx poecila*, *Phalaenophana pyramusalis*, *Hypena deceptalis*, *Lomanaltes eductalis*, *Polychrisia*

esmeralda, *Eosphropteryx thyatyroides*, *Autographa sansoni*, *Autographa mappa*, *Syngrapha alias*, *Acronicta sperata*, *Lithophane petulca*, *Lithophane pexata*, *Eupsilia devia*, *Xylotype acadia*, *Lacanobia nevadae*, *Diarsia dislocata*, *Aplectoides condita* and *Pyrrhia exprimens*.

The moths of EP were most similar (50.40%) to those of the Bird residence in Erskine, and least similar (23.31%) to those of the Lowden Springs Conservation Area.

#### **ER – the Bird residence, 5 Maple Close, Erskine**

Moth species found only at ER (17) - *Ypsolopha senex*, *Pennisetia marginata*, *Proteoteras willingana*, *Acleris semiannula*, *Acleris implexana*, *Adoxophyes negundana*, *Platphalonidia poss. albertae*, *Nepytia canosaria*, *Thera juniperata*, *Eupithecia sheppardata*, *Ceratonia undulosa*, *Bomolocha atomaria*, *Hypena californica*, *Trachea delicata*, *Pseudaletia unipuncta*, *Agrotis volubilis* and *Euxoa difformis*.

The moths of ER were most similar (59.29%) to those of the Buffalo Lake Conservation Area, and least similar (33.73%) to those of the Lowden Springs Conservation Area.

### **TAXONOMIC WORK STILL NEEDED**

While the above list of 1086 species may seem large, it should not give the impression that we know all there is to know about the moths that occur in the geographical area involved in the present research. On the contrary, much taxonomic work remains to be done, especially in the microlepidoptera. New species remain to be described and monographic work is needed to straighten out certain species complexes. Barcoding is currently being done on members of some of the problem areas and this may help (<http://www.barcodinglife.com/views/login.php>). A major problem is that there simply are not enough taxonomists to do the work, also that there is not enough government funding to hire taxonomists and to curate the museums that house the insect collections where voucher and study specimens are kept. Groups where taxonomic work is needed, and those working on them, include the following.

Incurvariidae – *Lampronia*, *Cauchas* (Dr. Donald Davis)

Lyonetiidae – *Lyonetia* (Dr. Donald Davis)

Gelechiidae – many genera including *Aroga* (no one is currently studying these)

Coleophoridae – *Coleophora* (Dr. Jean-François Landry)

Tortricidae – *Acleris* (Dr. P. T. Dang), *Sonia* (Dr. Don Wright), *Pelochrista* (Dr. Don Wright), *Eucosma* (Dr. Don Wright), *Olethreutes* (no one is currently working on this genus)

Cochylidae – several genera (Drs. Eric Metzler and John Brown)

Crambidae – *Pediasia* (no one is currently working on the species of this group)

Pterophoridae – several genera (Doug Macaulay)