ALBERTA LEPIDOPTERISTS' GUILD NEWSLETTER - SPRING 2011

Welcome to the ALG newsletter, a compendium of news, reports, and items of interest related to lepidopterans and lepidopterists in Alberta. The newsletter will be produced twice per year, in spring and late fall.

Contents:

Helen and Bruce Christensen at the Feralia Symposium (photo by C. Bird)

Dry Island scenery (photo by H. Proctor

Social Events for Snowbound Entomologists

Event 1: Feralia for February – by Felix Sperling: We had a great session of talks at the U of A on the afternoon of Feb 26, all on the theme of bug surveys in one form or another. Our organizer, John Acorn, was unfortunately laid low with a bad cold, but several people stepped forward to keep things moving forward smoothly, most notably Greg Pohl, Christi Macdonald and Heather Proctor. And Christi Jaeger brought some absolutely delicious chocolate snacks. A total of 15 people showed up, and we had lots of friendly back-and-forth between audience and speakers.

Here were the talks, in the order that they were presented.
1. **Christi Macdonald** spoke about involving young people in butterfly counts and collecting, with some very pertinent comparisons to the Pokémon craze.
2. **Dave Walter** described his and Heather's biotic survey of their "Moose Pasture" quarter section near Elk Island. They only have 44 leps, including 15 butterfly species, a rather sorry total that we all resolved to help them rectify this summer.
3. **Charley Bird** spoke about the Dry Island Buffalo Jump butterfly count that he has run for the last 11 years, including lots of public participation.
4. I spoke about the "Pollard Walk" that I have done at semi-regular intervals for the last 11 years at a nature reserve at Itaska, Pigeon Lake.
5. **Greg Pohl** provided a compilation of new introductions of Lepidoptera to Alberta (see article in this newsletter), with discussion of the factors that have facilitated the invasions.

Many thanks to **Greg Pohl and Barb Deneka** and Emilia and Colin for a really nice Feralia party to round off the day! In spite of the snow flurries that were threatening to become a real snowstorm, a dozen of us made it to the Pohl/Deneka abode for the evening, and the Feralia tradition remains strong. Lepist cameraderie, Greg's bug room, and Bruce Christensen's box of moths provided something for everyone.

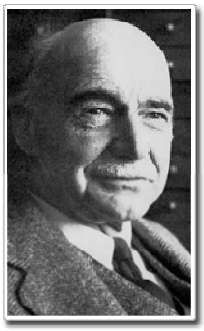
Social Events cont· next page

Social Events for Snowbound Entomologists cont …

Event 2: Strickland in March – by Heather Proctor
The 16th Strickland Memorial Lecture was presented on Friday March 18 by **Dr. Conrad Labandeira** from the Smithsonian Institution in Washington D.C. Labandeira's talk "*A Short, Interactive, History of Plants and Insects*" drew a crowd of more than 100 entomologists, paleontologists, botanists, and other –ists to hear a fascinating tale of arthropods and land plants starting from the Devonian and running to the Recent. On the 17th, Labandeira had wowed a more entomologically oriented audience with his whirlwind talk on "*Preangiospermous Mesozoic Associations Between Plants and Insects*."

The Strickland supper for 109 guests on Friday evening went off without a hitch, thanks to the attentive and accommodating staff at the U of Alberta Faculty Club. Labandeira was presented with a memorial scarf in U of A colours. **Bryan Brunet** from the Sperling lab received the Big Mac Award for having contracted an ocular fungal disease from his own moths. The Strickland Follies, based on the game show Family Feud, produced much good-natured competition and some consternation at the discovery of what Biol 108 students actually think insects look like. The winning team "Everybody Poops" received two bottles of bubbly, with the "Lady/bug Killers" getting the second prize of a single bottle. Many thanks to **Felix Sperling** for hosting Labandeira, and to the grad students who masterminded the Follies: **Bryan Brunet, Heather Bird, Jason Dombroski, Julian Rowe Dupuis, Sarah Leo, Boyd Mori, Alex Smith** and **Marla Schwarzfeld**.

A full list of previous Strickland speakers is at http://www.biology.ualberta.ca/facilities/strickland/?Page=6583



EDGAR HAROLD STRICKLAND, born in 1889, died in 1962, founder of the Department of Entomology at the University of Alberta. *Floreat Entomologia*!

From top to bottom: Conrad Labandeira looking a little rabbinical in his new U of A scarf; Bryan Brunet and his Big Mac Award; the Lady/Bug Killers imbibing their prize (photos b y C. Jaeger)

Young Leppers, or, Some Student Projects*

Two exemplars from *the P. tarandana* complex (photos by C. Jaeger)

Christi Jaeger - Taxonomy of *Phaneta*

Biol 498 (supervisor F. Sperling)

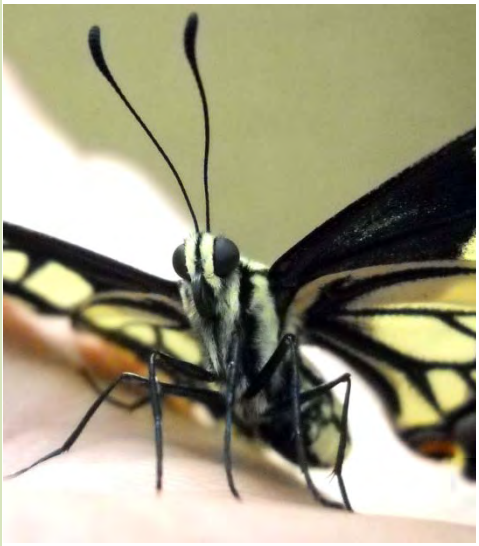
My project focuses on the taxonomy of a group of moths in the Tortricidae. I am working on separating the different species of *Phaneta* based on morphological characters such as genitalia, wing characters and head appendages. Currently there are at least three species commonly confused with *P. tarandana* and another three often confused with *P. elongana*, all of which are found in Alberta. The focus of my research is on resolving these issues and describing a more effective way of differentiating *Phaneta* spp. using morphology. I have a large sample of 138 specimens on loan from NoFC, UASM, Jason Dombroskie, and Greg Pohl; having such a large sample is a strong aid in distinguishing between species.

Tortricid moth wee,
Oh, how you complicate me
Phaneta? Let's see...

Julian Dupuis – Spatial Ecology and *Papilio* Population Structure

M.Sc. (supervisor F. Sperling)

My research focuses on the population dynamics of the *Papilio machaon* species group of swallowtail butterflies in Alberta. Broadly, I'm interested in how characteristics of the landscape influence dispersal and population structure of these butterflies. More specifically, however, my research focuses on how these relationships with the landscape are intertwined with the putative hybridization between *P. machaon* and *P. zelicaon* throughout southern Alberta. To answer these questions I am employing a landscape genetics approach coupled with fine scale sampling in four distinct regions of Alberta: Drumheller and the Red Deer River valley, the Peace River valley, the Swan Hills, and the foothills of the Rocky Mountains west of Calgary towards Kananaskis Country. By focusing on multiple regions, each with unique landscape characteristics, and a seemingly complex system in terms of the relationships within the group, I hope to capture the intricacy present within the system. Ultimately, this combination of phylogeography, population genetics, and spatial ecology will be useful in delimitating evolutionary significant units, prioritizing conservation practices, and understanding the mechanisms of homoploid hybridization in a natural system.



A *Papilio* in the hand... (by. J. Dupuis)

Young Leppers continued next page

* note to professors other than Felix Sperling – why aren't *your* students here?

Young Leppers cont…

Jason Dombroskie - Aspects of archipine evolution (Lepidoptera: Tortricidae)
Ph.D. (supervisor F. Sperling)

Thesis abstract: The economically important tribe Archipini (Lepidoptera: Tortricidae) has posed many taxonomic challenges, ranging from species and generic boundaries to their overall phylogeny. In Chapter 2, the species *Clepsis anderslaneyii* Dombroskie & Brown 2009, is described based upon material from southeastern Arizona, helping to complete our knowledge of the Nearctic archipine fauna. In Chapter 3, I apply an iterative approach utilizing morphological, molecular, and geographical evidence to test the species boundaries of the *Pandemis limitata* (Robinson 1869) group. None of these character suites alone fully supported the species boundaries; however in combination they successfully differentiated most specimens and for that reason we maintain the three separate species. Generic boundaries and putative synapomorphies of the genus *Pandemis* are examined using COI and ITS2 DNA. Definitive conclusions were precluded by weak phylogenetic support and losses of major structures in some taxa. In Chapter 4, a molecular phylogeny of the Archipini is presented, based on phylogenetic analysis of 28S and COI DNA for 134 species in 33 genera. It shows an Australasian origin for the tribe, with subsequent radiations into the rest of the Old World, and later the New World. Through tests for correlated evolution and total correlation, we examine factors that may facilitate the loss of secondary sexual characters (SSCs). SSCs are more frequently lost when host plant range is narrowed and when taxa radiated into the New World, but novel SSCs do not significantly replace existing SSCs. In Chapter 5, the need for accurate higher-level identifications is addressed in a user-friendly, interactive, matrix-based key to the Lepidoptera of Canada. It covers 222 taxon groups, using 73 characters with 266 states including many characters, like measurements and ratios, that are difficult to quantify using a dichotomous key. It works best with the traditionally challenging microlepidoptera and now provides a new gateway to their identification. Overall, this thesis proposes taxonomic changes for many pest and related species, and furthers a deeper understanding of their evolution.

Congratulations to Jason on the successful defense of his thesis on 21 March!

Left: Jason at Beaver Mines
Right: *Pandemis limitata*

And introducing a very young Lepper:

Although we don't know for sure yet, given her genotype she can't help but grow up to be an entomologist. Congratulations to **Amanda Roe** and **Chris MacQuarrie** on their new baby daughter **Sylvia Jean MacQuarrie**, born on March 30, 8 lbs 3oz and 21 3/4" long

A Short Introduction to *Ophion* of Alberta
by Marla Schwarzfeld (Ph·D· candidate, Sperling lab)

Hey, that's not a moth…

Any lepidopterist who has spent time hanging out at a light is familiar with *Ophion*, the large, gangly, yellowish Hymenoptera that frequently show up at the sheet or in light-traps. This is not to say that all nocturnal hyms are *Ophion*! For a key to the most common light-visitors, see the key in this newsletter. In Alberta, however, *Ophion* are by far the most commonly collected nocturnal wasp.

Biology and life-cycle

Ophion are parasitic wasps (parasitoids) in the family Ichneumonidae, subfamily Ophioninae. They are mostly known to attack Lepidoptera larvae, especially Noctuoidea, though other medium to large Lepidoptera are also used. One species has been recorded from *Phyllophaga* (a scarab beetle), and a European species has been recorded from a sawfly. There are very few Nearctic host records, so much remains to be discovered! *Ophion* females lay a single egg in the host larva, often a later-instar caterpillar. The parasitoid larva then begins developing slowly, while the host continues to feed and develop normally, unaware that its days are numbered… Once the host is mature, but generally before it pupates, the *Ophion* larva eats the remainder of host's tissues, leaving an empty cuticle and head capsule. It then spins a dense cocoon and pupates, emerging to begin the cycle anew.

"So how many species are there?"

This is the most frequently asked question about *Ophion* – followed closely by "do they sting?" (Answer: Yes! – but only if you're mean to them…). World-wide, there are approximately 130 described species, most of which are from temperate habitats (in the tropics, *Ophion* tends to be replaced by other genera of Ophioninae). Only twelve Nearctic species have been described, and seven of these have been recorded from Canada. The number of published species records for Alberta? Zero.

And yet *Ophion* are definitely here, as all you moth-collectors can attest to. My research is therefore focused on answering this very question – how many species of *Ophion* are there? And secondly, how can we tell them apart?

I am assessing this question by analyzing two genes (so far): COI (the barcode region) and ITS2 (the internal transcribed spacer). Both of these genes are useful at the species level since they mutate at a fairly rapid rate, and therefore show lots of variation. So far I have sequenced 277 specimens for COI and 212 for ITS2. The good news is that for many groups, there is remarkable congruence between these two genes, so I feel quite confident that my DNA trees are showing true relationships between groups. With some specimens, however, there is conflict between the genes; or, more frequently, there is a lack of resolution with both gene regions and the individuals remain unplaced.· *Ophion continued next page*

At left: Marla testing whether *Ophion* will indeed come to light

At right*: Ophion luteus*, or so says Wikipedia Commons

Ophion cont…

Along with the DNA work, I am also assessing the specimens morphologically. This is proving to be quite challenging, as most characters seem free to vary seemingly at random. At first glance, one might think that all *Ophion* look the same – but look more closely and you might think every individual is a different species! Nonetheless, there are some distinct (for *Ophion*) morphological differences between many clades, even between some that are closely related; however, in other cases, distantly related species seem to have essentially no distinguishing characters. These are the characters that have been most helpful so far: colour, size, overall shape (e.g., stout vs. skinny), patterns of the various carinae, number of antennal segments, and patterns of pubescence on the wings. I am also doing a morphometric study of the wing venation, which is showing promise at providing another line of evidence for separating species morphologically. This is still definitely a work in progress (and one that I will hopefully be working on for the rest of my life!). But my estimate so far is that there are somewhere between 25 and 40 species of Ophion in Alberta. Interestingly, several species seem to have very wide ranges, with essentially identical morphotypes and genotypes found from BC to Newfoundland; a few species, however, appear to be highly restricted geographically. By far, the vast majority of these species are undescribed. However at least one distinctive species is almost certainly described, and I am in the process of examining types to find if any of the others fit within existing names.

This work is just the tip of the iceberg of all there is to learn about Ophion. Once there is a basic taxonomic framework in place, it will be possible to study the ecology of this group, including host-ranges, habitat preferences, life-histories, etc., as well as continuing to refine the species boundaries. Finally, I want to take a moment to sincerely thank all the ALG members and friends* who have provided me with their precious bycatch. This project wouldn't exist without all of you!

* John Acorn, James Adams, Gary Anweiler, Robb Bennett, Charley Bird, Heather Bird, Brett Bodeux, Claudia Copley, Jeremy deWaard, Jason Dombroskie, Julian Dupuis, Jessica Edwards, Dave Holden, Wes Hunting, Dave Langor, Lisa Lumley, Doug Macaulay, Kerilynn Mercier, Boyd Mori, Ted Pike, Greg Pohl, Heather Proctor, Chris Schmidt, Michael Sharkey, Thomas Simonsen, Felix Sperling, Dave Walter – my apologies if I missed anyone!

Key to Ophion-like Hymenoptera commonly collected at lights in Alberta – by Marla Schwarzfeld

Of all the nocturnal Hymenoptera that show up at lights, *Ophion* are by far the most well-known (naturally, since they are clearly the coolest group!). Nonetheless, there are many other nocturnal Hyms that are attracted to lights, and in many cases these look remarkably similar (many would say identical). This convergent appearance has been labeled the "ophionoid facies" and consists of the following traits: yellowish or orange-brown colour, large swollen ocelli and long antennae. In North America this appearance is most common in the Ichneumonoidea (Ichneumonidae + Braconidae), but in the tropics it also shows up in other families. The most common non-ophionine to have this look is the genus *Netelia* in the subfamily Tryphoninae.

When I point out specimens that are *Ophion* and those that are not, the most common question is: "But how can you tell??" I have therefore prepared this brief key to some of the most common Ophion-ish light-visitors in Alberta. This key is not by any means exhaustive – all sorts of ichneumonids and braconids are regular visitors at lights. However this should cover the ones that are most common and are most likely to be confused with *Ophion*. Have fun! *Ophion key is on next page*

Key to Ophion-like Hymenoptera commonly collected at lights in Alberta

by Marla Schwarzfeld (Ph.D. candidate, Sperling lab)

1a. Discosubmarginal cell divided by two cross-veins (Fig. 1)
……...…..... Family Braconidae

b. Discosubmarginal cell not divided (Figs. 2-6)
……..... Family Ichneumonidae 2

2a. Vein "A" proximal to "B" (i.e,. closer to base of wing); areolet (small closed cell) absent (Figs. 2-4)
…… 3 (Subfamily Ophioninae)

b. Vein "A" distal to or in-line with "B" (i.e., closer to tip of wing); areolet often present (Figs. 5, 6)
...……..……..... 5

3a. Hairless patch at top of discosubmarginal cell (near stigma) usually with pigmented patches (scleromes); Vein "C" distinctly thickened at base and slightly wavy (Fig. 2)
…… *Enicospilus*

b. Hairless patch without scleromes; Vein "C" either straight and of uniform thickness (Fig. 3), or thicker at base and distinctly bent (Fig. 4)
…..……..……. 4

4a. Vein "C" straight and of uniform thickness (Fig. 3)
……...…….….... *Ophion*

b. Vein "C" thicker near stigma and with distinct bend at base (Fig. 4)
…….. *Eremotylus* (rare)

5a. Abdomen dorsoventrally compressed (flattened), often with black lines between abdominal segments; first tergite narrow at base and wide at apex, with spiracle distinctly after the middle (Fig. 7)
…… Subfamily Ichneumoninae

b. Abdomen usually laterally compressed or round, uniformly coloured; if dorsoventrally compressed then first tergite uniformly wide, with spiracle at or before the middle
……. 6

Ophion key and figures continued on next page

Ophion-like Key cont…

6a. Mandibles twisted, so that the upper tooth is larger and in front of the lower tooth (this character is somewhat difficult to photograph, but easy to see with a specimen in hand); ovipositor longer than apical depth of abdomen, without a dorsal notch (Fig. 8)
…..……... *Netelia* (Subfamily Tryphoninae)

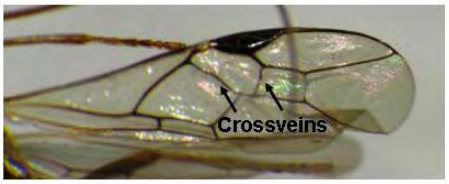
b. Mandibles normal, not twisted; ovipositor short and with a deep dorsal notch, or longer and needle-like (Figs 9,10)
……..……..... 7

7a. Ovipositor short with a deep dorsal notch (but difficult to see, because it is often hidden by sheathes) (Fig. 9); male genitalia not modified
…….……. Subfamily Ctenopelmatinae

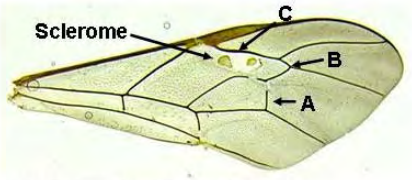
b. Ovipositor long and needle-like with long rigid sheaths (Fig. 10), male genitalia with outer lobe (gonoforceps) modified as an elongate process (Fig.11)
……..……... Subfamily Mesochorinae

* For more information and complete keys to Ichneumonidae and Braconidae subfamilies, check this out: Goulet, H. & Huber, J. 1993. Hymenoptera of the world: an identification guide to families (online at: http://www.esc-sec.ca/aafcmono.html)

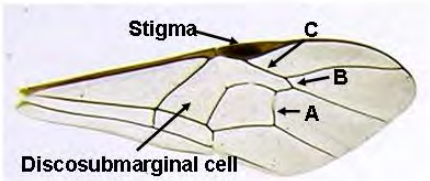
For a key to all the genera of Ophioninae (and the genera of a few other subfamilies), take a look at the American Entomological Institute website: http://www.amentinst.org/GIN



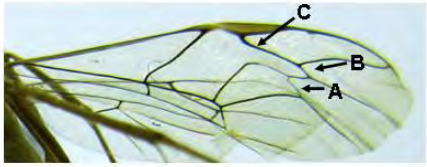
1. Braconidae



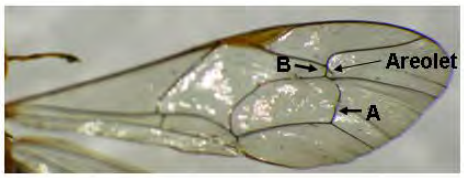
2. *Enicospilus* (Ophioninae)



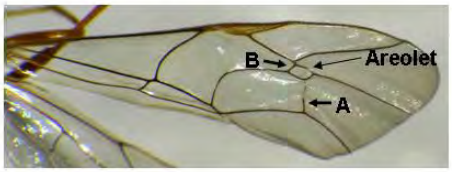
3. *Ophion* (Ophioninae)



4. *Eremotylus* (Ophioninae)



5. *Netelia* (Tryphoninae)



6. Mesochorinae

Figures 1-6. Forewings of Braconidae, three genera of Ophioninae, Netelia, and Mesochorinae

Ophion figures continued on next page

Ophion-like Key cont…

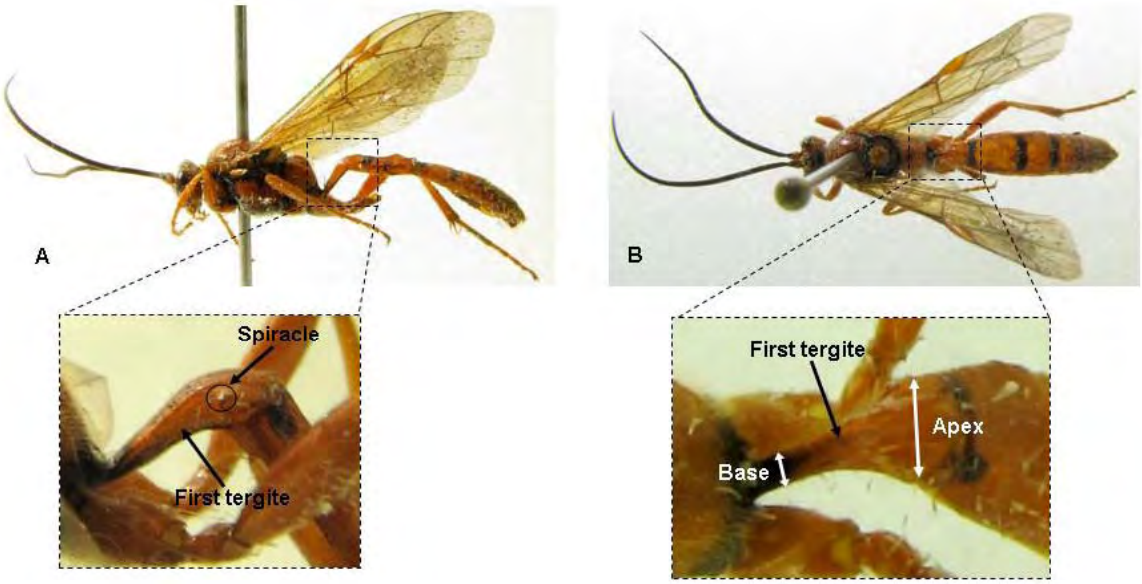
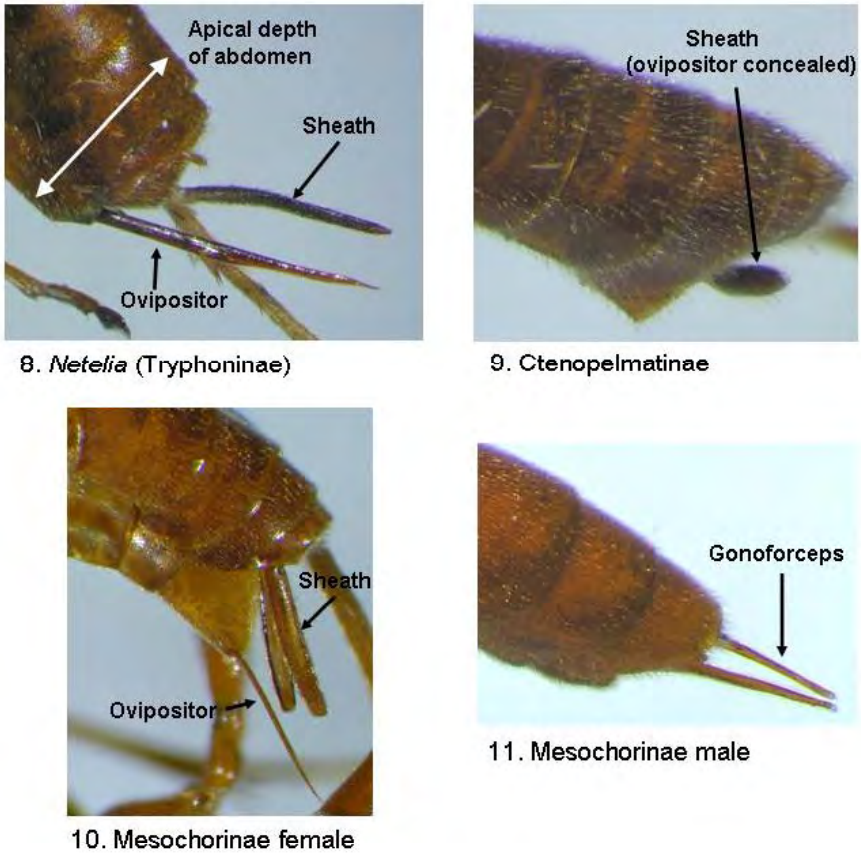


Figure 7. Lateral (A) and dorsal (B) views of Ichneumoninae. Photos: J. Dombroskie



Figures 8-11. Ovipositors of *Netelia*, Ctenopelmatinae (ovipositor is concealed within sheaths) and Mesochorinae; gonoforceps of male Mesochorinae

Errata and first update to the 2010 checklist of the Lepidoptera of Alberta

Gregory R. Pohl, Jason J Dombroskie, Jean-François Landry, Charles D Bird, and Vazrick Nazari
lead author contact: gpohl@nrcan.gc.ca

Introduction:
Since the Annotated list of the Lepidoptera of Alberta was published in March 2010 (Pohl et al. 2010), a few typographical and nomenclatural errors have come to the authors' attention, as well as three erroneous AB records that were inadvertently omitted from that publication. Additionally, a considerable number of new AB species records have been brought to our attention since that checklist went to press. As expected, most are microlepidoptera. We detail all these items below, in what we hope will be a regular series of addenda to the AB list. If you are aware of further errors or additions to the AB Lepidoptera list, please contact the authors.

Within the Noctuoidea, there are a few minor inconsistencies in the order of species within genera, and in the order of genera within tribes or subtribes, as compared to the sequence published by Lafontaine & Schmidt (2010). As well, the sequence of tribes in the AB list does not exactly match that of Lafontaine & Schmidt (2010), particularly in the Erebinae. We are not detailing those minor differences here unless they involve a move to a new genus or new higher taxonomic category.

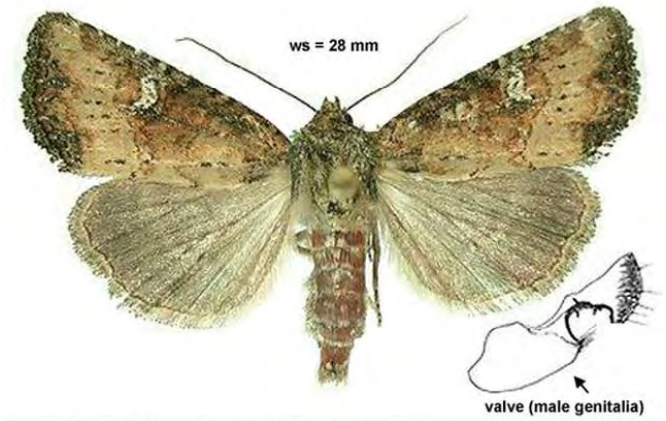
Errata:
Abstract, p. 2, line 10, should read "1530... annotations are given"
41 *Nemapogon granella* (p. 55). Add Kearfott (1905) to the AB literature records.
78 *Caloptilia syringella* (p. 60). This species should be placed in the genus *Gracillaria* as per De Prins & De Prins (2005). (The genus *Gracillaria* follows *Caloptilia* taxonomically, so the species still appears in correct position in the AB species sequence, immediately following true *Caloptilia*.)
403 *Acleris albicomana* (Note, p. 331). Append to the note: "This species was recorded from AB by Bowman (1951) under the name *A. bergmanniana* (Linnaeus), a closely related Palaearctic species."
686 *Eucosma derelecta* (p. 122; also in the Note, p. 339). This species name was misspelled, it should read "*derelicta*".
749 *Epinotia crenana* (p. 128; also in the Note, p. 341). Contrary to the note for this species, the name *Epinotia columbia* (Kearfott, 1904) has been recognized as a valid name, by Brown (2005), and is the correct name for North American populations previously referred to under the Palaearctic name *E. crenana* (Hübner).
924 *Homoeosoma stypticellum* (Note, p. 347). Contrary to the note here, the taxon *H. uncanale* is no longer a synonym of *H. stypticellum*; it was synonymized by Heinrich (1956), but reinstated as a full species by Neunzig (1997). Thus the report of *H. uncanale* in AB by Bowman (1951) is actually a missed AB species, see new AB records below.

Errata continued next page

Errata cont…

939 *Eudonia lugubralis* (p. 150; also in the Note, p. 347). The valid name for *Eudonia lugubralis* is now *E. alpina* (Curtis, 1850), following a recent synonymy.
1315.1 *Orthonama centrostrigaria* (p. 202; also in the Note, p. 378). This species should be placed in the genus *Costaconvexa*, following Scoble (1999). It remains in the correct position in the AB list.
p. 202. The heading Eudulini was misspelled Eudelini.
1506.1 *Metarranthis hypocharia* (p.222; also in the Note, p.385). This species name was misspelled, and should read "*hypochraria*".
p. 224, 225. The genera *Sicya* and *Prochoerodes* were removed from the tribe Ourapterygini by Pitkin (2002) and are currently unplaced at the tribal level. They would have been more properly placed at the end of Geometridae on p. 225, after 1533.
1556 *Paonias excaecatus* (p. 230). This species epithet should read "*excaecata*", the original spelling.
1941 *Oligia fractilinea* (p. 278). This species should be placed in the genus *Mesapamea*, following Lafontaine & Schmidt (2010). It should also be moved three spaces up in the list, to 1938.1, to be in the correct taxonomic position before the genus *Eremobina*.
1944 *Oligia mactata* (p. 278) This species should be placed in quotation marks in the genus "*Platypolia*" in the Xylenini (rather than in *Oligia* in the Apameini), following Lafontaine & Schmidt (2010); although it is not a true *Platypolia*, that is the best placement for this species pending further taxonomic work. It should be moved to the end of the true *Platypolia*, to 2032.1 on p. 285.
1945 *Oligia illocata* (p. 278). This species should be placed in the genus *Fishia* in the Xylenini (rather than in *Oligia* and the Apameini), following Lafontaine & Schmidt (2010). It should be listed as the last *Fishia* species, at 2029.1 on p. 285.
1983.1 *Lithophane bethunei* (p. 281). The date of description was erroneously listed as 1968; it should read 1868.
2027 *Cerapoda stylata* (p. 285; also in the Note, p. 410). This species should be placed in the genus *Rhizagrotis*, following the synonymy of *Cerapoda* with *Rhizagrotis* by Troubridge (2008). The species' position in the list remains correct.
2041.1 *Magusa divaricata* (p. 286, also in the Note, p. 410). This species was placed by Lafontaine & Schmidt (2010) in the Dypterygiini rather than the Xylenini. Its proper placement is at the end of the Dypterygiini at 1908.1, on p. 275.
2089 *Spirameter grandis* (p. 290). This species was moved from *Spirameter* to *Lacanobia* by Lafontaine & Schmidt (2010). It should appear four spaces up in the AB sequence, at 2084.1 (the last species in the genus *Lacanobia*).

Image from http://www.entomology.ualberta.ca/searching_species_details.php?s=6085



Oligia fractilinea (Grt.) SK. Burstall Dunes leg. Troubridge

Errata continued next page

Errata cont…

2108.1 *Admetovis oxymorus* (p. 292). This species was placed by Lafontaine & Schmidt (2010) in the Orthosiini rather than the Hadenini. Its proper placement is at the end of the Orthosiini at 2051.1, on p. 287.

2112 *Faronta diffusa* (p. 292; also in the Note, p. 412). This species should have been placed in the genus *Dargida*, following the synonymy of *Faronta* with *Dargida* by Rodríguez & Angulo (2005). Its position in the AB list sequence remains unchanged.

2168 *"Polia" detracta* (p. 297; also in the Note, p. 414). This species should be placed in quotation marks in the genus *"Orthodes"*, following Lafontaine & Schmidt (2010); it does not belong in *Orthodes*, but that is a better placement than near *Polia*, and it is placed there pending further taxonomic work. Its position in the AB list sequence remains unchanged.

E111 *Grammia celia* (p. 433). This taxon was synonymized with *G. figurata* by Schmidt (2009), and it should have been listed under the latter name. These western Canadian records of "*celia/figurata*" are correctly reported as referable to *G. margo*.

E157 *Loxagrotis albicosta* (p. 438). This species should have been placed in the genus *Striacosta*, following Lafontaine (2004) and Lafontaine & Schmidt (2010).

Index (p. 545). The index entry for *Sunira* was accidentally omitted. "Sunira ... 2001" [in regular font] should appear right below the entry for "Sunflower Moth".

Additional erroneous records:

E13.1 *Acleris bergmanniana* (Linnaeus). Reported from AB by Bowman (1951); these records are referable to *A. albicomana* (Clemens). *A. bergmanniana* is restricted to the Old World, but was historically confused with *A. albicomana* in North America.

E17.1 *Syricoris aurofasciana* (Haworth). Reported from AB by Bowman (1951), under the name "*Acleris latifascia* Haworth", now a synonym. Bowman's material is referable to *Acleris macdunnoughi*, not yet described at that time. The externally similar *S. aurofasciana* is restricted to the Old World.

E156.1 *Lithophane lepida* Grote. Report of this species from AB in the Moths of Canada website (CBIF 2003) is erroneous, based on a previous taxonomic arrangement. The specimens in question are now referable to *L. adipel* (Benjamin), previously thought to be a subspecies of *L. lepida* but now recognised as a distinct species (Troubridge & Lafontaine 2003).

Lithophane adipel Benj. USA NJ Lakehurst Nov 11-20 leg. F. Lemmer
U. A. Strickland Museum # 59786 PARATYPE (G. Anweiler image)

Image from http://www.entomology.ualberta.ca/searching_species_details.php?s=6080

Errata continued next page

Errata cont…

New AB Records:

33.01 *Paraclemensia acerifoliella* (Fitch, 1854). This species, known as the Maple Leafcutter Moth, was discovered at Lac La Biche in the summer of 2010, where it was present at high population levels on saskatoon trees (*Amelanchier* spp.; Rosaceae). Evidence of its distinctive larval damage was later found at several other sites in central AB. Identifications were confirmed via DNA barcoding of larvae; barcodes from AB specimens were an almost exact match with eastern material. This is the first confirmed report of *P. acerifoliella* from west of MB, the first record of the family Incurvariidae in AB, and the first global report of an incurvariid species feeding on *Amelanchier*; See Pohl (2011) for details.

A number of new bucculatricids were collected and identified recently via dissection by JJ Dombroskie, as follows:

62.6 *Bucculatrix angustata* Frey & Boll, 1876. This species was collected by JJ Dombroskie in Jasper National Park at the Palisades Centre and Maligne Canyon, at Kootenay Plains, and at Pakowki Dunes. It was previously known from eastern North America as far west as MB, as well as from WA.
62.7 *Bucculatrix leptalea* Braun, 1963. This species was collected by JJ Dombroskie in Jasper National Park, at the Athabasca River Dunes.
62.8 *Bucculatrix arnicella* Braun, 1925. This species was collected by JJ Dombroskie in the Porcupine Hills. It was previously known from BC.
62.9 *Bucculatrix tridenticola* Braun, 1963. This species was collected by JJ Dombroskie at Kootenay Plains. It was previously known from BC and WA.

Several new AB records of coleophorids were identified by J.-F. Landry from among a large number of specimens sent to him by CD Bird, from various sites sampled as part of his extensive survey work in the parkland of central AB. These records are as follows:

196.9 *Coleophora multipulvella* Chambers, 1878. Collected from near Nevis, from 8 km northwest of Winfield, and from Rochon Sands Provincial Park, collected between 1 and 18 July. Known as the Pistol Casebearer, for many years the name *C. malivorella* Riley was applied to this species, but *C. multipulvella* has taxonomic precedence (Baldizzone et al. 2006). It was previously known from BC and SK.
200.1 *Coleophora cretaticostella* Clemens, 1860. Collected from Big Knife Provincial Park, Buffalo Lake Conservation Area, Dry Island Buffalo Jump Provincial Park, and near Nevis, all collected between 27 May and 25 June. It was previously known from BC and eastern Canada.
202.1 *Coleophora kearfottella* Barnes & Busck, 1920. Collected near Nevis, 11 July 2003. It was previously known from BC and SK.
203.1 *Coleophora cornella* Walsingham, 1882. Known from two specimens collected 8 km northwest of Winfield, on 10 and 29 June. It was previously known from ON and QC.

Errata continued next page

Errata cont…

New AB Records cont…

209.1 *Coleophora sparsipuncta* Heinrich, 1929. Collected from Big Knife Provincial Park, Buffalo Lake Conservation Area, Dry Island Buffalo Jump Provincial Park, Lowden Springs, and near Nevis, between 21 June and 11 August. There are no previously published records of this species in Canada.

210.1 *Coleophora seminella* McDunnough, 1946. Collected from Buffalo Lake Conservation Area, and near Nevis, 11 to 15 July 2003. It was previously known in Canada from SK.

229.1 *Coleophora quadruplex* McDunnough, 1940. Collected from Big Knife Provincial Park and from 8 km northwest of Winfield, on 1 and 4 July 2006, respectively. It was previously known from ON and QC. In QC, larvae of this species feed on the seeds of *Achillea millefolium* (Asteraceae), in the fall (Landry 1998).

235.1 *Pigritia murtfeldtella* (Chambers, 1874). This species was collected at Tolman Bridge by CD Bird, 24 August 2002, and was identified recently by D Adamski. This is a new Canadian record; the closest previous record was SD, where it was reported by Forbes (1923) under the name *Dryoperia grisella* (Dietz), a recent synonym.

237.2 *Cosmopterix gemmiferella* Clemens, 1860. This species was listed as "probable" for AB, based on records in central SK. A specimen was collected near Bindloss, AB on 23 July 2008, by JJ Dombroskie and B Proshek, and identified recently by JJ Dombroskie.

237.3 *Cosmopterix clemensella* Stainton, 1860. A specimen of this species was collected in Jasper National Park, at Maligne Canyon, on 12 July 2007 by M Schwarzfeld, and identified recently by JJ Dombroskie. It was previously known from eastern Canada as far west as MB, although unconfirmed specimens exist from BC as well.

325.1 *Aroga unifasciella* (Busck, 1903). The range of this species was ambiguously reported to include AB in Powell & Opler (2009). The range is reported from "AB to western TX and CA" but then two sentences later they also state that it "occurs from Glacier National Park, MT, to western NM and … CA". Pending clarification of its true range, we include this species as "unconfirmed" for AB.

Two new Gnorimoschemini species were cited from AB in an unpublished report on the Gnorimoschemini of Yukon, by Nazari and Landry (2009). They are as follows:

330.01 *Gnorimoschema herbichii* (Nowicki, 1864). Collected 27 June 2009, in Jasper National Park, Jasper Lake sand dunes, by B.C. Schmidt and G.G. Anweiler.

331.02. *Gnorimoschema obscurior* Povolny, 1998. Known in AB from a specimen collected at Waterton Lakes National Park, Bellevue Hill, 15 August 2006, and a specimen from Pakowki Dunes, 16 August 2006, both collected by J.J. Dombroskie.

369 *Paranthrene tabaniformis* (Rottemburg, 1775). This species was reported as "unconfirmed" for AB, because no voucher specimens were known to support the record by Bowman (1951). Recently an old FIDS specimen from Athabasca, AB has been discovered in the Royal British Columbia Museum, Victoria, BC.

450 *Platphalonidia dangi* Razowski, 1997. The second global record of this species was collected at Pakowki Dunes, 8 July 2008, by J.J. Dombroskie and A. Rose. It was previously known from a single specimen collected at Nordegg in 1923.

Errata continued next page

Errata cont…

New AB Records cont…

512.1 *Clepsis penetralis* Razowski, 1979. The identity of the specimens identified in Pohl et al. (2010) as #506 *Clepsis fucana* (Walsingham, 1879), are hereby corrected to *C. penetralis*, and *C. fucana* is hereby relegated to an expected AB species (it is still known from adjacent BC). This is the first report of *C. penetralis* from Canada; it is known from UT, CA, VT, and CT, but may be more widespread, misidentified in collections among the very similar, but slightly smaller *C. peritana*. AB specimens confirmed as *C. penetralis* are from Jasper National Park, Kootenay Plains, and Pakowki Dunes, collected by various ALG members between 27 June and 31 July.

519.1 *Sparganothis senecionana* (Walsingham, 1879). This species was reported from AB by Powell & Opler (2009), but we know of no AB specimens so it is added to the AB list as an "unconfirmed" species.

521.1 *Sparganothis flavibasana* (Fernald, 1882). A specimen collected at Big Knife Provincial Park, on 4 July 2006 by C.D. Bird, was identified recently by J.J. Dombroskie. This species was previously known from eastern Canada, as far west as central SK.

522.1 *Sparganothis directana* (Walker, 1863). Several specimens were collected at Lowden Springs by C.D. Bird in late July 2002 and 2009, and were identified recently by J.J. Dombroskie. This species was previously known from eastern Canada, as far west as central SK.

602.1 *Ancylis albacostana* Kearfott, 1905. A specimen tentatively identified by J.J. Dombroskie as this species was collected in Medicine Hat on 11 June 2009 by J. Scott. It is added to the AB list here as an unconfirmed record. This species is otherwise known from eastern North America, only as far west as MB and MN.

643.1 *Phaneta labiata* Wright, 2010. Wright (2010) indicates a record in southern AB on the distribution map, but there is no mention of this locality in the text where state and provincial records are summarized. Although this AB record is an outlier (the species is otherwise known from ID and WY), D. Wright (pers. comm.) confirmed that there is indeed an AB specimen, collected near Writing-On-Stone by J.-F. Landry on 12 July 1984. It is deposited in the CNC.

709.1 *Suleima baracana* (Kearfott, 1907). A specimen collected at Pakowki Dunes, 28 June 2008, by L Lumley is the first Canadian record of this species. The nearest previous record was from WA. The specimen was identified by J.J. Dombroskie.

923.1 *Homoeosoma uncanale* Hulst, 1886. As noted in the errata above, the report of this species by Bowman (1951) was misinterpreted by Pohl et al. (2010) as a synonym of *H. stypticellum* (*H. uncanale* was synonymized with *H. stypticellum* by Heinrich (1956), but reinstated as a full species by Neunzig [1997]). No voucher specimens are known to support Bowman's record, and this species is otherwise unknown from Canada. However, it is known from high altitude localities in western USA, and could conceivably occur in the Rocky Mountains of western AB. It is added herein as an unconfirmed record for AB.

1413.1 *Speranza hesperata* Ferguson, 2008. A specimen of this recently described species was collected at Pakowki Dunes by GG Anweiler. This represents a major range extension for this Great Basin species, otherwise known from western USA only as far north as NV and UT. There remains some uncertainty as to the validity of *S. hesperata* as a species distinct from *S. coortaria* (Hulst) (G.G. Anweiler, pers. comm.), but it is treated here as a valid species pending further research.

Errata continued next page

Errata cont…

New AB Records cont…

1940.1 *Oligia modica* (Guenée, 1852). This species was listed as "probable" for AB, being known from Saskatoon, SK and expected in eastern AB. In 2010, J. Scott collected a specimen at Medicine Hat. Its identity was confirmed by G.G. Anweiler.

2020.1 *Enargia fausta* Schmidt, 2010. As mentioned in Pohl et al. (2010) in the notes for *E. infumata* (#2020) and *E. mephisto* (#E-147), a cryptic new species of *Enargia* had been discovered among specimens of *E. infumata*. It was described as *E. fausta* (Schmidt 2010), just as Pohl et al. (2010) was going to press; too late for proper inclusion therein. It occurs in the boreal forest throughout central AB.

2166.1 *"Orthodes" delecta* (Barnes & McDunnough, 1916). This species was collected at Waterton Lakes National Park by B.C. Schmidt, on 7 July 2008, and identified by G.G. Anweiler. It was previously known from southern BC. This species is not a true *Orthodes*, but has been placed there pending taxonomic clarification, by Lafontaine & Schmidt (2010).

Acknowledgements:

We thank David Adamski, Gary Anweiler, and Don Wright for providing determinations and information, and we acknowledge the many collectors of AB Lepidoptera whose efforts have led to these new discoveries. We also thank Gary Anweiler and Chris Schmidt for reviewing this manuscript for us.

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In Memoriam - ERNEST AUGUST MENGERSEN, 1945 -2009

By Charles Durham Bird[1] and Ken Fry[2]
[1]Box 22, Erskine, AB; [2]Olds College, Olds, AB

The Entomological fraternity and Olds College lost a revered member and an outstanding teacher when Ernest Mengersen passed away on July 20, 2009 at the age of 64 in the Linden Nursing Home.
Ernest was born 18 June 1945 in Yellowknife, formerly Northwest Territories, to August F. and Johanna (Poetzsch) Mengersen. He had a sister Rose Marie. The family moved to Duncan, B.C. in 1946 and later to Campbell River, B.C. Ernest spoke only German until he enrolled in Grade One. Ernest took his elementary and secondary education in Campbell River. He received a Grade 13 diploma at Concordia College in Edmonton in 1964. He then returned to Campbell River and worked in a paper mill for two years. He attended Concordia Teacher's College in Seward, Nebraska, from 1966 to 1970 earning a B.S. Ed degree. While there, Ernest met and then married Karen June Petersen on August 10, 1966, in Whittier, California.

Ernest then took graduate studies at Oregon State University in Corvallis, majoring in Entomology and minoring in Zoology. He left his graduate studies to teach Grade 7 and 8 at St. John's Lutheran School in Stony Plain, Alberta from 1972 to 1973. He then took on a job as dairy herdsman in the Stony Plain area and, at the same time, attended the University of Alberta where he earned a B.Sc. Ag. degree in June 1974. Ernest was a crop inspector for the Plant Products Division of Canada Agriculture from 1974 to 1976. In September 1976 he took a contract position at Olds College to teach a wide range of Agriculture courses from Botany to Entomology. He became a permanent staff member in September 1977. He began the Master of Pest Management program at Simon Fraser University from September 1989 to August 1990 but health problems prevented him from graduating. Ernest had severe angina in 1992 that required two angioplasties. Heart problems kept recurring and these eventually resulted in his leaving Olds College in February 2004.

In Memoriam continued next page

At left: George Ball and Ernest Mengersen at 2003 Lepidopterists' Society meeting in Olds
At right: Ernest Mengersen and Gary Anweiler
photos from ALG website: http://www.biology.ualberta.ca/uasm/alg/images/gallery/olds02-meng-anw1.jpg

In Memoriam cont…

When Ernest arrived at Olds College, there was a collection of around 10,000 insects, put together by Buck Godwin and Buck's students. When Ernest left the College, the collection had around 55,000 specimens. Most of the additions were made by Ernest, but many were made by his students, especially through insect collections that they made as part of the entomology classes that they took from Ernest. This collection is regarded to have the best representation of shortgrass prairie Lepidoptera in western Canada.

Hugh Philip and Ernest Mengersen were the authors of the widely used book "Insect Pests of the Prairies" which was published in 1989 by the University of Alberta, Faculty of Education. In the June 1989 Entomological Societies of Canada and Alberta publication "Entomologists of Alberta" authored by Paul Riegert, Riegert recognized "Ernest Mengersen for his yeoman effort to contact all living Alberta entomologists and obtain biographical details".

Greg Pohl of the Canadian Forest Service, made the following comments after learning of Ernest's passing; "I will miss his infectious enthusiasm for all things entomological – his interest and frequent visits to Edmonton in the 1990's were vital in building the community that is the Alberta Lepidopterist's Guild. I have fond memories of his visits to the Forestry collection with many a drawer of interesting specimens he'd collected, and a half-day full of visiting and excited chatter over the insect collection. Usually it was Lepidoptera he brought, but sometimes it was beetles … as he collected widely across many groups. He has certainly left his mark on the entomological community in Alberta, and he will be missed."

Ernest was the local organizer for the inaugural meeting of the Alberta Lepidopterist's Guild held at Olds College on October 16, 1999. Ernest was one of the founding members of the Guild. He was also the local organizer for the North American Lepidopterist's Society Conference held at Olds College from July 27-27, 2003. In an interview at that time he made the following comments. "Studying insects goes hand-in-hand with studying horticulture, because there are three times as many insects as there are species of plants. For every insect feeding on a plant there are many more insects feeding on that insect, so it's vital to understand the huge diversity and its impact. The insect world is a reflection of history, economics, science and our stewardship of the land. They are very important messengers of what might be coming next in our environment. We live in a fragile environment and every living thing, large or small, has an important role in the ecosystem. No one knows how far we can alter the environment with climatic change before we start to notice habitat changes, for example. But the insects are one of the first things to give clues to those answers."

In Memoriam continued next page

Botanical Garden at Olds College (http://www.seevirtual360.com/themes/52/VirtualTour.aspx?listingID=11123)

In Memoriam cont…

Ernest loved teaching and was equally loved by his many students. He once commented: “When you walk into a classroom, it has to be the most exciting time of your life”. He required his students to put together insect collections for his courses in agricultural, landscape and turf entomology and to identify the insects. As a result, many students developed a real love for, and a long-time interest in insects. He also did his best to keep in touch with his students. A typical comment by one of his former students is the following by Rob Hughes. “Ernest was my favorite teacher at Olds College. I always looked forward to, and couldn’t wait to get to his entomology classes.” Ernest loved his students and they were second in line only to his insects. A typical absent-minded teacher, Ernest mentioned that, when he had his first session with a new class he would appoint one student to watch where he put down his glasses so that that student could tell him where to look if he couldn’t find them at the end of the lecture.

Ernest kept the records for the Olds College weather station. He volunteered for a number of years with the Mountain View 4-H Dairy Club, and with Special Olympics Bowling. He served on the board of Horizon School when his son, Mark, was attending.

After leaving the College, Ernest purchased a Dodge truck which he had painted with a variety of moth images and which he called the “Moth Mobile”. The associated image shows Ernest proudly standing beside the new vehicle. Sadly, declining health prevented him from using the vehicle the way he had hoped.

Ernest is survived by his sister Rose Marie Fleming, his wife Karen, sons, Matthew, Michael and Mark, daughter Sarah (Joe Shandera) and grandchildren Kieren and Talon. Karen is thanked for her help in putting this article together. A Memorial Service was held at the Olds Church of the Nazarene on Saturday, July 25.

Ernest Mengersen and his Moth Mobile (photo by C. Bird)

The Maple Leafcutter Moth in Alberta

Greg Pohl, Christi Jaeger, Danika Richard, and Vazrick Nazari
lead author contact: gpohl@nrcan·gc·ca

Background

In 2010, the ALG Wolley Dod Discovery Award recognized the discovery of a new moth species for Alberta, the Maple Leafcutter Moth, *Paraclemensia acerifoliella* (Fitch) (Incurvariidae). Not only was this the first confirmed report of the species west of MB, on a new host plant for the family, it was also the first report of the family Incurvariidae in AB.

The Maple Leafcutter is the only known species of *Paraclemensia* in North America, but a handful of other species are known in other parts of the world (Nielsen 2982). This species is well-known in eastern North America, where the larvae feed on Sugar Maple (*Acer saccharum*) and Black Maple (*Acer nigrum*). They have occasionally been found on other *Acer* species, *Fagus*, *Ulmus*, and *Ostrya*, but these are considered to be accidental overflow during population outbreaks (Ross 1962). They are common in southern ON and QC within the range of their hosts, and occasionally reach outbreak populations. There are also two small series of specimens in the Canadian National Collection (CNC) collected in the 1920s at Aweme and Riding Mountain National Park in MB, well outside the range of these two host maple species.

Maple Leafcutter larvae, like other incurvariids, have very distinctive feeding habits. They spend the first instar as leaf miners, then exit the leaf and cut a small oval disc out of the leaf. They then live beneath this disc, or shield, and skeletonize the leaf from beneath it, in characteristic rings. The characteristic holes combined with skeletonized rings are unmistakable signs of incurvariid damage. In the fall, the larvae drop to the ground and overwinter in the leaf litter, and emerge as adults the following spring..

Finding the moth

The discovery of this moth involved several people and a fair bit of sleuthing. It all began in late May 2010, when a local photographer, Stan Gosche, took a picture of a pretty little moth he saw at Winston Churchill Provincial Park, at Lac La Biche in central Alberta (Fig. 1). He sent that image to Terry Thormin, retired technician from the Royal Alberta Museum, for identification, who passed it on to ALTALEPS, the ALG list-server, for suggestions as to what it could be.

Maple Leafcutter continued next page

Fig.1 - Adult Maple Leafcutter moth (photo by Stan Gosche.

Maple Leafcutter cont...

After seeing the picture, we thought it looked like a Maple Leafcutter Moth, but that could not be proven without a specimen, so that was where the matter stayed for the time being - an intriguing mystery. The first author got in touch with Mr. Gosche, and confirmed that the image was indeed from AB; he informed me that he'd photographed it at Lac La Biche on May 27, and that he'd seen a few of the moths there flitting about along the edge of a forest trail. Based on the literature, there was clearly no preferred host plant there, but we thought it could be feeding on another hardwood such as alder (*Alnus* spp.) or hazelnut (*Corylus* spp.). After reviewing the known biology, plans were made to search for larval damage later in the summer.

The second and third authors, both students working in the CFS entomology laboratory at the time, spent occasional weekends at a family cottage on Lac La Biche, and regularly collected insects there. Armed with information about the characteristic damage and suggested host plants, the hunt was on. On August 2, they found heavy incurvariid damage on saskatoon trees in Sir Winston Churchill Park (Fig. 2), and they brought larvae back to the lab (Fig. 3). Because no other species of incurvariids were known from AB, these were almost certainly the same species as in the enigmatic photo. But what species exactly were they? The adult in the photo looked externally like a Maple Leafcutter Moth. The larvae fit the description of *P. acerifoliella* (Ross 1958), but no other larvae had been described in the genus, so that description could fit other *Paraclemensia* species as well. The sudden appearance of a heavy population, on a commercial crop species, suggested that this might be an exotic introduction, either of Maple Leafcutters or of some related species. It was easy to imagine a camper at the park inadvertently bringing in some overwintering pupae with transported firewood. However, no incurvariid species anywhere had ever been reported on saskatoon trees. Most curiously, the larvae at Lac La Biche did not infest feral Manitoba Maple (*Acer negundo*) trees within meters of the infested saskatoons, suggesting this might be another *Paraclemensia* species. That suggested a third possibility; that this was an undescribed native species. But then why the sudden outbreak? And why hadn't these been noticed before, either by historical collectors such as Ken Bowman, or by commercial saskatoon growers? As collectors of AB Lepidoptera ourselves, it was difficult not to take that last prospect a bit personally.

Maple Leafcutter continued next page

Clockwise from left:
Fig. 2 - Typical leaf damage
Fig. 3 - Caterpillar inside case
Fig. 4 - Close-up of leaf damage

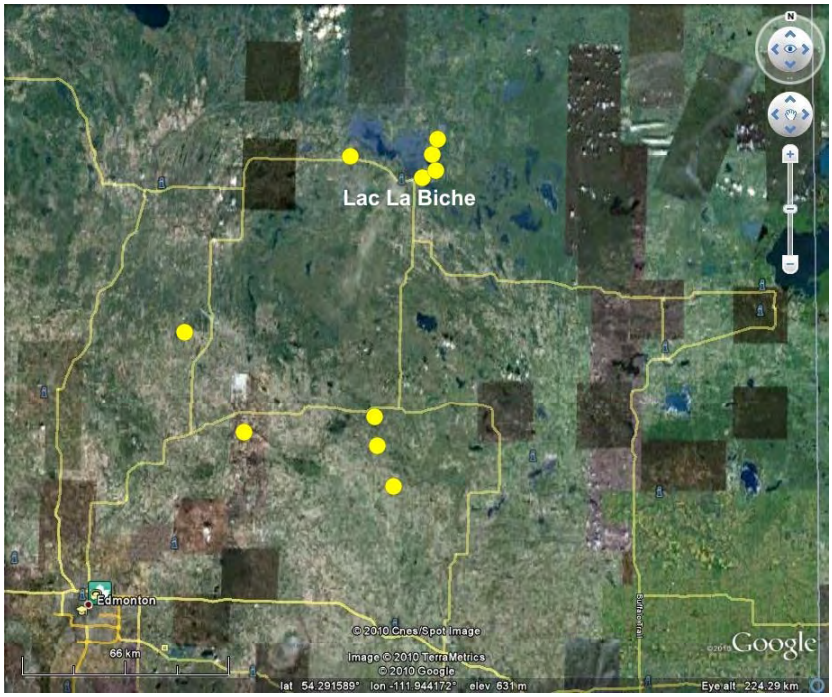

Fig. 5 - Known locations of Maple Leafcutter moths in Alberta.

The adult genitalia are the only definitive morphological diagnostic characters for *P. acerifoliella*, and required dissection to see. Towards that end, samples were collected for rearing, but they would not be emerging as adults until the following May. Because of the concern about a possible new pest problem, a diagnosis was needed quickly. To speed up the process, DNA samples were sent to the fourth author, who fast-tracked them for barcoding via the Lepidoptera Barcode of Life Initiative. In October we received our answer; the Lac La Biche samples were over 99% similar to eastern *P. acerifoliella*, well within the typical range of variation for a species.

In the meantime, we did some further surveying in the Lac La Biche area. We found signs of leafcutters at several sites around the south and east sides of the lake, as well as at a nearby saskatoon farm. After discussions with Alberta Agriculture personnel, an information bulletin was sent to saskatoon growers in the province, asking if any of them had ever seen this characteristic damage. We received a few calls, visited a number of saskatoon farms in central AB, and found traces of damage at two of them (Fig. 4). So, clearly this species is fairly widespread in the parkland of central AB (Fig. 5), and it appears to have been present for some time. The presence of parasitoids among the Lac La Biche larvae supports this assertion. As well, we received a report from a retired SK Agriculture employee, who clearly remembered seeing this type of damage once in SK in the early 1970s, which he had diagnosed as Maple Leafcutter at the time (he did not remember the host plant). So, based on the wide distribution in AB, the report from SK in the 1970s, and the old records from MB, it appears that Maple Leafcutters have been in the parkland of western Canada for some time, probably feeding on saskatoon. This species may have moved westwards over the past century, or it may have always been here at low populations, undetected. The sudden population explosion is still a mystery.

We believe that if they had been regularly present at the levels seen at Lac La Biche in 2010, they would have been brought to the attention of entomologists sooner. We believe this high population on saskatoon is new, perhaps due to warming weather trends, or a unique combination of other conditions.

Maple Leafcutter continued next page

Maple Leafcutter cont...

A new pest or a scientific curiosity?

Because these leafcutter caterpillars do most of their damage so late in the season (primarily in August, after the berry crops have been harvested), it does not appear to be a serious threat to commercial saskatoon berry growers. Heavy populations could potentially cause some loss of tree vigour, but chemical control is not required. In fact, no commercial insecticides are currently licensed for use on leafcutter moths.

Another wrinkle in this story is that there is an unsubstantiated report of this species from Kaslo, BC from over 100 years ago (Dyar 1904). Apparently several adults were collected there by Dyar and Cockle, in July. No host plant was mentioned, and this is very far from any preferred host species. No vouchers have ever been located, either in Dyar's collection at the USNM, Cockle's at the Royal BC Museum, or in any other collection we have checked. Because that July collection date is a month later than this species is otherwise known to fly, and no vouchers could be found, the BC record has generally been considered doubtful. However, now that the species has been confirmed in western Canada, and a new host plant has been reported, it becomes a little more plausible.

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Ross DA (1958) The Maple Leaf Cutter, *Paraclemensia acerifoliella* (Fitch) (Lepidoptera: Incurvariidae), descriptions of stages. The Canadian Entomologist 90 541-555.

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A closing mystery - are the prairie Alberta *Agriades* populations conspecific with the mountain populations, or are they distinct species? A hint of the latter are these two morphotypes in sympatry collected and photographed by N.G. Kondla 2010-6-29 Fir Creek, Eyrie Gap area west of Longview, Alberta. Specimens were found puddling ca.2.5cm from each other in a roadside ditch.

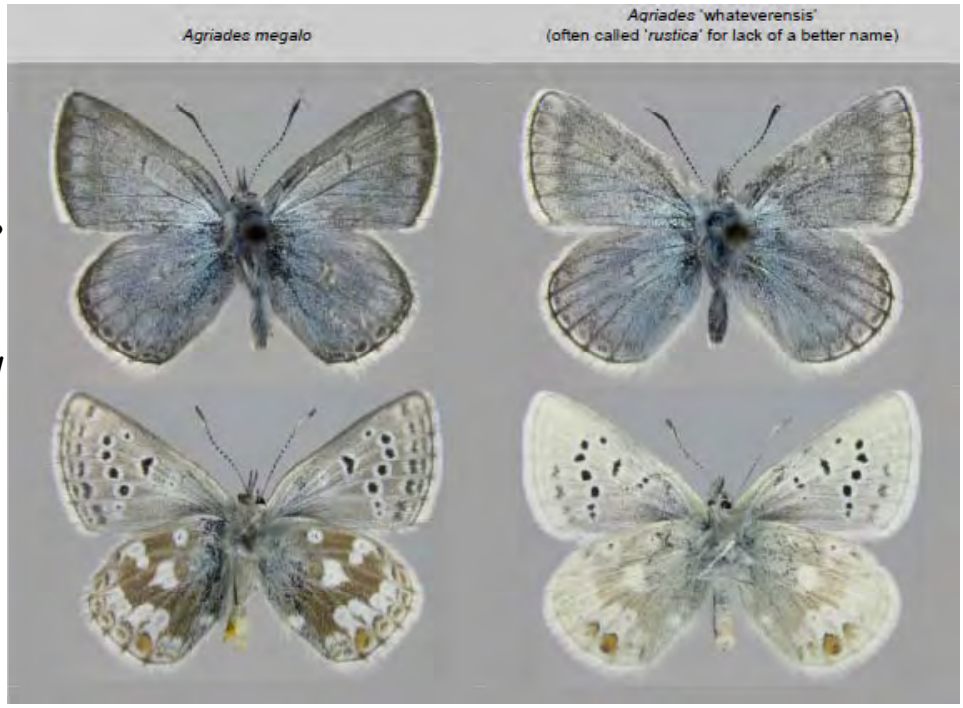

plate by N. Kondla