



# ALBERTA LEPIDOPTERISTS' GUILD NEWSLETTER – SPRING 2013

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.

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## Big year contest vouchers/photos:

We encourage catch-and-release of common species, but photographs and/or voucher specimens of unusual records are encouraged. If you wish to collect in protected areas or on private lands, you are responsible for obtaining your own permits and permissions.

## How many butterfly species can you observe in Alberta this year?

### Join the Alberta butterfly big year contest hosted by the ALG and eButterfly!

Observations must be made by the contestant, of live butterflies (in any life stage) occurring naturally in Alberta between March 1 and November 15, 2013. The winner will receive an original, commissioned work of butterfly art, by local artist Charity Dakin. Contestants must submit all of their observations to the **eButterfly** website: <http://ebutterfly.ca>, and submit a species list to the ALG Butterfly Big Year committee (Greg Pohl, Doug Macaulay, John Acorn, and Rob Hughes), by Nov. 15, 2013.

\*See the last page of this newsletter for a printable poster advertising the butterfly big year contest!



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## Feralia Seminar and Potluck



Post-seminar photo op! AB butterfly survey enthusiasts and organizers, from left to right, Felix Sperling, Maxim Larrivée, Charlie Bird, Greg Breed, Katy Prudic, and John Acorn. Photo: A Thyse



Busy living room and basement scenes at the Feralia potluck! And the future looks bright, as the youngster to the left is named Feralia Macaulay!



Thanks again to the Acorn family  
for hosting this year's Feralia!  
Photos: R. Hughes





## Summer azures in Alberta ....or not?? Gary Anweiler



The delightful little spring azure is one of our first non-hibernating butterflies to appear each spring. It occurs widely in Alberta, and can be very common along the river valley here in Edmonton, wherever native Red-osier dogwood is present. Although it is easy to recognize and a common butterfly throughout much of Alberta, its nomenclature has undergone a serious and somewhat prolonged massage in recent years. In Bowman's time it was known as *Lycaenopsis pseudargiolus lucia*, but by the end of the century it had "evolved" to *Celastrina ladon lucia*, with Alberta populations separated into two subspecies in a new genus! The common widespread population found throughout most of the province became *Celastrina ladon lucia*, while the darker blue populations in the mountains and foothills south of the Crowsnest Pass became *C. l. nigrescens* (Bird *et al.*, 1995; Layberry *et al.*, 1998). Most recently Pohl *et al.* (2010) treat our azures as two SPECIES, with *Celastrina ladon lucia* becoming *Celastrina lucia*, and the darker southwestern population becoming *Celastrina echo nigrescens*.

When the Butterflies of Canada was published in 1998 it showed that something interesting was going on with the azures just to the east of us; a THIRD species, the summer azure (*Celastrina neglecta*), was shown to be present across central Saskatchewan, almost to the Alberta border just southeast of Lloydminster. The "grapevine" also had it that Gerry Hilchie and Norbert Kondla had both encountered this species in Alberta. On July 8, 2008 I was surprised and excited to find a fresh male of a summer azure at the Bindloss campsite on the banks of the lower Red Deer River. Gerry Hilchie's specimen had been collected previously at Rochon Sands on Buffalo Lake. This past summer (2011) I was surprised and very excited to find a freshly emerged female summer azure in the backyard here in Edmonton on July 14, and even more surprised to find a male nectaring on sweet clover in the adjacent alley the following day. Both were clearly the much paler and more lightly marked summer azures reported in Butterflies of Canada in Saskatchewan. These summer specimens of azure differ from the "normal" spring flying azures in being paler blue on the dorsal surface and much more lightly marked on the ventral surface, appearing very different from the spring flying azures that were common in the same place some two months earlier.

The status of these summer azures has been the subject of considerable controversy, and arguments as to whether they are in fact two species or simply a few spring azures deciding to emerge in summer instead of awaiting next spring.

*continued...*

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Chris Schmidt tells me that Ross Layberry has studied this problem, and has found that a few summer azures will sometimes emerge in summer from normal dark spring azure eggs. To date DNA has apparently not been of much use in elucidating what is happening with the azures, although that in itself may suggest they are but a single species. However, I also find it interesting that summer azures seem to have appeared across Saskatchewan before showing up in eastern and central Alberta. A similar pattern has been observed with both the Northern Pearly-eye (*Lethe anthedon*), which was known in Alberta only west to Lac la Biche as recently as 1995 when *Butterflies of Alberta* was published, but had become abundant in Edmonton by 2006 and could be found west almost to the foothills. Yet another example is the Hobomock skipper (*Poanes hobomock*), which was known in Alberta from only two records on the eastern border of the province in 1995, but is now abundant at least as far east as Edmonton. Or could this be another result of "global warming", with moderating temperatures resulting a few spring azures jumping the gun??? A fascinating phenomenon, and one that obviously needs more research before we will have the answers. In the mean time, I am happy to have a "new" butterfly in the neighbourhood, and intend to get just as excited when I next encounter one!

Photos G. Anweiler

Bird, C.D., Hilchie, G.J., Kondla, N.G., Pike, E.M., and F.A.H. Sperling. 1995. *Alberta Butterflies*. The Provincial Museum of Alberta, Edmonton, AB, CAN, pp.93-110.

Layberry, R., Hall, P., Lofontaine, D. 1998. *The Butterflies of Canada*. University of Toronto Press, Toronto, ON, CAN.

Pohl G, Anweiler G, Schmidt C, Kondla N (2010) An annotated list of the Lepidoptera of Alberta, Canada. *ZooKeys* 38: 1-549. doi: 10.3897/zookeys.38.383



Unrelated to azures, But who could resist this gorgeous shot of *Archiearis infans*, also by Gary!



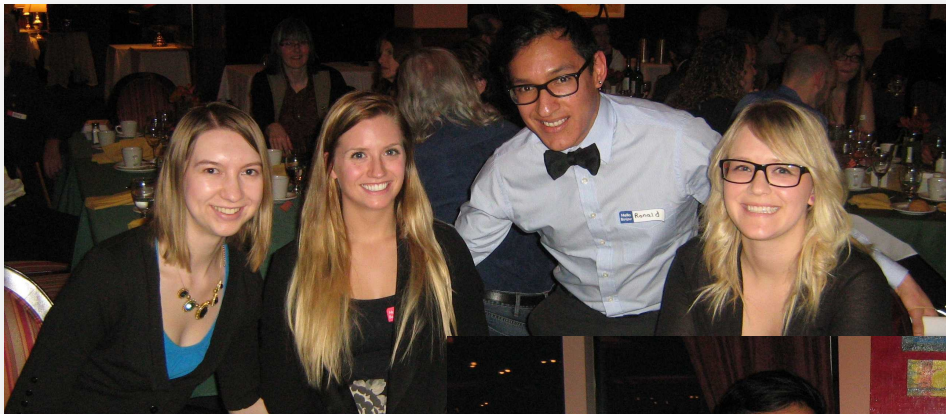


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## The 17<sup>th</sup> Annual Memorial Strickland Lecture & Dinner At the University of Alberta



The 17th Annual Memorial Strickland Lecture entitled: “Playing god with nature: a tale of two butterflies” was held March 22, 2013. The distinguished speaker this year was Dr. Carol Boggs. Dr. Boggs obtained her PhD in Zoology from the University of Texas at Austin and did post-doctoral work at Stanford University. She is currently a Professor of Biological Sciences at the University of South Carolina, Columbia and will become the Director of the School of Earth, Ocean and Environment in August 2013. Dr. Boggs’ research uses butterflies to understand how environmental variation affects reproduction, population size and species interactions over ecological and evolutionary time. The aim is to better understand the effects of both natural and anthropogenic environmental changes. Dr. Boggs also presented a second seminar as part of the Entomology seminar series entitled: “Life history and population responses to environmental variation”. Both lectures were well attended and received despite some unseasonable spring weather! The Strickland Dinner was held at the University of Alberta Faculty Club following the lecture and was attended by ~80 guests. This year’s winner of the BIG MAC award went to Boyd Mori of the Evenden lab for creating the “biggest gas leak ever observed on the University of Alberta Campus”. Bryan Brunet and Kevin Judge were also nominated for the BIG MAC award. Everyone enjoyed participating in the “Strickland Follies” which had a special “guess the entomologist” segment this year!



Left: Members of the Evenden lab, from left to right, Grace Carscallen, Caitlan Reich, Ronald Batallas, and Dominica Harrison

Right: Ronald Batallas, Joelle Lemmon, and the Big Mac winner himself, Boyd Mori with champagne!  
Photos T Wist



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## Student Spotlight!

### Lepidopterous Graduate Students Profiles

#### **Boyd Mori (Ph.D. supervisor M. Evenden)—Red clover casebearer management**

My current research focuses on the use of pheromones to monitor and manage the red clover casebearer (RCC), *Coleophora deauratella* (Lepidoptera: Coleophoridae), in northwestern Alberta. The red clover casebearer is an invasive pest of clover introduced to North America from its native range in Europe and the Middle East. In clover seed production areas throughout Canada, RCC infestations can cause > 80% seed loss and, to date, insecticides have been ineffective against this pest. My initial research helped identify the RCC female-produced sex pheromone as a 10:1 ratio of Z7-dodecenyl acetate and Z5-dodecenyl acetate. This identification allows for the use of synthetic pheromones to detect and manage this invasive pest. Presently, I am developing a predictive model by comparing male RCC pheromone-baited trap capture to subsequent larval infestation and feeding damage. This model will be the basis for an economic threshold by which producers can determine if RCC population levels warrant control. I will also use specimens from these pheromone-baited traps, as well as others positioned throughout the clover growing regions of RCC's introduced and native ranges to determine its' invasive origins in North America. Finally, I am testing pheromone-mediated mating disruption formulations to determine if treatment interferes with mate finding and egg laying. I am conducting large scale, season-long trials to determine if mating disruption can reduce larval infestations and increase seed yield. I also plan to investigate the mechanisms by which pheromone treatment disrupts mating of RCC. I will use small plot field trials, combined with laboratory electroantennograms and wind tunnel bioassays, to compare the attractive and unattractive pheromone formulations to determine the importance of competitive and non-competitive mechanisms in mating disruption. The results of these experiments can be incorporated into an integrated pest management program to help detect, monitor and manage RCC as it continues to spread in North America. Mating disruption can provide growers a non-insecticidal control option to help mitigate damage caused by RCC. Furthermore, determining the origins of RCC in North America may help focus the search for biocontrol agents that may control RCC populations. *[Pictured on pg 5 for the Strickland Dinner]*



**An adult red clover casebearer posing majestically on its plant of choice.**



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**Christianne McDonald (M.Sc. – supervisors F. Sperling & J. Acorn)—*Polygonia* taxonomy**

A portion of my research is focused on reconstructing the phylogenetic relationships between the species of *Polygonia* in Alberta. There are six species of *Polygonia* commonly found in the province – seven if you include the occasional migrant, the question mark, *P. interrogationis* – many of which are easily confused in the field. I will be using a combination of morphological traits and molecular markers to reconstruct the evolutionary relationships in the group, and to delimit the species that are difficult to differentiate, such as *P. progne* and *P. oreas* where their ranges overlap, as well as *P. gracilis* and *P. zephyrus* (or *P. gracilis zephyrus*, depending on the literature you happen to be reading). The second part of my thesis project examines the act of sorting similar specimens into species, and whether using their overall appearance – or gestalt – is more accurate than the use of specific field markings. I will be collecting specimens from localities all across Alberta from High Level to Waterton, and even into southern British Columbia. I am looking forward to making new discoveries in a group that has puzzled many great lepidopterists and shedding some light on how different people identify and delimit species.



Christianne posing next to a wonderful, ornamented spruce. Photo: J Acorn



An adult apple clearwing moth found in an orchard in Summerland, BC.

Photo: J Kwon

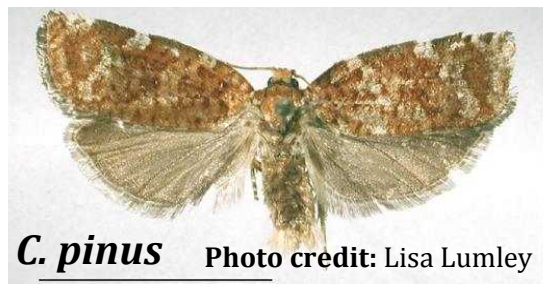
**Jessica Kwon (M.Sc. supervisor M. Evenden)—Clearwing moth chemical ecology**

The apple clearwing moth, *Synanthedon myopaeformis*, (Borkhausen) (Lepidoptera: Sesiidae) is a serious invasive pest of apples in British Columbia (BC), Canada. This native of Eurasia and Africa was first discovered in the Similkameen Valley of BC in 2005 and has since spread south to Washington, USA. Since the larvae of this diurnally active moth are protected under the bark, various semiochemical-based control strategies have been tested to target the adult stage. My project focuses on the development of a pheromone-based attract and kill system for this species. The effects of visual cues and the pyrethroid insecticide, cypermethrin, on the close-range orientation of apple clearwing moth males to sources of sex pheromone were tested. Various visual cues and cypermethrin were incorporated with pheromone in SPLAT®, a biologically inert medium that is commercially available in an array of colors. In an effort to develop an attract and kill formulation with multi-species control, the effect of codlemone, the sex pheromone of a sympatric species, *Cydia pomonella*, (Lepidoptera: Tortricidae), on apple clearwing male attraction was also tested in SPLAT®.

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**Heather Bird (M.Sc. supervisor F. Sperling)—Jack pine budworm phylogenetics**

My name is Heather Bird and I am one of Dr Felix Sperling's M.Sc. students studying the spruce budworms, *Choristoneura* spp., which are significant pests in Canada's boreal forests. Since my last entry in this newsletter, we have found over 700,000 single nucleotide polymorphisms (SNPs) in DNA near ApeKI restriction sites and over 200,000 SNPs in DNA associated with PstI-MspI restriction sites. These SNPs provide enough phylogenetic signal to confidently determine the evolutionary relationships between the jack pine budworm (*C. pinus*) and the spruce or fir feeding species. These little guys occasionally hybridize in Alberta and are fairly similar to begin with, so being able to sort them out with DNA is an accomplishment. Now we are looking at SNPs that are distinctive for the jack pine budworm and seeing what genes they belong to. It is very interesting because our preliminary results are giving diagnostic DNA fragments that match to wing disc formation, flight behaviour, larval behaviour, multiple cellular processes, and many other genes. DNA is cool, guys! [Picture below in photos from the ALG annual general meeting]



***C. pinus*** Photo credit: Lisa Lumley

Above: The jack pine budworm itself!

Left: A lovely larval spruce budworm roaming around a piece of notebook paper.

Photo H Bird

**Giovanny Fagua (Ph.D. supervisor F. Sperling)—*Choristoneura* phylogenetics**

My PhD project is focussed on three aspects of the tortricid moths in the genus *Choristoneura*: 1) the phylogenetic relationships of species in the genus *Choristoneura* globally; 2) divergence processes within and among the coniferophagous species of the genus in North America; 3) and the relationship between species definition and variation in the pheromones that are used in the spruce budworm species complex. Since a large amount of biological information is available for these species, *Choristoneura* is an ideal group for understanding factors that promote increased speciation, such as dispersal and global climatic change, as well as the effects of host plant association, behavior, and hybridization. [Pictured below in photos from the ALG annual general meeting]



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**Ronald Batallas (M.Sc. Supervisor M. Evenden)—cutworm ecology**

Cutworms (Family Noctuidae) are a complex of several species that affect many crops grown in the Prairie Provinces. Within this group, the redbacked cutworm (RBC), *Euxoa ochrogaster* (Guenée), is a native species regarded as the most widely distributed and destructive cutworm in Canada. Early larval instars feed on foliage, while mature larvae eat into the stem and sever the plant. Low populations cause spot damage on the field; however, outbreak infestations can cause complete destruction. To date, scientists have described the life history of RBC, its host range and adult flight activity, but there is no information regarding the impact of abiotic/biotic factors on phenology and biology of RBC larvae. My main objective is to evaluate the effect of multiple host plant species (Canola, wheat, peas and barley) on the developmental and growth rate of RBC larvae and its influence on adult female fitness. I will study the influence of host plant water stress and nutrient deficiency on the performance of RBC larvae and adult fitness. Nutrient analysis of the four crops will be conducted (C:N and amino acids) to understand host preference choice. Cutworm larval abundance and adult flight activity will be monitored in multiple crops in Central Alberta with sex-pheromone traps and feeding attractants. Information on larval phenology and adult reproductive status will lead to the construction of a degree-day model to predict insect development in the field for efficient management strategies. Understanding RBC immature phenology will improve integrated pest management programs, and estimates of breeding populations and their dynamics. [Pictured on pg 5 for the Strickland Dinner]

**Tyler Wist (Ph.D. supervisor M. Evenden)—Ash leaf cone roller chemical ecology**

My name is Tyler Wist and I am in the twilight of my graduate career at the University of Alberta in Maya Evenden's lab; I am trying to finish my thesis before it finishes me. I am studying the invasion of Western Canada's urban forests by the ash leaf coneroller, *Caloptilia fraxinella* (Ely) (Lepidoptera: Gracillariidae). This micro-lepidopteran infests ash trees (*Fraxinus* spp.) and has moved into many municipalities in Western Canada where *Fraxinus* has been planted. I am investigating the chemically mediated host finding of female *C. fraxinella* with the ultimate goal of developing an attracticide formulation. A complex of parasitoid wasps has developed on the ash leaf coneroller since its introduction to Edmonton and Saskatoon's urban forest ash. One parasitoid in particular is exerting heavy pressure on *C. fraxinella* populations in Edmonton's forest; a braconid wasp, *Apanteles polychrosidis*, and I am also studying host finding by this wasp to investigate and potentially augment its role as a bio-control agent against the ash leaf coneroller. The overarching theme of my project is the study of chemically mediated host finding in the *Fraxinus/C. fraxinella/A. polychrosidis* tritrophic system.



## ***Paranthrene tabaniformis* .....confirmed for Alberta!**

Gary Anweiler

The European Poplar Clearwing Moth or Dusky Clearwing (*Paranthrene tabaniformis*) is a relatively large sesiid (ws approximately 3 cm) with several narrow bright yellow bands on the black abdomen, and forewings largely clothed in dark brown-black scales. It is known to occur widely across Canada and much of the United States, as well as Europe and parts of Asia, and is apparently a long-established invasive species in North America. The larvae are borers in trunks of poplar trees.

Eichlin & Duckworth (1988) reported it as occurring across southern Canada to Alaska, and Englehardt (1946) reported it for Alberta, under the name *tricincta* (Harris). Until now have been unable to locate any specimens or specific records for Alberta, and we listed *tabaniformis* in the recent *Annotated List of the Lepidoptera of Alberta* as a holarctic species unconfirmed for Alberta.

I have been trapping sesiids in Alberta and Saskatchewan over the past few years using artificial sessiid pheromones, including the pheromone used to attract *tabaniformis*, but until now had failed to find it. In June of 2012 I placed a number of traps baited with a variety of sesiid pheromones in a small bog south of Sherwood Park in an attempt to collect *Synanthedon arctica*, a rarely collected species that I had found in this bog previously. A number of used pheromone baits left over from previous years were placed in the traps as well, including the specific pheromone for *tabaniformis*. Nine specimens of *tabaniformis* were caught in this trap, confirming its presence in Alberta.

Specimens have been deposited in the University of Alberta Strickland Entomological Museum; one of which is illustrated here.



Three European poplar clearwings prepared and photographed by Gary.



Eichlin TD, Duckworth WD (1988) Sesiioidea: Sessiidae. Fasc. 5.1. In: Dominick RB, Ferguson DC, Franclemont JG, Hodges RW, Munroe EG (Eds) The moths of America north of Mexico. Wedge Entomological Research Foundation, Washington, D.C., 176 pp.  
Engelhardt GP (1946) The North American clear-wing moths of the family Aegeriidae. Bulletin of the United States National Museum 190: 1–22.  
Pohl G, Anweiler G, Schmidt C, Kondla N (2010) An annotated list of the Lepidoptera of Alberta, Canada. ZooKeys 38: 1-549. doi: 10.3897/zookeys.38.383



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## Late Edmonton Skippers

Gary Anweiler

Butterflies in general appeared to have a banner year in central Alberta in 2012, with unusually large numbers of the more common species appearing, not to mention the amazing Monarch influx. Roadside and European skippers, Common wood nymphs, Common ringlets, Banded hairstreaks, Silvery blues, Tiger swallowtails, Speyeria fritillaries and others were all present in the local meadows in larger numbers than I can recall ever seeing. The introduced European skippers swarmed; there were literally thousands, perhaps millions, in the river valley and local parks. It was not unusual to see as many as two dozen on a single clump of alfalfa. The big Silver-spotted skippers, at the north-western edge of their range here, also had a great year. I normally see 1 or 2 in a season along the edge of the ravine across from the house, but this year I saw 2 or 3 almost daily and they were regular visitors to the back yard flower garden...a first.

Three of the local native skippers, Peck's (*Polites peckius*), Hobomock (*Poanes hobomok*) and Tawney-edged (*Polites themistocles*) were also present in good numbers. Both Hobomok and Tawny-edged skippers are at or near the northern edge of their range here in central Alberta, while Peck's are known to occur sparingly across the boreal forest almost to the northern boundary of Alberta. Based on the map in Butterflies of Alberta, Hobomock skippers have only recently extended their range from the east into central Alberta. Collection records in the Strickland Museum and the Butterflies of Alberta indicate that all three species have a single summer brood in Alberta, with Hobomok skippers flying from late May through the first week of July, Tawny-edged skippers from early June to the end of July, and Peck's from early June to the third week of August.

From late August through the end of September I regularly visited a large patch of blooming vetch in Goldbar Park while searching for bumblebees. During this period I noted small numbers of skippers still visiting the vetch blossoms. Realizing this was rather late for skippers to be on the wing, I collected two specimens for vouchers on September 16; one turned out to be a Hobomock, the other a Peck's. A week later, on September 24, I collected one of the two skippers encountered, this time a Tawny-edged. All were in good condition, showing little sign of wear. I had assumed that these late skippers would all belong to a single late-flying species and was surprised to find three different species involved. According to the Butterflies of Canada, Peck's skippers are single-brooded in Canada except in southern Ontario, flying until early August, while Tawny-edged fly in Manitoba until late July, and do have a second brood in the northern States. Hobomok skippers in Canada fly until late July. Records in the Strickland collection do not extend past the first 10 days of July for any of the three species. I do not know how unusual it is for these skippers to appear this late, and would be interested in hearing if anyone else has encounters them in late summer or fall. The specimens collected have all been deposited as vouchers in the Strickland collection.



## ALG Annual General Meeting, 1 December 2012 at the Sperling residence!

As you can see, fun was had by all—And thanks to the Sperling family for hosting!



Above, talking business! From left to right: Heather Bird, John Acorn, Gloria Brons, Monica Higuera, Bruce Christensen, Charlie Bird, Rob Hughes, Vic Romanyshyn, and Greg Breed.



Above, John Acorn and Karina Brandao receive a lecture on proper playing by Miguel Brandao!

John Acorn, Marcello Brandao and Julian Dupuis debate how to properly eat pizza.

Below, happy Lep-loving duos: Charlie & Heather Bird, Giovanny Fagua & Monica Higuera, and Greg Pohl & Barb Deneka!





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**And, one more new moth for  
Alberta from Gary Anweiler:**

***Hypena scabra***



While providing names for the moths collected last summer by Bruce Christensen, I found a specimen of *Hypena scabra* (Fabricius) in Bruce's material, a species not previously reported for Alberta. The recent Alberta Checklist (Pohl *et al.*, 2010) states "This species occurs in central Canada west to central SK and may occur in southeastern AB". The label on Bruce's specimen reads "1/2 mile north of Hwy. 663 on Hwy. 801, Sept. 1, 2012". This translates to lat long 54.5654 -113.8373, approximately 20 km SW of Athabasca, and a fair distance from southeastern Alberta as was predicted in the Alberta Checklist. The specimen will be placed in the Strickland collection.

*Hypena scabra*, the Green Cloverworm Moth, is a noctuid moth in the subfamily Hypeninae, until recently placed in the genus *Plathypena*. It is a rather narrow-winged, medium-size (ws approx. 35mm) predominantly black-brown moth, with marking varying from prominent to obscure. Bruce's specimen, illustrated here, is predominantly dark black-brown with obscure markings. According to Covell (2005) the larvae feed on a variety of legumes including clover and alfalfa crops, as well as strawberry and raspberry plants, but are not considered to be a serious pest.

Photo: G Anweiler

Covell CV (2005) A Field Guide to the Moths of Eastern North America. Virginia Museum of Natural History and the Smithsonian Institution, Special Publication 12.

Pohl GR, Anweiler GG, Schmidt BC, and Kondla, G (2010) An annotated list of the Lepidoptera of Alberta, Canada. Zookeys 38, Special Issue.

**It's SPRING!!  
Happy Lepping to One and All!**



# ALG Alberta Butterfly Big Year Contest - 2013

Hosted by the **Alberta Lepidopterists' Guild** and **eButterfly**

How many butterfly species can you observe in Alberta this year? Observations must be made by the contestant, of live butterflies (in any life stage) occurring naturally in Alberta between March 1 and Nov. 15, 2013.

The winner will receive an original, commissioned work of butterfly art, by local artist Charity Dakin.

Contestants must submit all of their observations to the **eButterfly** website: <http://ebutterfly.ca>, and submit a species list to the ALG Butterfly Big Year committee, by Nov. 15, 2013.

We encourage catch-and-release of common species, but photographs and/or voucher specimens of unusual records are encouraged. If you wish to collect in protected areas or on private lands, you are responsible for obtaining your own permits and permissions.



For more details on this competition: how to enter your sightings on **eButterfly**, and submit a species list, visit the **Alberta Lepidopterists' Guild** website.

<http://www.biology.ualberta.ca/uasm/alg/index.html>

