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ALG NEWS

The Need For Insect Collecting

by Gregory Pohl, Natural Resources Canada, Canadian Forest Service

Concerns over the practice of insect collecting are periodically raised by uninformed people who equate insects with birds and mammals, assume that killing insects is unneccessary, and then attempt to curtail legitimate collecting activities. This often leaves entomologists scrambling to justify and defend their legitimate work. Recently the ALG was asked by the Federation of Alberta Naturalists to respond to a letter they had received from one of their member groups, the Grasslands Naturalists, expressing concern about insect collecting in Alberta. As president of ALG, I responded with a detailed letter outlining the many benefits of insect collecting, and the misconceptions that arise when comparing insects to vertebrates. The Grasslands Naturalists' letter, and my response, are posted on the ALG website. Any ALG member or other amateur or professional entomologist who is being taken to task over their collecting activities is welcome to use all or part of that letter to explain the value of their work.

Young children collecting "bugs". One of the best ways to get introduced to the marvels of nature (photo G. Pohl)

Also in response to this recent challenge to insect collecting, ALG has prepared the following position statement.

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The Rare Flower Moths of Alberta

By Gary Anweiler

Flower moths are mostly small, colorful day-flying noctuid moths comprising the subfamily Heliothinae. They tend to be highly specialized, frequently utilizing a single species or genus of hostplant and feeding only on the flowering parts of the plant. With few exceptions they are single-brooded and short-lived as adults. Of the 23 species recorded from Alberta, 9 or 40% are considered rare species (known from very few specimens and no more than 3 sites in Alberta in the past 50 years).

Over the past 3-4 years Chris Schmidt and I spent an inordinate amount of time and energy focused on several species of Flower Moths, not only in Alberta but also in southern Saskatchewan and the Spruce Woods Provincial Park area of southeastern Manitoba. *(Continued on page 2)*

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Special points of interest:

- *Importance of insect collecting*
- *The rare flower moths*
- *The Gray Cactus-Moth*

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The ALG Position on Insect Collecting

Insect collecting is a valid pursuit that leads to a greater understanding and appreciation of insects and of the natural world. It contributes to their protection and ongoing security far more than it threatens them. By far the greatest threat to insects is habitat loss resulting from human activities. Of the many ways that humans directly and indirectly kill insects - urbanization, deforestation, land cultization, and pesticide use to name but a few - insect collecting is the only one that actually contributes to protecting insects, by increasing our understanding of them and the crucial roles they play in the ecosystems that sustain us. Insects are incredibly numerous and prolific, so the effects of collecting on their populations are minimal. Because we know little or nothing about most insect species, and they are very difficult to identify, it is necessary to kill and collect them to study them. Most insects cannot be identified reliably until they are examined under a microscope. Collecting insects is a vital part of most entomology research, including taxonomic, diagnostic, biodiversity, and pest management work. As well, most of the information critical to the protection of endangered insect species is derived from insect collecting

Valid insect collecting and research activities can be carried out by both amateur and professional entomologists. In fact, the distinction between "professional" and "amateur" is largely artificial, since virtually all entomologists are driven by a passion for the field, whether they are paid or not. Amateur collectors are often world-class experts contributing large amounts of valuable information.

We recommend that insect collecting be limited to sampling a population, not unnecessarily depleting it, and that restraint should be exercised where the health of a particular insect population is unknown. To ensure their value for scientific study, collected specimens should have locality and date information attached, and they should be safeguarded to ensure their long-term safety. Properly labeled and cared-for specimens are extremely valuable to scientific researchers; private collections should be made available to qualified researchers for examination, and when no longer required or wanted by the collector, they should be offered to a public facility where they will be available to future workers as well.

For some research, it is necessary to collect and rear specimens, or otherwise keep them alive for a time in captivity. Any such specimens that are returned alive to the wild, should only be returned to the region where they originated, in suitable habitat.

Collectors should always respect private property, and local regulations pertaining to controlled areas and species or habitat protection. They should always comply with provincial, federal, and international regulations regarding collection, possession, import and export of protected species and live material.

ALG does not support mass commercial collecting. The commercial market in insects is driven by a very few butterfly and beetle collectors who are not interested in the biological aspects of insects, but simply in the acquisition of specimens. ALG does not respect or condone that form of collecting, and draws a clear distinction between it and the many amateur hobbyists who pursue insects to learn more about them. The only "high-demand" insects in Alberta with any "market value" are a few species of high elevation mountain butterflies. Those species are already protected from overzealous collectors by provincial and national parks (whether this provides adequate protection from other threats in another matter).

The impacts of insect collecting are overwhelmingly positive. Any undue restrictions on this activity would be an impediment to scientific study, and ultimately to insect conservation. We wish to see insect collecting encouraged, rather than discouraged, so that we may more fully document the diversity of these wonderful and fascinating creatures.

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The author caring properly for the days catch at Slave River (photo D. Macaulay).

(The Rare Flower Moths of Alberta — continued from page 1)

The impetus for all this effort was, of course, funding. Both COSEWIC and ACA provided funding for us to prepare status reports on several species of these little moths, with some money actually allotted for field-work!. The species we specifically searched for and prepared status reports for included 4 species that are globally scarce: Verna's flower moth (*Schinia verna*), Gold-edged gem (*Schinia avemensis*), Dark-banded flower-gem (*Melaporphyria immortua*) and White flower moth (*Schinia bimatris*) – all but the last are found in Alberta. This year (2007) ACA provided additional funding for me to conduct additional searches in Alberta and to prepare a provincial status report for *Schinia verna*.

To this list of rare flower moths can be added another six species that are equally rare in Alberta, although most are more common south of the border and to the west. The number of Alberta localities for each is in brackets: *Schinia roseitincta* (1), *Schinia honesta* (1), *Schinia nuchalis* (1), *Heliothis zea* (2), *Heliothis acesia*s (1), and *Schinia suetus* (3).

Schinia roseitincta ***(photo: Moths of Canada Website)***

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(The Rare Flower Moths of Alberta — continued from page 2)

The Gold-edged gem is a sand dune specialist – and is found only in active sand dunes and sand blow-outs associated with it's larval host – an annual native sunflower that also forms colonies on these shifting sands. It still thrives at the type locality in the Spirit Dunes at Spruce Woods Provincial Park in Manitoba, the only locality in Canada where this species was known when I set out to look for it in 2004. The only other place where this moth was known to occur was in dunes in 2 or 3 locations in southern Wyoming and Colorado, but specimens from there are larger and darker and there was some doubt that these were the same species. During fieldwork in 2004 I located a single specimen in the Burstall dunes in Saskatchewan, while at almost the same time Chris discovered a colony in a blowout at "Dune Point", north of Bindloss in Alberta. Chris later discovered an old Alberta specimen hiding in a batch of unidenitified micromoths in the Strickland Museum, collected in 1929 by none other than E.E. Strickland himself, thus removing any doubt that are not recent arrivals and have been here all along. The following year I located a second larger colony in the Pakowki Lake dunes, making Alberta the only province with more than a single population. I visited both the Spirit Dunes and Pakowki dunes in 2007 and was pleased to find these little moths busily going about their business at both sites. The Gold-edged gem has since been formally assigned Endangered status by COSEWIC and is now a protected species under SARA legislation.

Verna's flower moth is a puzzling moth found in a rather common habitat – grazed native prairie pasture where the host plant pussytoes (*Antennaria* sp.) is blooming in the northern grasslands and Aspen parklands region from southwestern Manitoba to central Alberta. Since being discovered and described relatively recently, in the early 1980's (again at Spruce Woods in Manitoba by David Hardwick) only 4 additional specimens have turned up – a single historic specimens from Medicine Hat, collected by F.S. Carr in 1929 and now residing in the Smithsonian collection in Washington DC), at Saskatoon Saskatchewan in 1980, and two Alberta specimens that I collected in 2003 (Jenner bridge) and 2007 (Alliance). This little moth flies with and uses the same host plant as the much more common and widespread flower moth *Etricopis nexilis,* the White-spotted midget. In life *verna* looks and acts very much like *nexilis,* and has proven to be essentially impossible to identify in the wild. It is not until you look at the ventral surface that the difference in the two species becomes obvious. Only Hardwick, who discovered and described it, has knowingly seen it alive. Even he did not know what he had when he collected the first specimens, until he removed what he thought were specimens of *nexilis* from his killing bottle. Both the recent specimens from Alberta were thought to be *nexilis* when captured, and were not recognized as being *verna* until later, in spite of the fact that I was searching for *verna* at the time I caught the second specimen. I strongly suspect that *verna* will be found in other Alberta pastures with additional searching, in particular if as many specimens of "*nexilis*" as possible are captured and examined. Verna's flower moth has recently been assigned "Threatened" status by COSEWIC and is thus also protected under SARA..

***Golden-edged Gem*, Schinia avemensis**
(photo T. J. Simonsen)

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The Dark-banded flower gem (*Melaporphria immortua*) is a true enigma. No one has encountered this species in Alberta since Bowman collected three specimens in the Edmonton area over a 23 year spread between 1919 and 1942, all in late May. It also appears to be globally rare – although specimens have been found over a huge area - New England south to Florida, west to Alberta, South Dakota, Colorado, Oklahoma and New Mexico!. In Canada it has been collected in southwestern Manitoba, at several sites in Saskatchewan and central Alberta. Bowman also listed Zone 7 (Lloydminster area) as an Alberta site for *immortua* We were unable to locate any Alberta specimens from Lloydminster, but did locate single specimens from Lloydminster SK and nearby Harlan SK in the CNCI and BMNH collections. In eastern North America it has been collected in sandy pine barrens; in the west in the grasslands and parklands regions, but the specific habitat associations remain poorly understood. Every 20 or 30 years somewhere in North America a specimen pops up, proving that it still exists! The last Canadian specimen was collected at Glenboro MB in 1979 by David Hardwick, and the only specimen reported since is a single specimen collected in the Oklahoma panhandle in 2003 (Schmidt & Anweiler, 2004). The host plant and early stages remains unknown.

The prettiest *Schinia* of the bunch is *Schinia roseitincta,* also one of the smallest with a 2 cm wingspan. *Schinia roseitincta* occurs from southeastern Manitoba and the Black Hills of South Dakota west to southeastern Alberta, Montana, Colorado, Utah and New Mexico. The only Alberta record is a single specimen found by Ted Pike in the badlands near the Jenner bridge last year (June 2, 2006). According to Chuck Harp the larval host is *Tetraneuris acaulis* (Pursch) Greene (stemless four-nerve-daisy, stemless hymenoxys or rubberweed) a common yellow composite flower in the badlands at Jenner. Chuck has found and collected adults on the blossoms of *Tetraneuris* in the evening, but most specimens have been collected in UV traps, as was Ted's specimen. Personally I think that walking round in the badlands of the Red Deer River valley in the evening. checking rubberweed blossoms for little rose-colored *Schina* is about as pleasant an activity as can be imagined.

Schinia honesta is another species known in Alberta from a single specimen. It is a checkered black and white diurnal moth – similar to and apparently closely related to *Schinia verna*. It has a fairly wide range in the mountains of western North America, but the host plant and early stages remain a mystery. The single Alberta record is a specimen Dr. Dave caught on July 14, 2000, on the sage-covered slopes of Windsor Mountain, in the mountains south of the Crowsnest Pass.

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(The Rare Flower Moths of Alberta — continued from page 3)

Schinia nuchalis is a rather drab but interestingly patterned grey-brown and white moth. It is a diurnal species that uses the same hostplant, wild Tarragon (*Artemesia dracunculus*) as does the Badlands swallowtail (*Papilio machaon dodii*).. Appropriately enough one of the few Canadian specimens was reared from a larvae collected at Kamloops BC on this plant by Felix Sperling himself, a man who has spent much time searching the Tarragon patches for swallowtail larvae. I have never encountered *nuchalis* in life, and it is added to the Alberta fauna based on two old collections from Lethbridge, way back in 1929 and 1936! It is very closely related to the European *S. scutosa* (The Spotted Clover), and until recently they were thought to be conspecific.

Schinia suetus is known from only 3 or 4 specimens collected in the Lethbridge area. Oddly enough, two of these were collected in traps baited with lures for *Peridromia saucia*, a large and destructive moth also known as the Variegated Cutworm. *Schinia suetus* ia is a small diurnal species with reddish or greenish brown forewings and coal black hindwings with 2 white spots. The larval feed only in the flowers and seed pods of various species of lupines.

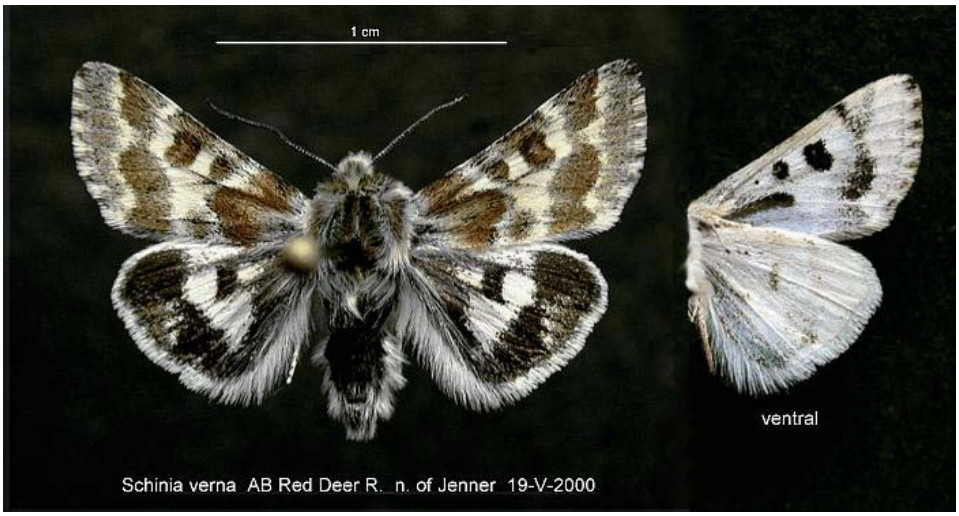
The last two species are not usually thought of as flower moths per se, but are members of the subfamily Heliothinae nevertheless. The first is *Helicoverpa zea* – the Corn Earworm – one of the most widespread and destructive agricultural pest moths in existence. Fortunately is only makes it as far north as Alberta late in the year, as rare migrants or offspring of migrants from further south, and unable to overwinter here. I am aware of only 3 Alberta records – one from the Calgary area in the 1920's and two recent specimens collected at the Tolman Bridge Recreation Area in the Red Deer River valley by both Charley Bird and myself.

Last and possibly even least is *Heliothis acesias,* another rare flower moth about which we know almost nothing. The early stages and larval host plant(s) are unknown. It is closely related and more common *H. phloxiphaga*, which is nocturnal. Unlike *phloxiphaga* which has white hindwings, the hindwings of *acesias* are usually yellow. It is added to the Alberta list based on a single specimen in the CNCI collected in 1928 and labeled simply "Dunes, Alberta".

Anyone collecting in the southern half of the province should watch for these interesting and often beautiful little moths. I would also like to hear from anyone who has additional Alberta records for any of the species discussed here. There are also a number of additional species that occur in adjacent Saskatchewan and Montana that may well turn up here as well. All the Alberta species are (or will be shortly) illustrated in color on the Strickland Museum Virtual Museum site, as well as on the Moths of Canada website.

Happy Hunting

Gary Anweiler, October 3, 2007



(Photo G. G. Anweiler)

Look Out For the Gray Cactus Moth

Text and photo by Thomas J. Simonsen, editor ALG NEWS

Compared to south-western USA and Mexico, Alberta may not seem the most obvious place to look for moth and other insects associated with cactus. Nonetheless, the prairies and especially the badlands of the south-eastern part of our province have, as many will know from painful experience, quite a healthy population of cacti. Of the three species found in Alberta, the most common are the two Prickly-pear species Fragile Prickly-pear (*Opuntia fragilis*) and Plains Prickly-pear (*Opuntia archantia*). Fragile Prickly-pear even occurs close to 61°N in the Peace Country, the northern most wild cactus population in the world.

A whole group of phycitine Pyralidae are associated with cactus as larvae: mostly as borers in the stem, pads and fruit. The best known example is probably the "true" Cactus Moth (*Cactoblastis cactorum*), a moth native to southern South America that has been used to control invasive cactus weeds with great success. Though *C. cactorum* has accidentally been introduced to Florida and is spreading in south eastern USA, there is no risk that it will make it to Alberta. Our winters are too cold and long (but with global warming – who knows?).

But Alberta has its own cactus moth. *Melitara dentata* a large, generally gray moth with a wingspan up to 5.5cm occurs widespread and common throughout the prairies of Alberta. It has not yet been recorded from the Peace Country, but since Fragile Prickly-pear is one of the species' preferred host plants, it could easily bee there. Keep looking for it! But there is another, rarer and more elusive cactus moth in Alberta. *Melitara subumbrella*, a close relative of *M. dentata* does seem to occur in the southern most part of the province. A specimen was collected and identified by Bowman in (or near) Medicine Hat in 1949.

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What is the ALG?

The Alberta Lepidopterists' Guild (ALG) is a non-profit society made up of amateur and professional Lepidopterists. Our objective is to support and encourage the study and appreciation of Alberta Lepidoptera (butterflies and moths). We coordinate research projects, facilitate the exchange of information among members, and host events where people can collect and look at Lepidoptera and exchange information and ideas. We have an elected executive, and hold at least one annual general meeting to handle society business. We also host a members-only electronic bulletin board, and numerous scientific and social events throughout the province.

Alberta is a province in western Canada which includes a diverse range of habitats, including mountains, boreal forest, and prairie. Over 3000 species of butterflies and moths are thought to live here; so far about three-quarters of these are known.

We are on the Web: http://www.biology.ualberta.ca/uasm/alg/

(Look Out For the Gray Cactus Moth — continued from page 4)

The Common Cactus Moth,* Melitara dentata *note the fairly elaborate wing-pattern

The Gray Cactus Moth,* Melitara subumbrella, *note the almost absence of any wing-pattern (live specimens usually have more antennae).

Though this specimen today is in the E. H. Strickland Entomological Museum at the University of Alberta it has apparently avoided the eye of entomologists for more than half a century, and the "official" northern limit of *M. subumbrella's* ditrubution is Wyoming and central Idaho (Neunzig 1997). When I was going through the E. H. Strickland collection of *M. dentata* earlier this year, I discovered that several specimens from southern Alberta were actually misidentified *M. subumbrella*.

Both *Melitara* species are large, robust micro moths that superficially look more like medium-sized noctuids (especially when pinned) than phycitine Pyralidae. But almost all phycitines rest in a very characteristic position with their wings coiled cigar-like around the body and the antennae pressed flat against the back. The two species are superficially quite similar with broad, white hind wings with a more or less distinctive gray margin, and long but fairly narrow gray forewings, sometimes with a warmer, yellowish cast. But whereas *M. subumbrella* has uniform gray forewings, at most with a single discal spot, *M. dentata* has a more or less elaborate, black zigzag cross-pattern and almost always a black spot close to the wing tip. Another good way to tell the two species apart is their flight period. In Alberta *M. subumbrella* flies from mid May to late June, whereas *M. dentata* flies from mid-late July to early October. So, if you are out collecting in south eastern Alberta in May or June keep an eye out for the gray cactus moth. I am currently revising the genus distribution in western Canada and will highly appreciate any records of both species.

Lit.: Neunzig, H. H. (1997). Pyraloidea, Pyralidae (Part). MONA Fascicle 15.4