



ALBERTA LEPIDOPTERISTS' GUILD NEWSLETTER

Spring 2023

Welcome to the ALG Newsletter, a compendium of news, reports, and items of interest related to lepidopterans and lepidopterists in Alberta. The newsletter is edited by John H. Acorn, and it is published twice a year, in spring and fall.



A very early spring Western White, *Pontia occidentalis*, at McKinnon Flats just east of Calgary, AB on April 23, 2022. Photo: R. Bercha.

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Lepideditorially Speaking

John Acorn



I've been at this for some time now. Since the spring of 2014, in fact, making this my tenth year as editor. Perhaps it's time for another editorial.

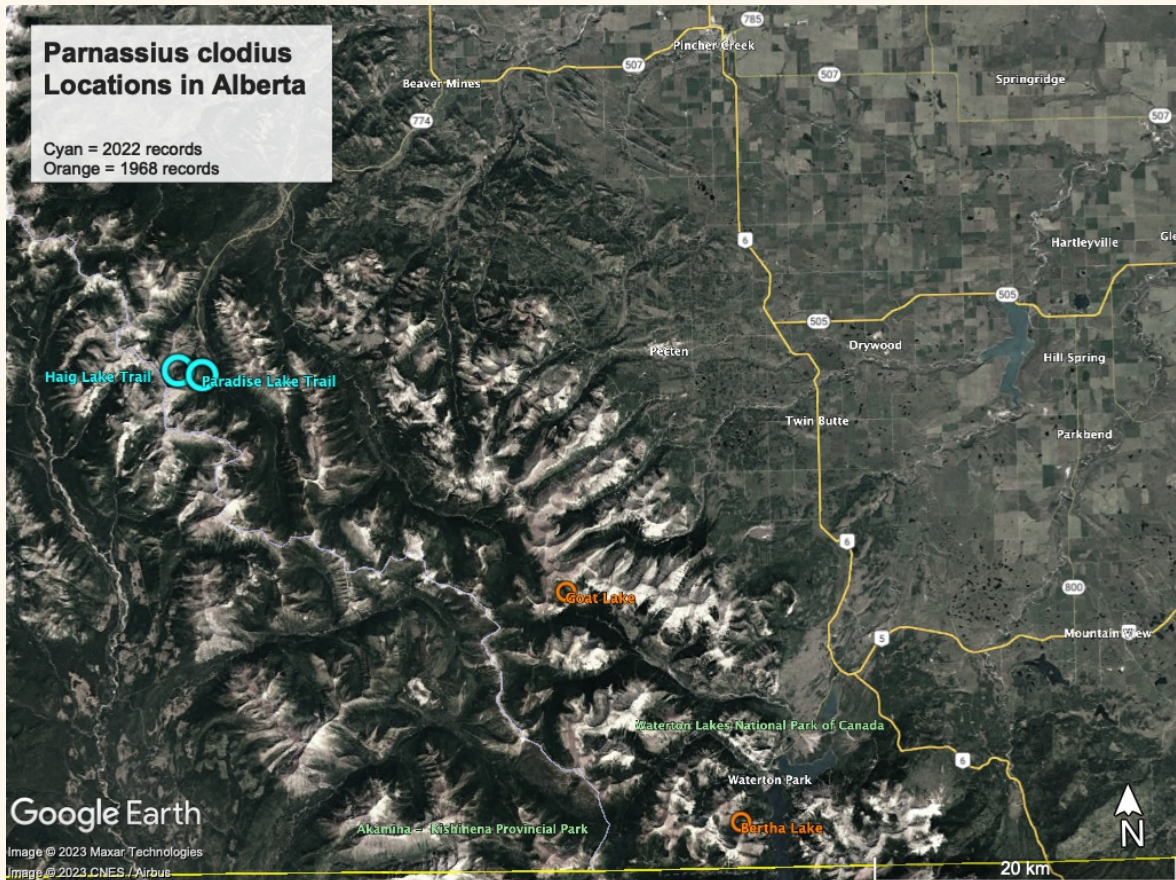
The ALG Newsletter is, in my opinion, a wonderful thing. It is old-fashioned in style, but that is what gives it that "official" feeling. Things in the Newsletter are somehow more permanent than postings to the email list, or the Facebook page. That, it seems to me, is good.

Thankfully, submissions continue to come in, at a more or less steady rate, generally with more in the fall than the spring, as one might expect. This issue is no different, with two fine articles, and a number of shorter pieces as well. I am grateful to all who write for the Newsletter, and I'm happy to receive submissions from new authors, or to help develop ideas if anyone is interested. Speaking of which, we haven't had any poems for a while. Any poems out there?

For the most part, I'm a pretty easy-going editor. I do have some pet peeves, though, such as avoiding specific epithets with no associated genus,. I also try to correct grammar where it is needed, but other than that, I try to let authors have their own styles, even with respect to how they cite their references. I hope that doesn't trouble any of our readers (and why would it?). There is one issue that keeps coming up, however, and that is the standardization of species names, both scientific and English. My preference has been to let authors choose the names they use, but I realize that this results in some taxonomic controversies. For the next issue, I am planning a list of butterfly synonyms, in the hopes that it will help bring our authors up to date. We'll see. In the meantime, keep writing, and happy ALGing to you.

Clodius Parnassian (*Parnassius clodius*) found again in Alberta, 54 years after the only other records!

Dave Lawrie



Last summer, Gerry Hilchie, Vic Romanyshyn and I managed to find *Parnassius clodius* in Alberta. This was the first sighting of the species in the province since 1968. The map above shows all known locations, to date. This finding raises some questions about the status of *P. clodius*. Specifically, is this an extremely rare resident species or just an occasional stray? Why hasn't it been seen in all that time?

Let's consider the 1968 records first. Gerry Hilchie and I managed to track down the actual Waterton specimens. They are both males and, to me, slightly worn, meaning they'd been flying for a while. The collection data is (both by D.G. Wales):

Waterton Lakes National Park, Bertha Lake, 5800', August 1, 1968

Waterton Lakes National Park, Goat Lake, 6500', August 12, 1968

Goat Lake is about 20 km NW of Bertha Lake. With this data, we have two widely separated slightly worn singleton males. No records of females. To me, this

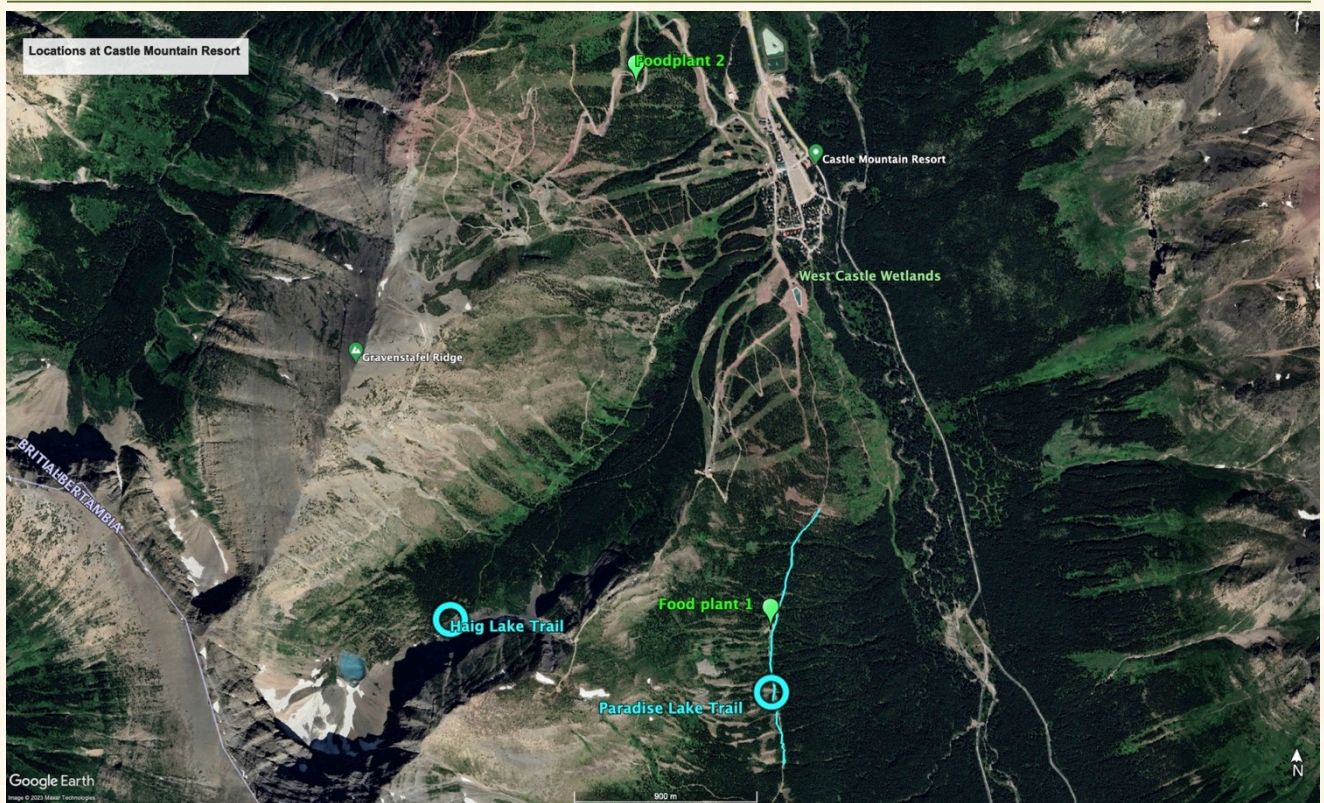
suggests strays rather a resident population.

Now let's consider our findings last summer. Gerry, Vic and I have been visiting the Castle Mountain Resort area for the past four years, typically July 14 to 17 or so. A summer trail map can be found here: <https://www.skicastle.ca/summermaps/> Despite the same calendar dates, the species seen each year vary greatly depending on the general weather. We are usually interested in finding high alpine (above tree line) species and Haig Lake is the spot we usually visit first. 2022 had a cool wet spring and the butterfly season was just starting at Haig Lake on July 15, with only 14 species of butterfly seen. In contrast, we saw 31 species on the same hike in 2021. Only five species were common to both years. This observation will be relevant later.



The details of our finding of *P. clodius* have been reported in the previous (Fall 2022) ALG News. For the discussion here, the important points are:

1. Both Gerry and I thought we were seeing female *P. smintheus* flying, and it was only after I caught a voucher specimen that we realized that it was a male *P. clodius*. This despite the fact that we have both found *P. clodius* multiple times outside Alberta. It just “wasn’t on our radar” that morning. Similarly, Vic didn’t recognize what he’d found the previous day, it was only after it was pinned up that he suspected what he had.
2. Between the three of us we collected eight specimens (all fresh males) and saw at least 10 others over three days.
3. All the locations we observed *P. clodius* were significantly below treeline, and had lots of rocky open areas. None were observed around Paradise Lake itself.
4. No *P. smintheus* were seen in 2022, but many were seen in 2021.



These locations are plotted on the map above. It shows the locations of Vic's and my first specimens as cyan circles and the cyan line along the Paradise Lake trail shows the section where *P. clodius* was observed in the adjacent avalanche chutes on July 16 and 17. The two sites are about two km apart and about 30 km NW of Goat Lake.

Gerry identified a species of *Corydalis* on the Paradise Lake trail as the likely food plant of *P. clodius*. Matthias Buck was in the area just prior to us and observed the same species of plant, *Capnoides* (formerly *Corydalis*) *sempervirens*. His iNaturalist observations are plotted on the map above as foodplant 1 and 2.

Matthias wrote to me:

Dear Dave,

I finally got around to uploading my observation of *Capnoides sempervirens* from the West Castle Valley:

<https://inaturalist.ca/observations/144340897> . This species used to be in *Corydalis* but was moved to its own genus. I think it is probably the host plant for *Parnassius clodius*. There is only one other *Corydalis* in Alberta, *C. aurea*. I don't see many observations from the southwestern corner of Alberta on iNaturalist even though it is a conspicuous plant:

https://inaturalist.ca/observations?place_id=6834&subview=map&taxon_id=76451

During my three weeks in the mountains I never saw any, either, despite

being very attuned to the flora the entire time. *Dicentra*, another genus in the same family that is mentioned as a host plant for *clodius*, does not occur in Alberta. So *C. sempervirens* is likely it. I am mentioning this to you because you are doing a write-up on *clodius* for the newsletter. If you would like to use any of my images please feel free to do so! I think it would be good to familiarize the gang with this plant so we can keep our eyes open for it. I saw it only twice so it does not appear to be very common, either.”

His second observation is <https://inaturalist.ca/observations/145314955> and here are 3 pictures:



So what do these new observations say about *P. clodius* in Alberta? The numbers observed over three days along with the confirmed presence of a possible foodplant strongly suggests that there is an established population at the Castle Mountain Resort. However no females were observed, nor were any caterpillars, or evidence of feeding on the foodplants.

As to why it hasn't been seen in all this time, Vic, Gerry and I have been to Haig lake for the last four summers and only found it once. But we've rarely spent much time in what we now know is the preferred habitat. Other people have definitely looked as well. In 2005, the Waterton Bioblitz, 6-13 July, was organized by the Biological Survey of Canada and a number of ALG members participated. Chris Schmidt and I visited Bertha Lake twice (July 9 & 10) but didn't see any. Various other ALG folks were out looking, but didn't see any. I was able to return on July 28, 2005 and again visited Bertha Lake. In both cases very little time was spent on the

lower sections of the trail. Waterton NP holds a Butterfly count each summer, with help from a number of ALG members, and they've never recorded *P. clodius*. The count runs the second Friday following the Canada Day long weekend, which works out to about the same calendar dates that Gerry, Vic and I have been visiting the Castle Mountain Resort. They have standardized count sites, and it is my suspicion that all the sites are a bit low altitude / not suitable habitat for *P. clodius*.

My conclusion, assuming that *P. clodius* is a regular breeding resident in Alberta, is that no one has been looking in exactly the right habitat at exactly the right time. A pretty obvious conclusion. We got lucky last summer, and found it by chance. Two factors came together for this. My suspicion now is that in average years the *P. clodius* peak flight is late June and last year's cool late spring delayed that peak into the usual time we have been visiting Castle Mountain Resort. Additionally having found the season barely starting at Haig Lake, Gerry and I spent more time exploring the lower parts of the Paradise Lake trail, rather than our usual "speed walk" to the high alpine. If we'd been on our speed walk, we likely would have zipped by saying "Look female *P. smintheus*!" Which is exactly what I told Vic he'd caught without even looking at his specimen on the previous day.

An alternate possibility is that *P. clodius* is not a regular breeding resident in Alberta, but occasionally strays into Alberta in favourable years. We had a very hot summer in 2021, and this could perhaps have allowed a female or two to reach the Castle Mountain area in 2021, and we found her offspring in the summer of 2022. The 1968 records for Waterton could perhaps be explained similarly. Anyone know how to find out what the summer of 1967 and the spring of 1968 were like in Waterton NP?

All things considered, I'm fairly confident that there is a breeding population of *P. clodius* at Castle Mountain Resort. I would like to see females and even caterpillars found there for confirmation. Now that we have a better idea of what to look for and timing, there's a good chance that *P. clodius* could be found at various locations in SW Alberta, including Waterton.

There are two *P. clodius* records for 2022 on iNaturalist from about 15 km SW of Bertha Lake across the US border in Glacier National Park:

<https://inaturalist.ca/observations/129749544> and

<https://inaturalist.ca/observations/141992989>

Both seem to be females, were observed July 30, 2022, and are from slightly higher elevations. It is possible that we didn't see any females in 2022 since we were slightly too early in the flight season for them.

My goal in writing this article is to share the information and experience that Gerry, Vic, Matthias and I now have in finding *P. clodius* and its foodplants in Alberta, in the hope that others will look for, and more easily find, additional occurrences.



What to look for? The photo above shows the view looking up an avalanche chute on Paradise Lake Trail. The elements to watch for are:

1. Open rocky meadows, gullies/avalanche chutes and slopes at middle elevations in forest. Not above treeline.
2. The foodplant(s), as mentioned by Matthias.

When? Anytime! Earlier on years with a hot early spring and later on ones with cold wet ones. My guess would be late June for an average spring. My suspicion, at least at the Castle Mountain Resort is that if *P. smintheus* is flying at Haig Lake, then it is too late in the season, but if *Pontia sisymbrii* (Spring White) is flying there then *P. clodius* should be flying lower down as well.

Fanatical type folks could try looking for late instar caterpillars early-mid June. “The caterpillars are nocturnal feeders and hide at the base of the hostplant during the day.” (Peterson Field Guide to Western Butterflies, J.W. Tilden & Arthur C. Smith, 1986). See here for pictures of the larvae:

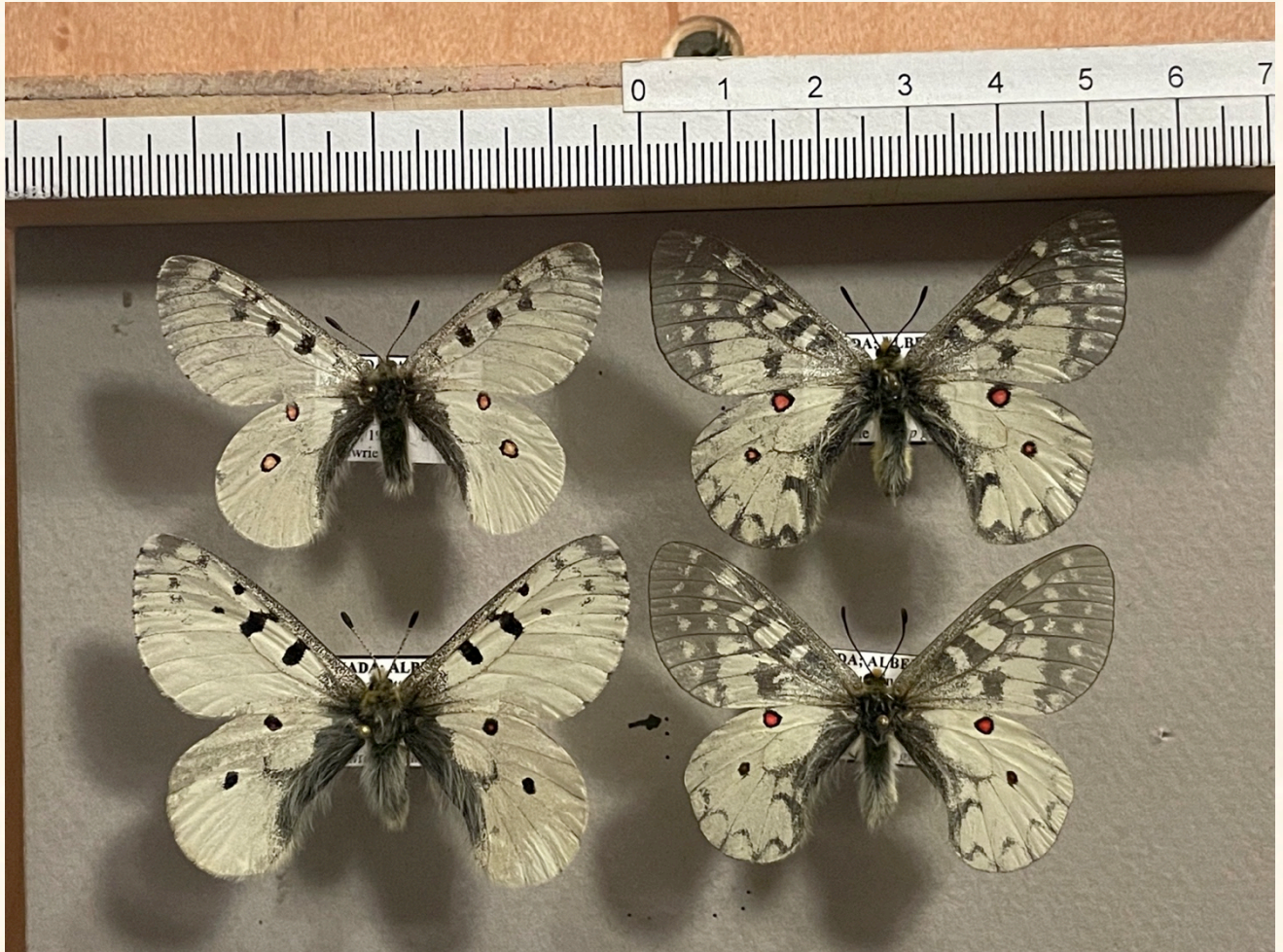
https://www.butterfliesofamerica.com/L/parnassius_c_clodius.htm

Once you’ve found adults, how to tell the difference between *P. clodius* and *P. smintheus*? The most definitive key is that *P. clodius* has completely black antennae while *P. smintheus* has black and white striped antennae.

Below, *P. smintheus* is on the left, and *P. clodius* is on the right. Both are males.



P. clodius also has more extensive dark markings on the upper side forewings and these areas are somewhat transparent. *P. smintheus* has much whiter upper side forewings and may have some red spots as well. *P. clodius* never has red on the upper side forewing. Below, *P. smintheus* is on the left, *P. clodius* is on the right. All are males. Scale is in cm.



Now to end on a perhaps surprisingly positive note, what about the fact this is a ski resort? Isn't any sort of human disturbance "bad" for the "Natural Environment"? The Castle Mountain Resort is a Public Land Use Zone (PLUZ), and is not part of the new Castle Provincial Park.

In another communication from Matthias, he says:

"... I think your best chances are to look for the host plants which aren't very common. Both *Capnodes* that I found were growing in rocky spots that were created by road cuts (lots of those around the ski resort!). I think the human disturbance actually created favorable conditions for the host plant, which might benefit *clodius* as well (if it becomes established)."

Later we discovered that the area above the Paradise Lake trail is used for Cat Skiing and almost all of the chutes are named ski runs. The top picture at right is a Google map view rotated to match the ski trail map at the bottom. Paradise Lake trail becomes Ski-Daddle trail in winter! As a result, this portion of the trail is regularly maintained, hence various road cuts.

Avalanche chutes are a disturbed habitat that go through a succession of vegetation depending on the frequency and severity of the avalanches. In forested areas with infrequent avalanches the forest may regrow completely eliminating the open habitat favoured by the pioneer species.

Gerry and I climbed part way up a couple of the avalanche chutes. They are very steep! We saw some evidence of brush clearing = branches cut back from the edges of some of the chutes, keeping them open for use as ski runs, and also for various wildlife! It therefore seems that a ski resort may provide and maintain valuable habitat.

I encourage folks to use the information presented here to help in their own searches for this elusive critter and report back to ALG!

Many thanks to Gerry, Vic, and Matthias for all their help!



Ellis Bird Farm 2022 Butterfly Count Report

Naia Holtom and Delano Lewis



Introduction:

Butterfly counts create a simple way to monitor biodiversity trends. Citizens can participate in butterfly counts, positively contributing to worldwide model citizen science. Ellis Bird Farm (EBF) in Central Alberta is a prime location for citizen-lead butterfly counts. EBF is known in the community for hosting butterfly counts at its Bug Jamboree, which takes place in July/August of every year. Bug Jamboree data has been collected once a year for the past 22 years. Many members of the Alberta Lepidopterists Guild have been a fundamental part of the count, members including Dave Lawrie, John Acorn, Charles Bird, Benny Acorn, and many others have participated in the counts. Delano Lewis is an entomologist (lepidopterist) who is currently an associate professor at Burman University in Lacombe, Alberta. Dr. Lewis was introduced to the annual Bug Jamboree at EBF and, after talking with Sandy Van Dijk, was inspired to set up his own butterfly count at EBF. The butterfly counts have evolved into a summer-long process that is hoped will provide longitudinal data for years to come, a plan supported by the current EBF manager and biologist Carolyn Ross. For the 2022 sampling season, Dr. Lewis was joined by Naia Holtom, a 2nd year Burman University Biology major and Andre Sanchez, a recent graduate from Burman who is currently a graduate student at the University of Toronto. Dr. Lewis has also secured funding from TD Friends of the Environment for 2023 to implement a community science butterfly count where community members will be trained and assist in counting butterflies over the summer.

Methods:

Methods follow Lewis (2022) but with a slight modification of the spreadsheet to increase the size of the reference images and row sizes to aid in easier identifications. An undergraduate student and a recent graduate from Burman University were trained to conduct the butterfly counts. The observers walked, maintaining a constant pace, occasionally pausing to record data or venture to get a more detailed look at a butterfly so species could be determined. The loop that was used last year was utilized again this year (Lewis, 2022). Walking the loop took about 1 hour, reaching a distance of approximately 1 kilometer. The path begins at the main visitor's center and makes its way down the path past the pond and butterfly garden. Reaching the cafe and old visitors center through the parking lot, then down a path towards the entrance of the west woods. This path was chosen because it is convenient to access. Additionally, it provides several habitats for observing butterflies.

Results:

Butterfly abundance rose and dipped, reaching a peak abundance on the 11th of August; values then began to drop off until the 28th of August, with a slight increase on the last sampling day September 27th (Figure 1). In order of abundance, butterflies observed were *Thymelicus lineola* (European Skipper), *Pieris rapae*, (Cabbage White), *Coenonympha californica* (Ringlet), *Colias philodice* (Clouded Sulphur), *Glaucopsyche lygdamus* (Silvery Blue), *Aglais milberti* (Milbert's Tortoiseshell), *Papilio canadensis* (Canadian Tiger Swallowtail), *Cercyonis pegala* (Common Wood Nymph), Fritillary species (15 fritillary butterfly species were grouped together as one due to the difficulties in proper identification for this guild), *Erebia epipsodea* (Common Alpine), *Celastrina lucia* (Northern Azure), *Cupido amyntula* (Western Tailed Blue), *Polygonia satyrus* (Satyr Comma), *Danaus plexippus* (Monarch), *Polites mystic* (Long Dash Skipper), and *Nymphalis antiopa* (Mourning Cloak) (Figure 2). The top five observed species accounted for 85% of the total observations. This year top five species varied slightly from the previous year. This year's top five species ranked greatest to least were *Thymelicus lineola* (European Skipper), *Pieris rapae*, (Cabbage White), *Coenonympha californica* (Ringlet), *Colias philodice* (clouded sulphur), *Glaucopsyche lygdamus* (Silvery Blue). While last year the top five were *Pieris rapae*, (Cabbage White), *Thymelicus lineola* (European Skipper), *Colias philodice* (Clouded Sulphur), *Cercyonis pegala* (Common Wood Nymph), *Coenonympha californica* (Ringlet). From this year's observance *Thymelicus lineola* (European Skipper), *Pieris rapae*, (Cabbage

White) made up approximately 60% of the total butterflies observed, repeating data collected in 2021 as well as the 20-year aggregate (Lewis, 2022). This year there were fewer butterflies observed; in 2021 there were a total of 685 observed while in 2022, only 399 butterflies were seen. A percent difference of 42%. In addition to lower numbers of butterflies there were fewer species recorded during the 2022 counts. Reasons for these results are still being investigated. With a long term collection of data there will hopefully be patterns that will provide the reason for varying levels of butterfly richness and evenness over time.

Reference

Lewis, D. 2022. Ellis Bird Farm 2021 Butterfly Count Report. Alberta Lepidopterists' Guild Newsletter Spring. 2022: 18-22.

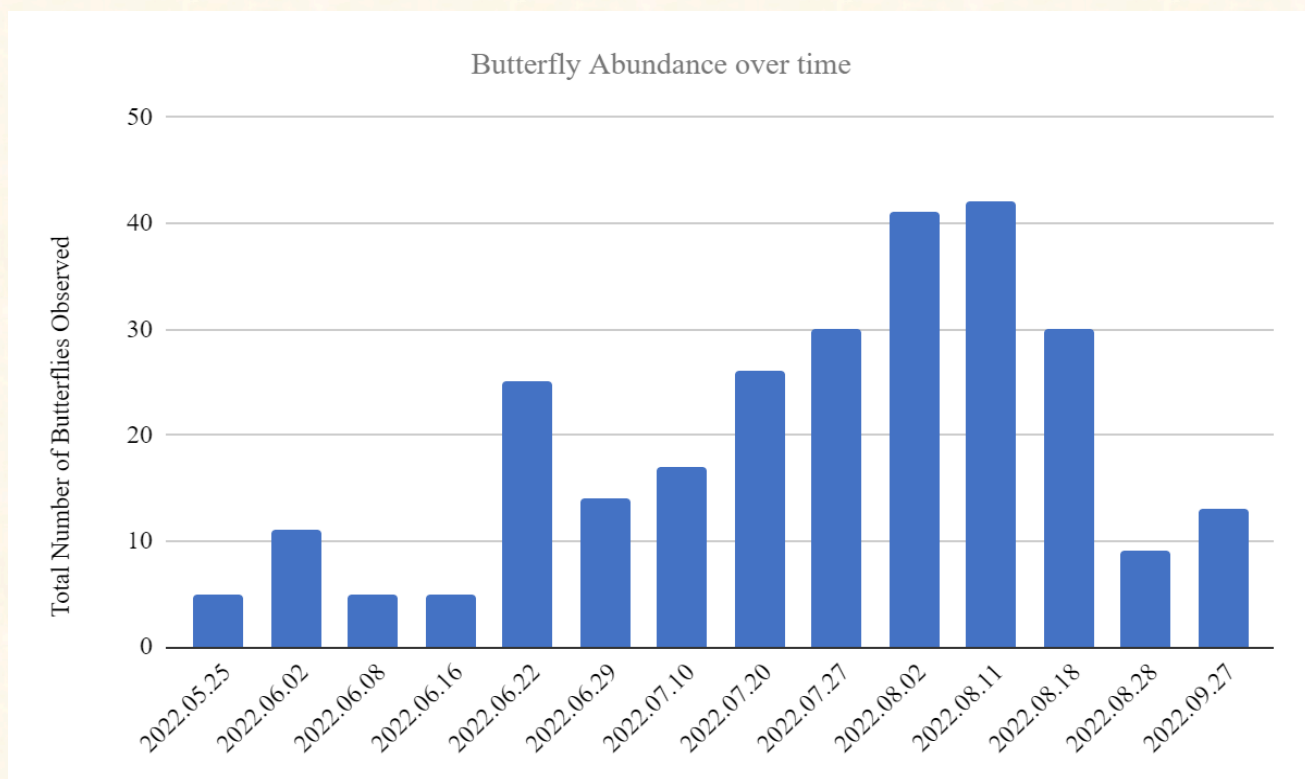


Figure 1. Butterfly abundance over time.

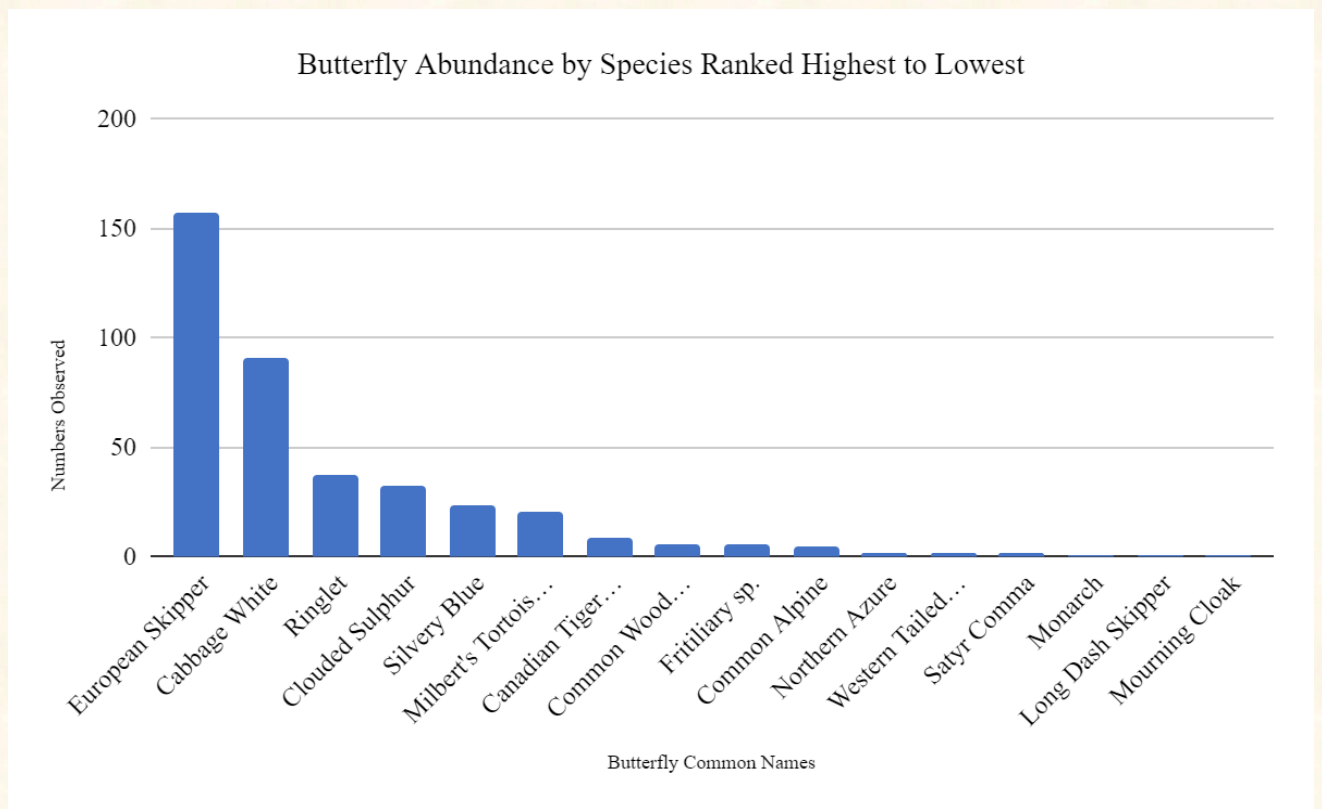


Figure 2. Butterfly abundance by species, ranked highest to lowest.



Some of the many Purple Martins at the Ellis Bird Farm.
Clearly they have not eaten all the butterflies. JHA

A Treasure of a Treasurer

Melissa Penney



A big thank you to Greg Pohl, our Secretary Treasurer for the last 23 years! Well, technically he got a break in there for a few years while he was President. But we'll let it slide. Greg has been the financial backbone of the Alberta Lepidopterist Guild since its inception. The value of having a consistent member of the executive can not be measured. The history, the growth and changes of our guild all have Greg to thank for being there and storing and organizing all of our data and money.

Not only has he been there for the ALG, his contributions to science are impressive and have put Alberta and The ALG on the map. Most recently his work encouraging citizen science has given many people, not only ALG members, the inspiration to record and share their observations. He is the key organizer of the City Nature Challenge for the Edmonton Metro Area, and has served on several committees that have furthered research and improved policies regarding lepidoptera.

There are few organizations who can boast having an executive member for so long, and arguably with the hardest job of all the executive! Thank you Greg for keeping us on the right path, since the beginning. We are so grateful for everything you have done. Welcome to Cheryl Tebby who will be taking over as our new secretary Treasurer!



Alberta Lepidopterist Guild

Photo Contest

April 1, 2023 - October 31st 2023

Voting will be done by the membership!

Contest details and instructions for entry at www.albertalepguild.ca

Entrants must be current
Alberta Lepidopterist Guild Members

4 Categories

Butterfly

Moth

Cocoons, Chrysalises and Caterpillars

Cell Phone Photos

1 entry per category

Prizes generously provided by



Graven W
photography



Please join us for the **71st Annual Meeting of the Lepidopterists' Society** as we gather in Billings, Montana and enjoy the wide-open spaces of the American West. The meeting will be held from Wednesday, July 19th to Sunday, July 23rd and will be hosted by the Lepidopterists' Society, the Northern Rockies Research and Education Services (NRRES, Lolo, MT), and the C.P. Gillette Museum of Arthropod Diversity (Colorado State University, Ft. Collins, CO). The area provides an outstanding array of scenery, western history, and opportunities for exploring a diverse flora and fauna while set in a modern city, rich in industry and innovation. Billings, the largest city in Montana, is nestled between ancient marine cliffs (the Rimrocks) to the north and the Yellowstone River (North America's longest, free-flowing river), to the south. Residents consider Billings "Montana's Trailhead," as recreational opportunities abound in nearby ranges, including the Beartooth Mountains, which boast a 10,000 foot high alpine plateau, and the older Pryor Mountains to the South.

Field trips will include both collecting and observing, which will feature both daytime and night collecting trips to the Beartooth and Hell-Roaring Plateaus, riparian sites along the Yellowstone River, and to the southern flanks of the Pryor Mountains with its impressive ecological richness and unique high-desert habitats. The region also hosts areas of badlands to the north of Billings and myriad public lands accessed via National Forest, State, and Bureau of Land Management properties.

The meetings and lodging will be held in the historic Northern Hotel located in downtown Billings and less than two miles from the Billings International Airport. Shuttle services are available from the airport. There are many other lodging opportunities across the city as well as camping areas in nearby towns.

The Executive Council meeting will be held Wednesday morning (July 19). The welcome reception will be at the Northern Hotel on Wednesday evening. The scientific program (talks and posters) will be scheduled for Thursday (July 20) and Friday (July 21), with Saturday morning available if needed. The annual BBQ will be held at a location just outside of town with an organized moth collecting/observing opportunity to follow the catered meal. The banquet will be held Saturday night at the Northern, again followed by an organized nighttime collecting trip after the meal. Dark skies come late (>10pm) this far north and collecting sites are always nearby and accessible.

More information on fees, registration and call for talks will be available in Spring 2023 via the Lepidopterists' Society website. A block of rooms will be reserved at the Northern Hotel for LepSoc members, with special rates for the meeting. The organizing committee consists of Mat Seidensticker (mat@nrres.org) and Marian Lyman with NRRES, and Chuck Harp (chuck.harp@colostate.edu) and Todd Gilligan with Colorado State University.

For more information, visit <https://www.lepsoc.org/2023-annual-meeting>. See you in Billings!



Paradise Lake (Castle Mountain Area) Matthias Buck

Some Upcoming Lepidoptera Events:

Dry Island Buffalo Jump Provincial Park Butterfly Count: July 9. Meet at the upper parking lot at 10:00.

2023 ALG Adventure: July 14-16 weekend, at the Castle Mountain Resort and nearby Public Land Use Zone. Check out the Castle Mountain Resort Website for information on accommodation. The resort has a hotel, hostel & RV camping sites, as well as entire cabins. Folks are responsible for making their own arrangements for accommodation. There is also camping in the nearby parks.

Whitehorse Wildland Park BioBlitz: July 14-16, 2023. The BioBlitz is sponsored by the Cardinal Divide Conservation Coalition. “We are specifically looking for a moss - Porsild's Bryum but will be recording all plants and animals that we can.”

Waterton Lakes National Park Butterfly Count: July 21 (or, if the 21st is rainy, the 28th). Contact the park for details.

Cardinal Divide Butterfly Count: Wednesday, July 26. Meet at Green Square in front of the Visitor Centre in Hinton at 10:00 am. Be prepared for a day outdoors. Butterfly nets are provided.

Whitehorse Wildland Park Butterfly Count: Wednesday, July 26. This is jointly sponsored by Alberta Parks (Scott Sunderwald and his staff) and the Whisky-jack Club (Hinton). We count butterflies along Whitehorse Creek and on the Cardinal Divide and enter everything into eButterfly.

Ellis Bird Farm Bug Jamboree: August 12, 11:00-4:30, at the Ellis Bird Farm near Lacombe. Various ALG members will be speaking and showing off the traveling collection.



How nice to see this trail, near Lacombe, named for one of ALG's founding members, Charley Bird! We look forward to seeing him at the Ellis Bird Farm Bug Jamboree in August. The area is very good for butterflies and moths, as one might expect. JHA

ALG Curation Party, and the 2023 Ferialia

ALG's Curation Parties continue to be a success, with various members working on their individual projects, and the potential for some outreach as well. They are held in the meeting room of the Calder branch of the Edmonton Public Library. Many thanks to Hilary Pittel for her work in organizing this event, and Melissa Penney for the photos below.

The 2023 mid-February Ferialia gathering was also a big success, hosted by Melissa Penney and her family, at their home. There is a real sense of community among the active members of the ALG, and we are thankful to those who help to bring us together.



Helen and Bruce Christensen



Dave Lawrie, Judy Weisgarber



John Acorn, Leah Jackson, Kristian Smits, Steven Penney



Greg Pohl, Judy Weisgarber, Barb Deneka



Melissa Penney, Monica and Daniel Glaeske, Bruce Christensen, Steven Penney, John Acorn, Brevan Wagner, Matthias Buck, Felix Sperling
Helen Christensen, Kelsey Bourgeois, Cheryl Tebby, Leah Jackson, Greg Pohl
Bandana Subedi, Kristian Smits, Hilary Pittel, Barb Deneka, Dave Lawrie



Hilary Pittel



Matthias Buck



Bandana Subedi, Kristian Smits, Leah Jackson



Dave Lawrie, Ofer Pittel, Hilary Pittel



Brevan Wagner



Monica and Daniel Glaeske



Norbert Kondla's Nymphalini Photographs.

Continuing a project begun in 2017, I am borrowing here from Norbert Kondla's work at the flickr site: <https://www.flickr.com/photos/118126948@N03/> with a selection from his images of Nymphalini (the "Papiliones angulati" and their relatives). Norbert has given me permission, and I consider this a fine opportunity to share some of Norbert's contributions.

John Acorn, Editor

Four *Vanessa/Cynthia*
© NG Kondla April 2013

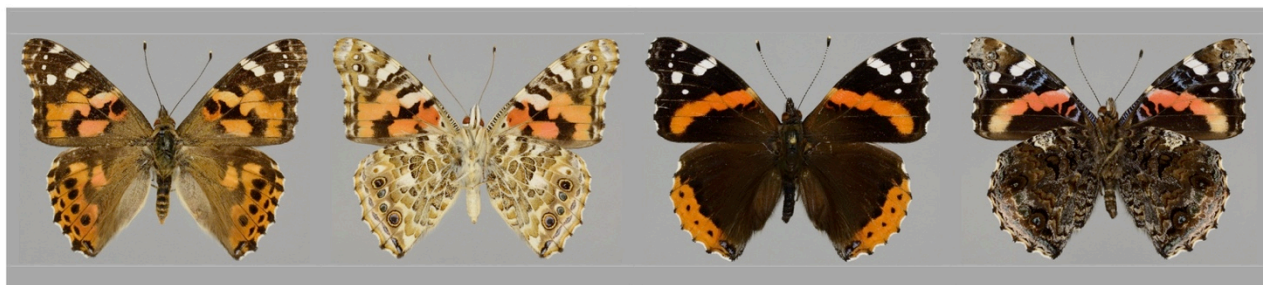
Cynthia annabella
1979-8-6 Hailstone Pass, Alberta leg NG Kondla

Cynthia virginensis
1976-6-12 Los Angeles, California leg R Wuttken



Cynthia cardui
1991-8-12 Cranbrook, British Columbia leg I. Janz

Vanessa (atalanta) rubria
2007-9-14 Savona, British Columbia leg DL Threatful

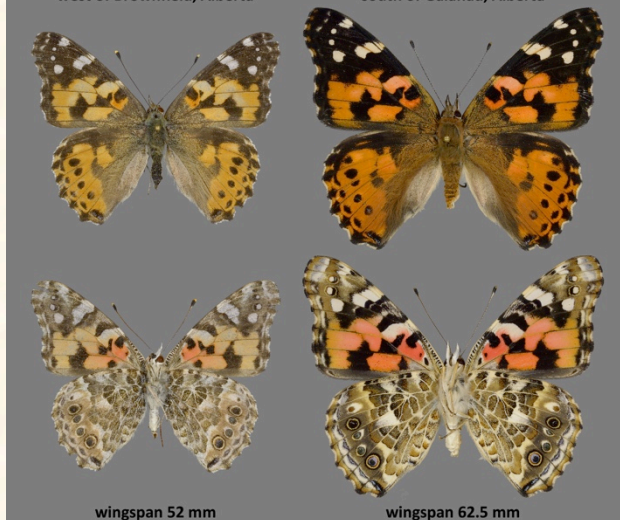


Note: In the literature *Cynthia* is often treated as a subgenus of *Vanessa*.

Old vs new *Vanessa cardui* – aka Painted Lady

2017-6-12 Battle River valley
west of Brownfield, Alberta

2017-7-25 Battle River valley
south of Galahad, Alberta



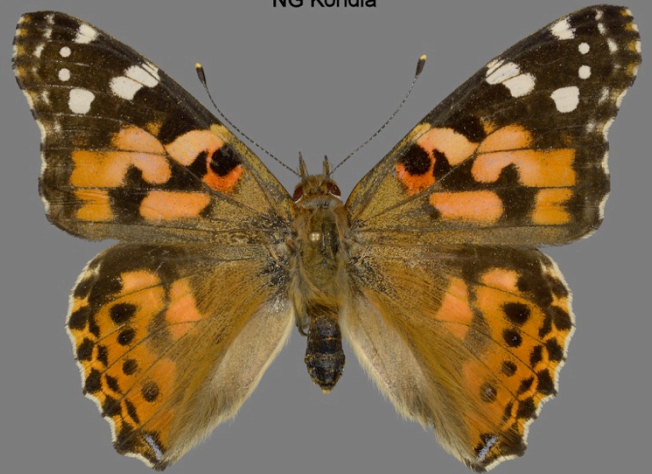
wingspan 52 mm

wingspan 62.5 mm

male *Vanessa atalanta*
2012-9-4 Oras Road, W of Rimbey, Alberta
NG Kondla



Vanessa cardui
2014-8-30 Beiseker, Alberta
NG Kondla



wingspan 59.5 mm



wingspan 58 mm

Darker vs brighter *Nymphalis antiopa hyperborea*
female specimens leg NG Kondla
2006-9-2 Red Deer River SW of Sundre, Alberta



wingspan 70 mm



wingspan 62 mm

Three *Nymphalis (Euvanessa) antiopa* specimens - males

antiopa

2006-8-20 Tenala, Finland
leg J Laiho

hyperborea

2005-8-19 nr Delta Junction, Alaska
leg NG Kondla

lintnerii

2007-6-28 Colome, South Dakota
leg R Patterson



wingspan 60 mm



wingspan 58 mm



wingspan 74.5 mm

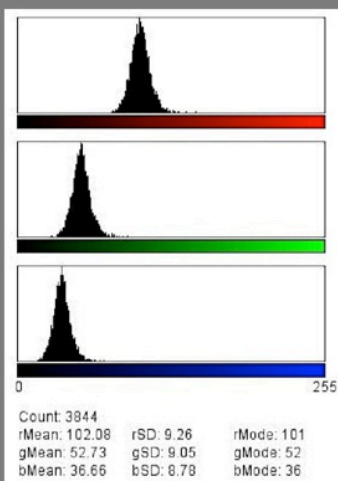
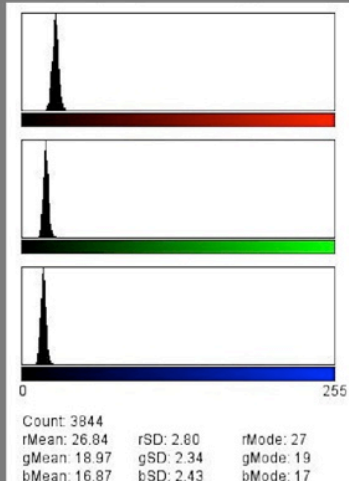


Pennsylvania *lintnerii* August 2010

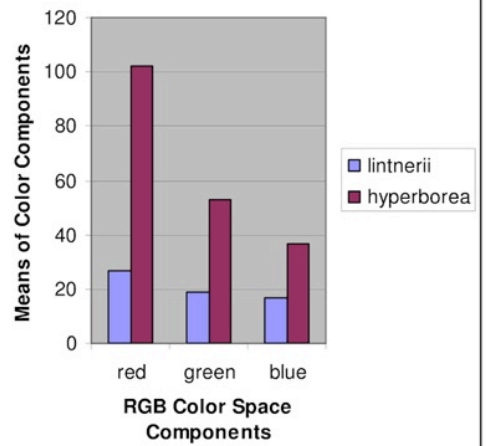
Alberta *hyperborea* October 2010



rgb histograms from forewing sample areas, ImageJ software



Pixel RGB Histogram Means



Four male cloaks
© NG Kondla December 2014

lintnerii
nr Geraldton, Ontario August 2012
leg R Foster et al wingspan 80 mm



hyperborea
nr Fairbanks, Alaska August 2011
leg K Philip wingspan 66 mm



lintnerii
nr Geraldton, Ontario August 2012
leg R Foster et al wingspan 75 mm



hyperborea
nr Fairbanks, Alaska August 2011
leg K Philip wingspan 62 mm



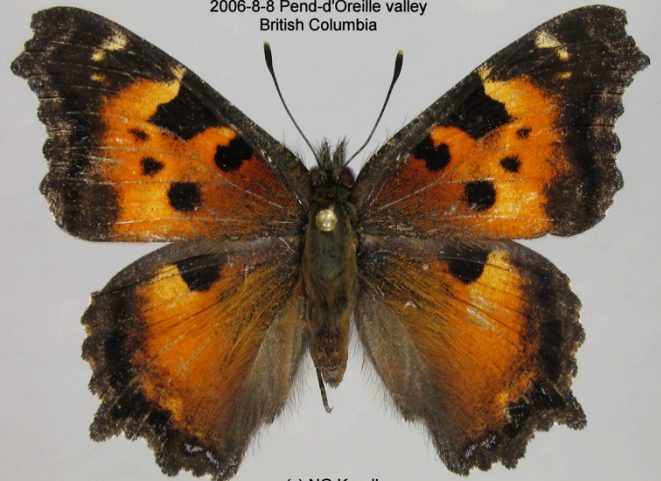
Note: fresh specimens kept frozen

genus *Roddia* type species
Roddia l-album
2002-8-2 nr Ekaterinburg, Russia
Y Shevvin



wingspan 56.5 mm

male upperside *Nymphalis californica herri*
2006-8-8 Pend-d'Oreille valley
British Columbia



(c) NG Kondla

male *Aglais milberti*
2011-8-17 Porcupine Hills, Alberta
NG Kondla



wingspan 41 mm

female *Aglais milberti*
2007-9-2 Calgary, Alberta
NG Kondla



wingspan 48 mm

female *Polygonia satyrus*
Red Deer River valley, E of Ya Ha Tinda, Alberta
2014-7-31
legit M Olsen



wingspan 48 mm

female *Polygonia oreas silenus*
2001-5-23 SE of Hope, British Columbia



wingspan 53 mm

hibernated male *Polygonia faunus ceneray*
2009-5-29 nr Bragg Creek, Alberta



wingspan 44 mm

female *Polygonia progne*
2012-8-13 Range Road 64, W of Rimbey, Alberta
NG Kondla



wingspan 52.5 mm

Polygonia gracilis 'nr zephyrus' - dark variant
2001-9-15 nr Rossland, British Columbia
NG Kondla



wingspan 44 mm

Polygonia gracilis ssp
2015-7-31 Limestone Mtn access road, Alberta
NG Kondla



wingspan 44 mm

Some Alberta *Polygonia faunus* females

Scale = life size on legal size paper; © NG Kondla March 2014
Specimens legit NG Kondla west and northwest of Rimbey, Alberta in August 2013



Notes: Largest wingspan 47.5 mm, smallest wingspan 42 mm, average wingspan 45 mm

Some Alberta *Polygonia faunus* males

Scale = life size on legal size paper; © NG Kondla March 2014
Specimens legit NG Kondla west and northwest of Rimbey, Alberta in August 2013

