A COLLECTING TRIP IN YUKON AND ALASKA

ALLAN H. LEGGE
Box 278, Okotoks, Alberta, Canada

During the summer of 1962, a companion and I had an extended opportunity to collect Lepidoptera in the Yukon Territory and Alaska. Much of the collecting, as might be suspected, was done along the Alcan Highway. Of greater importance, however, were a few less frequented areas which were also sources of material on this rather widespread trip. Despite the weather, which was miserably wet, we were able to take approximately 3,500 specimens. Thirty percent of these were in excellent condition. It is significant to note the capture of eight species of the genus *Erebia*: *fasciata* Butler, *theano* (Tauscher), *youngi* Holland, *erinnyn* Warren, *rossii* (Curtis), *epipsodea* Butler, *disa* (Thunberg), and *discoidalis* (Kirby). A good series of each of the first six species was taken. Viewing the trip as a whole, 56 species of butterflies were recorded.

Our take-off point was Calgary, Alberta on the 11th of June. Three days found us on the Alcan Highway and our collecting began. The first stop of note was Mile 162. Here was the first appearance of *Colias hecla* Lefèbre. As it turned out, we were to follow this species all the way to Dawson City, Yukon. In the next five miles we climbed 300 feet from the Sikanni River valley of Mile 162. This change in altitude was accompanied by a similar change in the species of butterflies to be found. The *Papilio glaucus* L. of Mile 162 were replaced by *Papilio machaon* L. Flying among the *machaon* was *Erebia discoidalis*. The few specimens of the latter that were taken at this location were found in the boggy regions of a burned over hillside which was at the edge of a thickly forested area.

By the middle of June we were on the Dawson–Mayo Highway at Mile 3.6 at which point three fresh *Oeneis jutta* ssp. were taken. At Mile 12.6 we had increased 2,000 feet in elevation. Here the grassy hillsides yielded an excellent series of *Oeneis chryxus caryi* Dyar. The 20th of June found us on the Dawson Highway and our first encounter with *Erebia epipsodea remingtoni* Ehrlich and 1 *Erebia disa*. As was typical of every location at which the former was taken, tall green grass and a small amount of moisture was present. The one *disa* taken was found in heavy timber. *Erebia discoidalis*, as usual, were skirting the forest rims. By this time the heretofore abundant *Papilio glaucus canadensis* Roth. & Jord. were worn and gradually fading from the scene. Individuals of

Colias hecla were so worn that I found it hard to believe they could still fly.

The 24th of June put us into Klondike Pass in the Oglivie Mountains. Here at Mile 45 of what is called the Dempster Highway and at an elevation of 3,800 feet in the moist grassy tundra *Erebia fasciata* were taken in number. Nearly all of the specimens taken were fairly fresh and intact. However, by the 27th of June they were badly worn and becoming scarce. The previous year at this location only one *fasciata* was found, and this on the 6th of July. It seems apparent that due to the short growing season there is very little time when a region is dormant. The lepidopteral cycles seem to be built almost one on top of the other. Therefore, as can be seen, timing is a major factor in northern collecting. For example, *Erebia rossii* began to appear as *fasciata* disappeared. To the right of the road at Mile 45 we climbed a ridge which took us up to approximately 5,000 feet. Here we were well above both the valley and the summit of Klondike Pass (4,300 feet). For the most part, this ridge was composed of very brittle black shale with only minute splotches of mossy vegetation. It was at this location that we caught five *Erebia youngi.* Both males and females were relatively fresh and there was little variation between individuals of the respective sexes. (This was not the case in a Richardson Mountain location collected two weeks later; the variation between the sexes there was fantastic.) About 150 feet below this ridge in a dry, grassy area two extremely dark *Erebia fasciata* were taken. Both were males. The ventral side of one of them was completely free of any trace of mahogany suffusion. This was contrary to what was found in the valley tundra. *Oeneis taygete fordi* dos P. and *Boloria frigga gibsoni* (B. & B.) were also taken at Mile 45. Both species were fresh but only the *Boloria* were taken in any number.

An interesting discovery was made at Mile 48 of Klondike Pass. On the opposite side of the valley from the road, on a hillside marked by melting snowbanks, I took 20 *Parnassius eversmanni* Men. It is interesting to note that there were ten males and ten females. This was the only location at which we ever saw this Parnassius in number in the four days that we spent in the area. Contrary to the 1961 trip, only one *Boloria chariclea butleri* (Edw.) was taken. The previous year it had been extremely abundant. This may be a case of timing.

As we traveled back into the Yukon valley on 27 June, *Colias palaeno chippewa* Edw. was out and fresh, while *Colias hecla* was no longer present. At Mile 7.5 one female *Papilio machaon* was taken. Both time and weather were against us here, so we were unable to collect at this

point any longer. One *Euphydryas anicia helvia* (Scud.) was taken at Hunter Creek just off the Dawson Highway. Unfortunately we were early and unable to remain to obtain futher specimens.

In examining the specimens of *Boloria frigga* (Thunb.), it was noted that a gradational sequence occurred as *frigga saga* (Staud.) flowed into *frigga gibsoni*. The *frigga* taken in the valley of Yukon were much darker than those taken at Klondike Pass. These may be variations due to altitude or perhaps the junction of a Pleistocene separation. A very similar occurrence was noted as far as *Boloria titania* (Esper) and *Boloria chariclea* (Schneider) were concerned. The former was taken almost everywhere along the Alaska Highway in July, while the latter was found only in Klondike Pass and McKinley National Park. For example, at Mile 253.6 on the Richardson Highway a nice series of fresh *Boloria titania* were taken. Two days later at Thorofare and Highway Pass in McKinley Park a beautiful set of fresh *chariclea* was taken. The females taken here were extremely dark in comparison to those found in Klondike Pass in 1961. A black radial suffusion from the body characterized the dark female.

By far the most interesting area collected was in the Richardson Mountains. Of particular note is one location which yielded five species of *Erebia*. These were all taken with a vertical change in elevation of only 1,000 feet. The entire location consisted of a gently benched and rolling mountainside. Vegetation varied from bare rock covered with dried black lichen to mossy tundra. At the lowest elevation (3,400 feet) collected we were still approximately 1,200 feet above timberline. Peak elevation was 4,400 feet. Between 3,800 feet and 4,300 feet a large black *Erebia* was taken. This is believed to be *Erebia erinnyn*,[1] as the female has a large rusty suffusion on the forewings ventrally. It is significantly larger than *Erebia magdalena* Strecker from Colorado, which seems a direct contrast to Warren's[1] characterization of Yukon *erinnyn* and true *magdalena* from Colorado. As I have gathered from Mr. Don Eff in Colorado, the habitat of *Erebia magdalena* is high, dark rock slides near the early part of July. The Richardson *erinnyn* were taken on the 7th and the 11th of July. All specimens, both male and female, were fresh. Another individual was seen in a different location but was on a near vertical black bouldered rock slide. The apparent average elevation for flight concentration seemed to be about 4,000 feet. This was approximately 1,800 feet above the timberline of the region. It must be borne

[1] *Erebia erinnyn* Warren, 1932, described from Asia, is not included in standard lists of North American Rhopalocera, although it was reported from the Yukon by Warren (1936, *Monograph of the genus Erebia*. British Museum (Nat. Hist.), London). The species is closely allied to *E. magdalena*, and presumably the Yukon *erinnyn* recorded by Warren is included with *E. magdalena mackinleyensis* Gunder in dos Passos' 1964 *Synonymic List of the Nearctic Rhopalocera*.—EDITOR.

in mind that at this latitude the timberline is approaching sea level for we are nearing the Arctic Plain. There could, therefore, be a considerable correlation between the environment of *magdalena* at 11,000 feet in Colorado and *erinnyn* at 4,000 feet in the Richardson Mountains. Approximately equal numbers of both sexes of *erinnyn* were taken.

The Richardson Mountains locality yielded other lepidoptera but none were as plentiful as the *Erebia*. Two rather worn *Papilio machaon* were taken at 4,000 feet. It seems possible that these were carried up by the wind from a lower elevation. One rather small *Boloria improba* (Butler) was taken. Very few *Oeneis* were collected in this locality, and oddly enough, we took only females of *Oeneis polixenes* (F.) and *Oeneis melissa gibsoni* Holland. Better weather and more collecting time might have yielded some males. One additional male *Oeneis* which resembles *O. polixenes peartiae* (Edw.) was also collected. It is considerably smaller than the *polixenes* at the same locality, and the coloration of the upperside is more grey than the buff of *polixenes*. Six males and three females of *Oeneis brucei yukonensis* were also taken. There are two female *Oeneis* which have as yet defied identification. In comparison with 1961, very few *Boloria* were captured. This last year, for example, *Boloria astarte distincta* (Gibson) (det. A. B. Klots) was not even seen. An interesting fact to note is that this year's collecting locations were farther north than those of the previous year. I feel that the lack of *Boloria* was due to elevation. Most of the localities were into the true Arctic tundra rather than taiga.

Our next stop was Eagle Summit, Alaska, and for the first time in many days, we were blessed with good weather. In fact, over 175 specimens were taken in one day. *Boloria napaea* (Hoffmsgg.), *Colias nastes* Bdv., and *Colias palaeno chippewa* were all taken in numbers. Very worn representations of *Erebia youngi* were on hand. These seemed to frequent the damp, boggy depressions lush in green growth. For the most part, we were late at this locality because all the specimens taken were somewhat worn. *Parnassius eversmanni* were taken but not in quantity. A female *Oeneis melissa gibsoni* is believed to have been taken on the summit itself. Another male *Oeneis* thought to be *peartiae* was captured.

The next area of concentration was McKinley Park. Here we took *Colias boothii* Curtis, *nastes* and *hecla* all flying together and fairly fresh. According to persons living in the area, spring was six weeks late. The caribou, for example, did not arrive until the middle of July. The net result was a very apparent clustering of flight periods to complete the lepidopteral cycle in the remaining summer. As at every stop since the

Yukon valley in late June, *Colias palaeno chippewa* were still flying in numbers in mid-July. *Oeneis bore mackinleyensis* dos P. were taken at Toklat River, while a few *Oeneis polixenes* were collected at Highway and Thorofare Pass. At 4,300 feet on Highway Pass, well above the road, one male *Oeneis melissa gibsoni* was taken. Toklat River yielded a nice series of *Erebia theano alaskensis* Holland in the grass amongst the scrub birch.

We came across a very unusual spot in the Toklat River area. Two valleys came together forming a large, delta area at the base of Divide Mountain. Our major obstacle was fording the glacial streams. The water was extremely cold and swift. However, the fordings were well worth the cold feet because here, as well as on Highway and Thorofare Pass, *Boloria napaea* were taken in number and fresh. Because this locality was maneuverable, it was the only area where *Colias nastes* was frequent enough to be taken in numbers. On Divide Mountain itself the gullies were amply boggy from the melting snow. It was here that *Erebia youngi, Erebia fasciata* and one female *Erebia rossii* were found. It should be mentioned that the female *rossii* was unusually large in comparison with those females taken in the Richardson Mountains and Klondike Pass in the Oglivie Mountains. *Colias hecla* was taken amongst the *Erebia*, but were somewhat fresher.

Thorofare Pass yielded an excellent series of *Boloria eunomia denali* (Klots) in a boggy area below the road. Of note was the capture of *Lycaena phlaeas hypophlaeas* (Bdv.) at Toklat River and Highway Pass in McKinley Park. Four were taken, three males and one female. We spent seven days in McKinley Park but were only able to collect on two of these days because of torrential rain.

On our way down the Alcan Highway, Mile 1119 yielded a nice fresh series of a very distinct population of *Colias alexandra christina* Edw. There was very little variation among the individuals of the respective sexes. This was not true of the other *Colias* nor is it true of *Colias christina* in Alberta. *Lycaena dorcas* Kirby was also found here along with *Speyeria mormonia* spp. Both were fresh. Mile 718 gave us *Speyeria mormonia opis* (Edw.), and fresh but scarce *Lycaena mariposa* Reak. and *Plebejus argyrognomon* (Bergstr.).

One of the most interesting areas from an ecological standpoint was Liard Hot Springs in British Columbia. Here hot sulphur waters spread over a large area of timber and muskeg. The hillside vegetation was abnormally large and the air was tainted with the smell of hydrogen sulfide. The temperature of the water was high enough to remove permafrost from the area. We were up to our waists in oozing mud

many times. These lowland swampy areas yielded many *Boloria selene* (D. & S.) and *titania*. As we went to higher ground, *Speyeria atlantis* ssp. became more and more frequent and a good series of males was taken.

In summary, we had a very successful trip in spite of the weather. A few questions have arisen in my own mind and so far remain unanswered. The abundance of *Erebia* taken throughout the trip, the corresponding decrease in *Boloria* relative to 1961, and the predominance of female *Oeneis* over males in the northern locations raise questions which can only be solved by continued collecting in the Arctic. Some species such as *Boloria distincta* may be biennial in nature. The shortened summer season may play a significant part here. Most disturbing was the predominance in some species of females over males. This could be due to timing of sampling at given locations. It could, however, be nature's insurance that sufficient females will be bred to assure survival of the species in this rigorous climate. At any rate, more data must be obtained.

I hope in some way the bits and pieces of information that we obtained may be of some aid to others.

I would like to thank my companion, Mr. Lawrence Davidson, for his aid and assistance and the park personnel of McKinley National Park for their time and interest, Western Minerals Ltd., of Calgary, Alberta for the use of their aircraft and camp facilities, and Mr. Don Eff for his help and advice in the preparation of this manuscript.

BOOK NOTICE

INDEX LITTERATURAE ENTOMOLOGICAE, Serie II, vol. I (A–E). By W. Derxen and U. Scheiding. I–XII + 1–697 pp. Published by the German Academy of Agricultural Sciences, Berlin. J. Nawrocki Street 1, Berlin-Friedrichshagen, DDR. Price 55,- DM.

In the German Entomological Institute bibliographical studies have an old and important tradition. The first series of "Index Litteraturae Entomologicae," prepared by W. Horn and S. Schenkling, was published in 1928–1929. In the first series the entomological literature of the world prior to 1863 was recorded.

The world entomological literature of the period of 1864–1900 (contains about 90,000 citations) will be published in four volumes and one volume of index.

The first volume contains citations of the papers published in the mentioned period; the authors' names are recorded alphabetically (Aagaard–Eysell). For most authors the important biographical dates are given.

This monumental work was prepared by the collective of authors in the period of seven years. The "*Index Litteraturae Entomologicae*" is very important for all students in entomology. We wish the authors a successful continuation in their useful work.—JOSEF MOUCHA, Národní museum v Praze, Praha 1, Czechoslovakia