

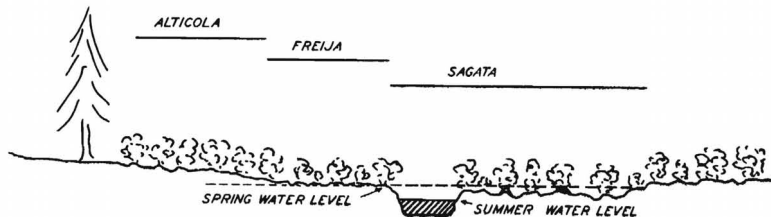
SOME NOTES ON *BOLORIA* IN CENTRAL COLORADO (NYMPHALIDÆ)

by F. MARTIN BROWN

Six species of *Boloria* are found in Colorado, and there is the possibility that three others fly in the state but as yet have not been discovered. To avoid nomenclatorial confusion while awaiting KLOTS' promised revision of the genus I use here the names for species accepted by McDUNNOUGH in his 1938 Checklist.

Boloria myrina (=selene) *tollandensis* Barnes & Benjamin

My experience with this insect is limited to three areas and all-too-brief collecting. The butterfly is on the wing early in July and by the last week of the month is in rather shabby condition. It seems to prefer open grassy meadows much like those in which its eastern counterpart flies. Altitudinally it seems to be narrowly restricted to a few hundred feet, either way, from 9000 feet. I know of colonies in the Front Range north of the South Fork of the Platte River, the Park Range, the Collegiate Range, and the Rabbit-ears Range.



DISTRIBUTION OF COLORADO WILLOW-BOG *BOLORIA*.

Boloria aphirape alticola Barnes & McDunnough

This is one of three species closely associated with willow bogs in Colorado. There is good reason to believe that it flies in all of the mountain ranges of the state, although I have not seen specimens from the Sange do Cristos. It first appears during the last week of June in bogs around 9600 feet, and the last specimens to be taken are found at about 12,000 feet late in August. Of the June *Boloria* in Colorado this one is found on the driest ground. At times it abounds in the hummocky areas where a willow bog is drying out. Elsewhere it is found rather sparsely along the edges of the bog where it invades the dry grasslands for a few yards. Its bright reddish upper surfaces and its swift erratic flight immediately set it apart from the

other species, *B. frigga sagata* and *B. freija*, often found with it around 9600 feet.

During the last week in June when the three fly together it is very clear that they prefer different parts of the bog. The wettest part is the home of *B. sagata*, the driest of *B. alticola*, with *B. freija* occupying an intermediate zone. As the stream cuts its channel deeper and the bog starts to dry out, *B. sagata* disappears.

Boloria belena belena Edwards

This is the last of the Colorado *Boloria* to take to the air. It is found throughout the mountains of the state, rarely below 10,000 feet and often as high as 12,500. It roams the grasslands above timber and more than any other Colorado species of the genus may be found considerable distances from water or bog. Its flight is moderately strong and rather direct. It appears at the lower extreme of its altitudinal range early in July and flies until killing frosts occur late in August.

	MAY	JUNE	JULY	AUGUST	ALTITUDE
<i>TOLLANDENSIS</i>					9000
<i>ALTICOLA</i>					11800 9600
<i>HELENA</i>					11800
<i>FREIJA</i>					11800 9600
<i>SAGATA</i>					9700
<i>BELLONA</i>					8000

TEMPORAL DISTRIBUTION IN CENTRAL COLORADO

Boloria freija browni Higgins

The first of the mountain butterflies to appear in the spring as the snows melt is either *B. freija* or *Glaucopsyche lygdamus oro* Scudder. I have always found them together when nothing else is flying. Whereas with the other *Boloria* the females emerge soon after the males, with *B. freija* there may elapse as much as two weeks between the first emergences of the sexes. Like *B. alticola* this insect is found most abundantly in willow bogs. There it occupies the middle zone of bog that is underlain with sphagnum but rarely fully flooded by the spring freshets.

At about 9500 feet the insect appears during the last week of May, and as the season progresses fresh material continues to fly at higher and higher altitude until during the first week of July it appears at about 12,000 feet. By the middle of August the butterfly has disappeared throughout its altitudinal range. Wherever and whenever it is found, it has a swift direct flight. Its duller color is quite noticeable on the wing. Long-flown specimens are faded to almost ochre and black.

Boloria frigga sagata Barnes & Benjamin

Soon after *B. freija* is flying *B. sagata* puts in its appearance. Unlike *B. freija* which is found in all of the mountains of the state, *B. sagata* thus far has been found only in the heart of the Colorado Rockies. A chain of colonies is known reaching from the Rocky Mountain National Park to Tennessee Pass. The butterfly is most abundant in the Park Range that separates Middle from South Park. Altitudinally it is found from about 9500 to 11,000 feet. Its present distribution suggests that at one time in the near past it ranged high enough to cross the Continental Divide at Hoosier Pass. Such a period of warmer conditions is postulated by paleo-climatologists about 6,000 years ago. Much more collecting must be done in Middle Park bogs before anything of importance can be drawn from the distribution of this arctic insect.

To collect *B. sagata* it is necessary to be prepared for wet feet in icy water. The beast roams the wettest parts of the willow bogs where the spring high water floods the sphagnum floor. Its flight is rather slow and direct, quite unlike that of either *B. freija* or *B. alticola* found with it in the same bog. The best method is to perch on a willow hummock and catch those that fly by. Travel in the bog is too hazardous and slow to attempt to chase even these slow-flying insects. The accompanying profile of a typical willow bog shows the areas of concentration for the three species usually found at the same locality late in June.

Boloria bellona Fabricius (= *B. toddi* Holland)

In North and Middle Parks and near Aspen are small colonies of this eastern butterfly. All records of *B. epithore* for Colorado that I have been able to trace to the insect have proven to be *B. bellona*. It is found around 8000 feet in aspen-shaded boggy land - a rather rare combination! From these centers the butterfly strays a short distance onto the adjacent sage-flats where its appearance is startling. Its rather gentle flight makes it an easy mark for the net. The first week in July seems to be the best time to hunt it.

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