

A Second Phenotype of *Satyrrium calanus* (Huebner) from Wyoming (Lepidoptera: Lycaenidae; Theclinae)¹

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Abstract. A population of *Satyrrium calanus* was discovered in northeastern Wyoming in 1983. This population is dark-colored and relatively uniform in maculation in comparison to the highly variable pale phenotype discovered in 1977 in southeastern Wyoming. This new northeastern phenotype is discussed and illustrated.

Introduction

In 1983, the author was asked to assist the administration of Devils Tower National Monument in initiating a three-year insect resources survey within the confines of the park. This effort is part of an on-going program to inventory the natural resources in National Parks and Monuments throughout the United States. The Monument occupies a relatively small region and is nearly square, with an area of approximately 3.6 square miles (930 ha). The principal topographic feature is a magma intrusion in the center of the park which rises 867 feet (264 m) above its base, and 1267 feet (386 m) above the Belle Fourche River which passes through the southeastern portion of the park. The elevation of the river area is 3850 feet (1174 m) above sea level.

Vegetation types consist of mixed-grass prairie, oak and mixed deciduous forest, Ponderosa pine forest (*Pinus ponderosa* Laws.), and riparian flora along the river. Typical habitat is illustrated in Fig. 1. A single road serves the park headquarters and a visitor center. The environment is relatively undisturbed, except along the river.

The area has been protected since 1906 when President Theodore Roosevelt proclaimed the park as the first national monument under the Antiquities Act. Consequently pesticides have not been applied to the area, although some damage has occurred along the river bottom, especially to the Fremont cottonwoods (*Populus fremontii* S. Wats.) as a result of drift from aerial spraying of herbicides (picloram) over neighbor-

¹Published with the approval of the Director, Wyoming Agricultural Experiment Station as Journal Article No. JA 1296.

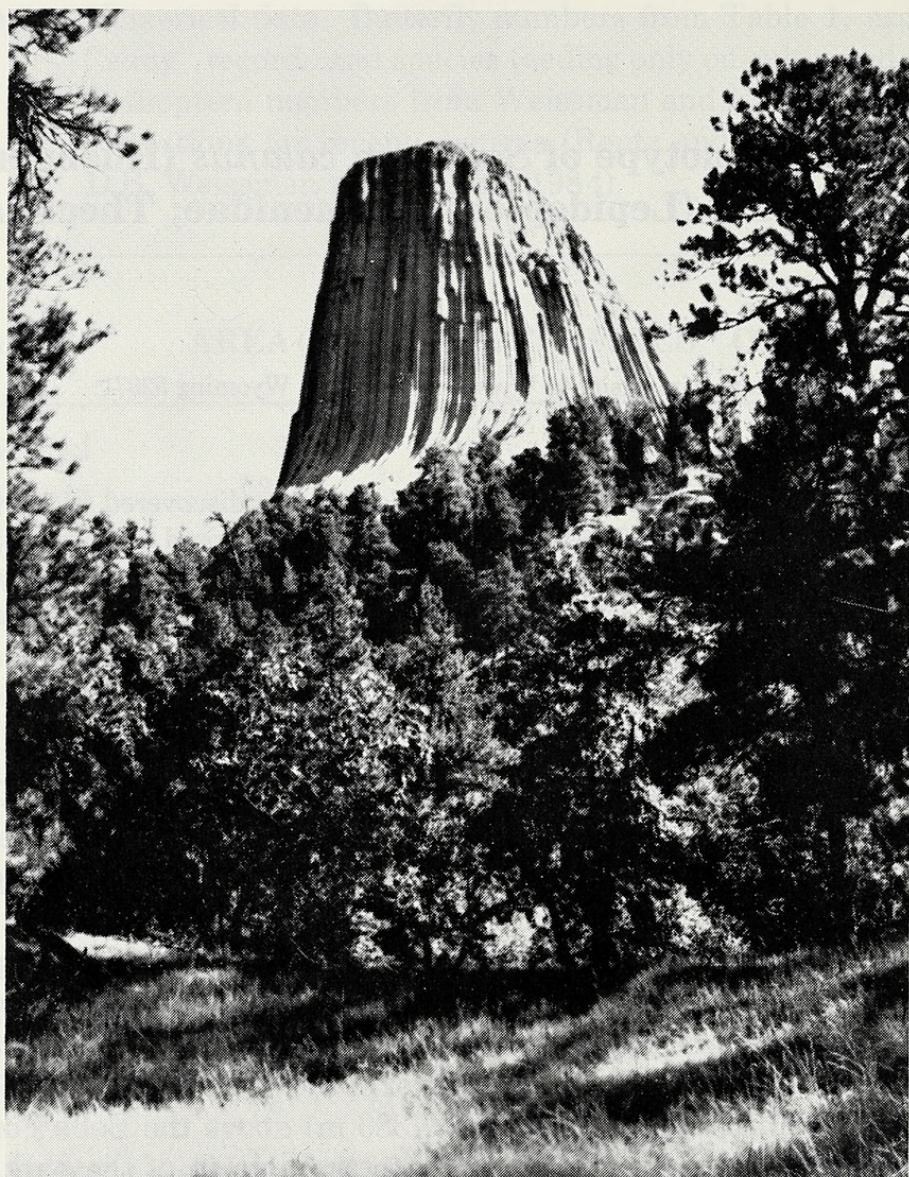


Fig. 1. Devils Tower showing a typical collecting site in the oak-pine transition belt.

ing ranch lands in an attempt to control leafy spurge (*Euphorbia esula* L.).

Wyoming is depauperate in oak, the larval host of *S. calanus*. Oak occurs in two areas only in the eastern portion of the state, as indicated in Fig. 2. Although there are a few reports in the literature that *Prunus* sp. is utilized by *calanus*, oak is the favored host. Gambels oak (*Quercus gambelii* Nutt.) occurs in southern Carbon Co. in the SE portion of the state, and Bur oak (*Q. macrocarpa* Michx.) is the species found in Crook Co. where Devils Tower is situated. Although the oak forest extends beyond the confines of the park to the north and eastward into the Black Hills, *calanus* has not been recorded previously from this region of Wyoming, and the only record from contiguous South Dakota is from

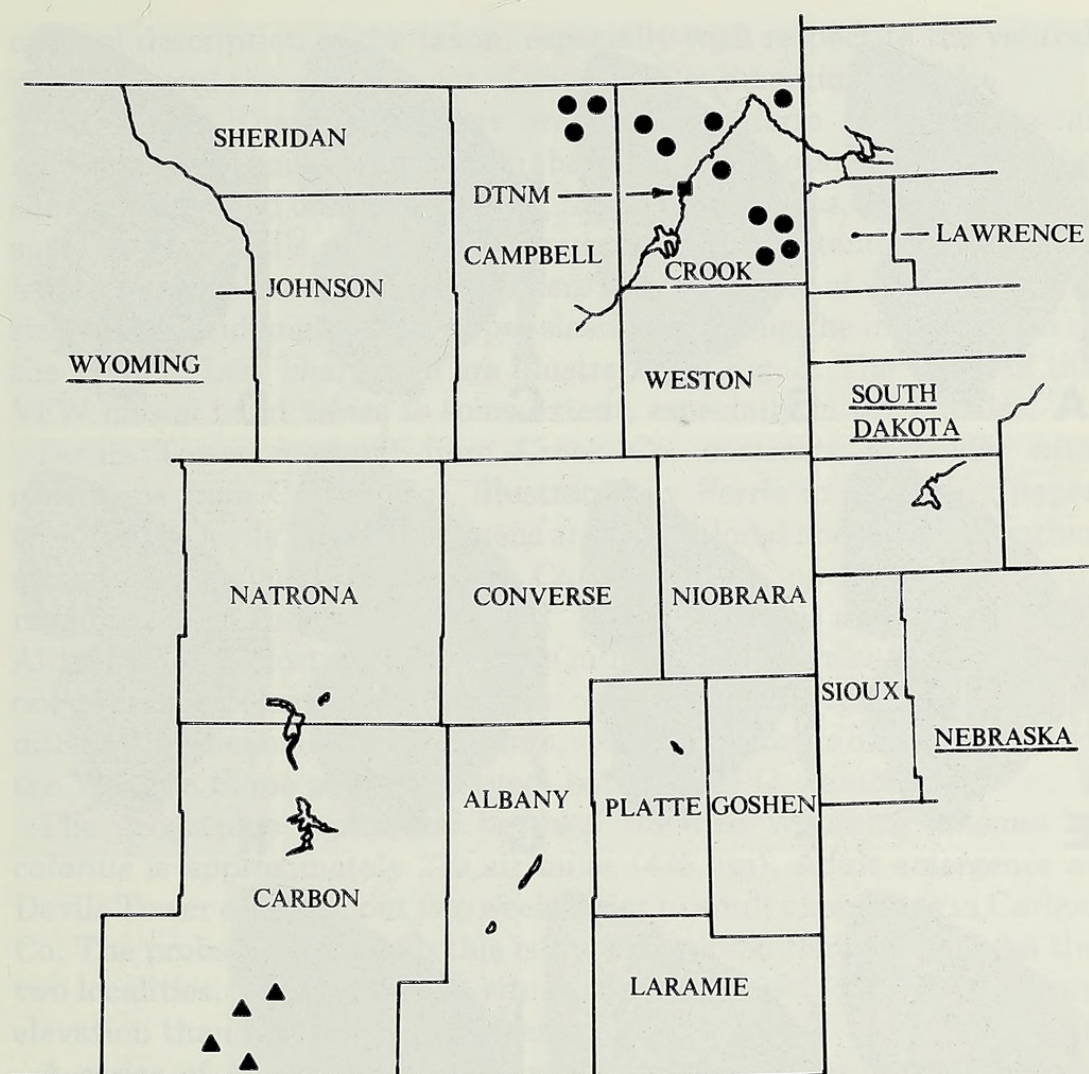


Fig. 2. Distribution of oak in Wyoming. Only the eastern portion of the state is shown since oak has not been recorded elsewhere. The dots represent *Q. macrocarpa* and the triangles *Q. gambelii*. Records are from the Rocky Mountain Herbarium, University of Wyoming.

Lawrence Co. It may be that *calanus* is particularly sensitive to some insecticides or herbicides, since for a number of years the general region surrounding the park has been treated with a variety of chemicals in an attempt to control various forest and agricultural pests.

The Crook Co. Phenotype

Two previous papers (Ferris, 1981[82], 1982[83]) discussed the distribution and phenotypes of *S. calanus* in the southern Rocky Mountains. The Front Range region from northern New Mexico to central Colorado supports populations of *S. calanus godarti* (Field), which is a very dark insect, both dorsally and ventrally. Along the Western Slope in Colorado through the Rabbit Ears Pass area and into Carbon Co., Wyoming, a very

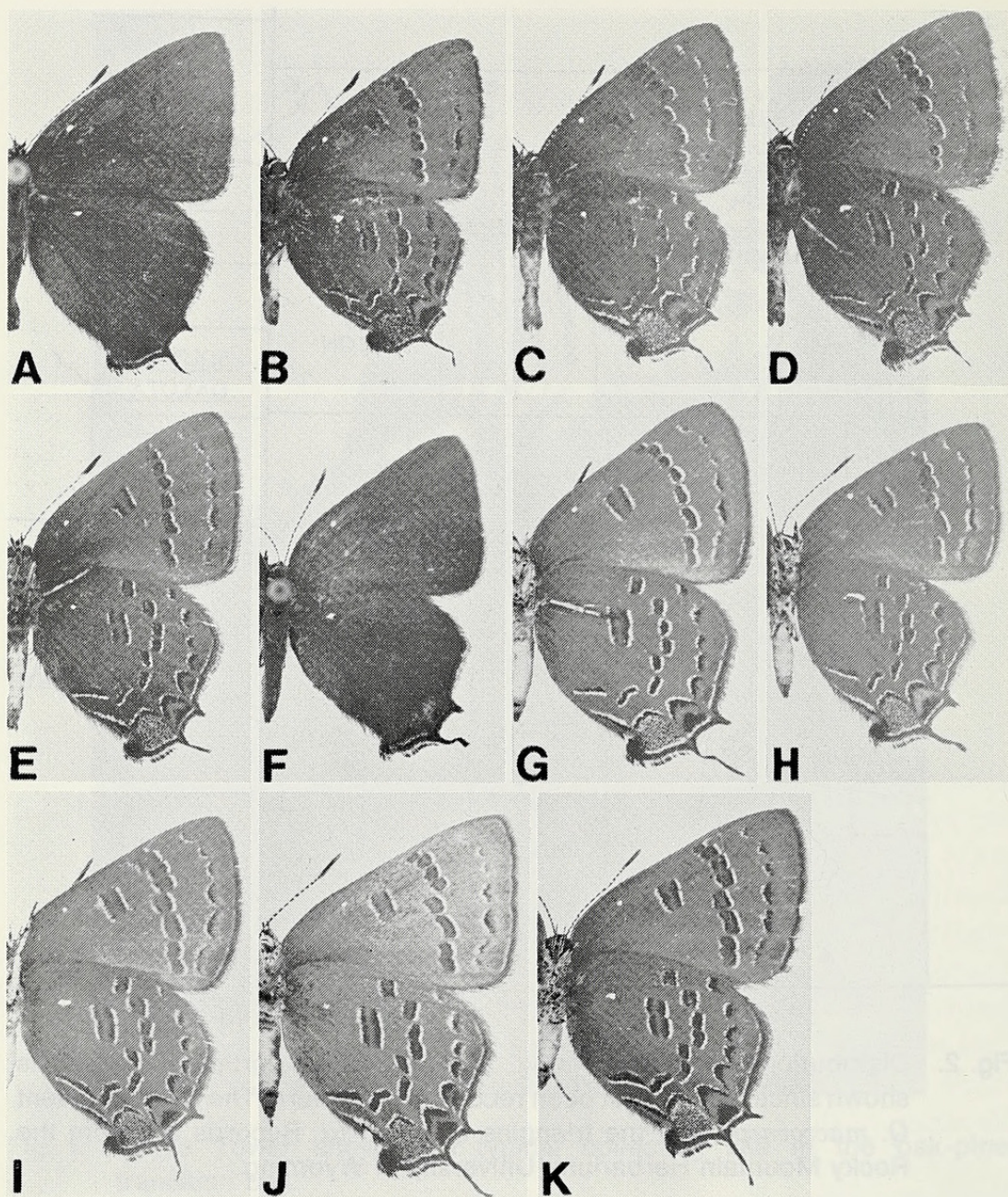


Fig. 3. Variation in *S. calanus godarti* from Devils Tower National Monument, Crook Co., Wyoming. All specimens were collected on 21-22 July, 1983. A. Male, dorsal. B-E. Males, ventral. F. Female, dorsal. G-K. Females, ventral.

pale phenotype occurs, with many individuals exhibiting the "heathii" form as described in some detail by Fisher (1976) and Ferris (1982[83]). Scott (1981) applied the name *albidus* to the Western Slope population, but the validity of this taxon has been questioned (Ferris, 1982[83]).

Specimens from Devils Tower are not quite so dark dorsally as in typical *godarti*, but rather are a paler and warmer brown. Ventrally they tend to be a slightly warmer gray-brown than *godarti* from southern Colorado and northern New Mexico. On the whole, however, they fit within Field's

original description of the taxon, especially with respect to the ventral markings and the orange color of the VHW submarginal lunules.

The Devils Tower specimens are rather uniform in their ventral markings. The main variation is in the extent of the orange lunules in the submarginal band on the hind wing. In some specimens, only two orange spots appear, while others have orange markings extending the entire length of the submarginal band. There is some degree of variation in the size, shape, and angle of the upper slash mark along the inner margin of the VHW. These characters are illustrated in Fig. 3. The width of the VFW mesial band varies to some extent, especially in the females.

Devils Tower material from Crook Co. contrasts markedly with specimens from Carbon Co., illustrated by Ferris in an earlier paper (1982[83]). Devils Tower specimens are dark colored and generally rather uniform in maculation. Carbon Co. specimens, on the other hand, manifest a considerable range of color variation and maculation. Although larval host may have some influence upon *calanus* phenotype, one cannot necessarily attribute the observed phenotypic differences to different species of larval host plants, since Front Range dark *godarti* and the Western Slope pale phenotypes both utilize *Q. gambelii*.

The geographic separation between the two Wyoming colonies of *calanus* is approximately 270 air miles (435 km). Adult emergence at Devils Tower occurs about two weeks prior to adult emergence in Carbon Co. The probable reason for this is the elevation difference between the two localities. The Carbon Co. site is about 3500 feet (1067 m) higher in elevation than the Devils Tower area.

A series of approximately 70 specimens of *calanus*, predominately males, was collected at Devils Tower. These were taken by the traditional method of beating the oak foliage and observing where the startled butterflies settled. Only a very few specimens were taken at nectar sources, and those were primarily leafy spurge plants. Collecting took place on broad "bench" areas above the Belle Fourche River where the major oak stands occur. The pine forest exists at a slightly higher elevation.

Sympatrics

At the Carbon Co. colony site of *calanus*, *S. liparops aliparops* (Michener & dos Passos) is sympatric and commences its flight period 1-2 weeks prior to *calanus*. The same situation exists at Devils Tower. A few worn *S. liparops aliparops* were taken when *calanus* was at its peak on July 21-22, 1983. One specimen was taken while perching on oak, the others were in association with *Prunus* sp., and *Crategus* sp., both of which are reported larval hosts for this species. This is also the first record of *liparops* from Crook Co., although the species has been taken in Lawrence and Harding counties, South Dakota and Sioux Co., Nebraska.

Acknowledgments. I would like to thank Richard A. Guilmette, the Chief Ranger and Shirley Norton, Administrative Assistant at Devils Tower for their many courtesies that they extended during my visits to the park. Dr. Karolis Bagdonas, Laramie Wyoming, provided able assistance in collecting *calanus*. Voucher specimens have been placed in the Devils Tower National Monument collection and in the National Museum of Natural History-Smithsonian Institution, Washington, D.C. The draft of this paper was reviewed by Dr. Robert J. Lavigne and Dr. Robert E. Pfadt of the Dept. of Entomology, University of Wyoming.

Literature Cited

- FERRIS, C. D., 1981[82]. Field notes on four western hairstreaks (Lycaenidae: Theclinae). J. Lepid. Soc., 35(4):325-330.
- , 1982[83]. Polymorphism in *Satyrium calanus* (Huebner) from Wyoming and Colorado (Lepidoptera: Lycaenidae: Theclinae). J. Res. Lepid., 21(3):188-193.
- FIELD, W. D., 1938. New forms and subspecies of North American Libytheidae and Lycaenidae. J. Kans. Ent. Soc., 11(4):124-133.
- FISHER, M. S., 1976. The *heathii*-white banding aberration in the Strymoninae (Lycaenidae). J. Res. Lepid., 15(3):177-181.
- SCOTT, J. A., 1982. New Papilionoidea and Hesperioidea from North America. *Papilio* (new series), 1:1-12. (Privately published by the author).



Ferris, Clifford D. 1984. "A Second Phenotype of *Satyrus calanus* (Huebner) from Wyoming (Lepidoptera:Lycaenidae; Theclinae)." *The Journal of Research on the Lepidoptera* 23(4), 297–302. <https://doi.org/10.5962/p.333809>.

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