

VARIATION OF *EREBIA CALLIAS* (SATYRIDAE)
IN THE UNITED STATES¹

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Erebia callias Edwards is found in Asia (Iran, Mongolia), Siberia, and the Rocky Mountains of the United States. It is closely allied to *Erebia tyndarus* (Esper) of the Old World, with which it was thought to be conspecific, until de Lesse (1955) demonstrated that the two species have different numbers of chromosomes. The diploid number for *callias* is 30 and for *tyndarus*, 20.

This butterfly is not well known to collectors in the United States, probably because of its restricted habitat. It flies in the treeless Arctic-Alpine Zone above 10,000'. It is usually found in grassy areas, but I have also taken it on rocky outcroppings and flying about gravel patches. Several collectors have observed *callias* virtually swarming on Guanella Pass, Clear Creek Co., Colorado (observed by J. D. Eff in 1962, C. D. Ferris in 1967, and by O. Otto in 1972 as reported in the News of the Lepid. Soc., 15 March, 1973, p. 8).

Distribution

Holland (1898) reported *callias* from Colorado and New Mexico. Warren (1936) listed the same areas in North America. Ehrlich & Ehrlich (1961) list Colorado and Wyoming. Callaghan & Tidwell (1971) give Utah records. At the present time, *callias* is known from four states. The county records are listed below and state localities are shown in Fig. 1.

Colorado: Chafee, Clear Creek, Grand, Hinsdale, Lake, Larimer, Park, Summit (Brown et al., 1957; C. J. Durden, in litt., 1973).

Montana: Carbon (collected by author).

Utah: Summit, Uintah (Callaghan & Tidwell, 1971).

Wyoming: Fremont, Park, Sublette (Ferris, 1971).

A search of the major U.S. museum collections has failed to turn up any specimens from New Mexico. It is quite possible that *callias* occurs in the high mountains of the northern part of that state. Holland may

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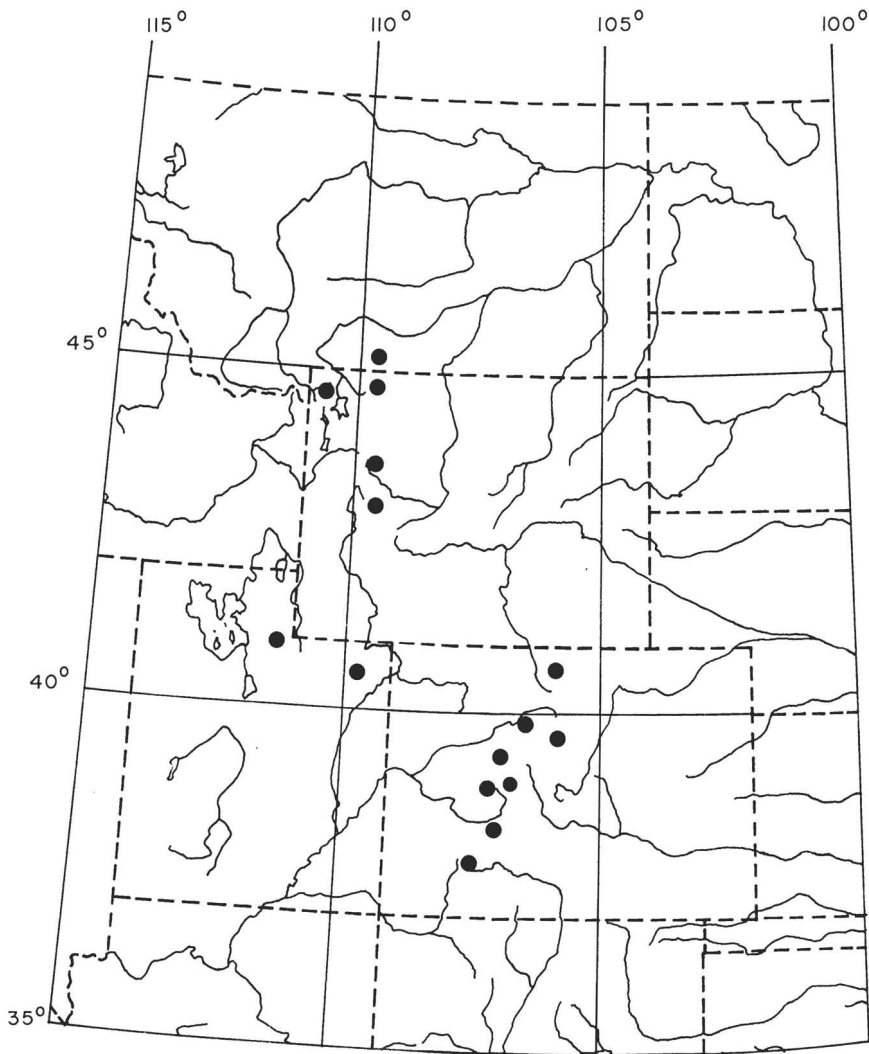


Fig. 1. Collection sites (black dots) for *E. callias* in North America.

have had specimens which are now lost, or he may have projected the range into New Mexico based upon the distribution in Colorado.

One would also expect to find *callias* in the Snowy Range Mountains of Wyoming (Albany and Carbon Cos.) as what appears to be suitable habitat exists. To date, the insect has not been collected in this area. This is a strange situation as *callias* is abundant in spots to the north

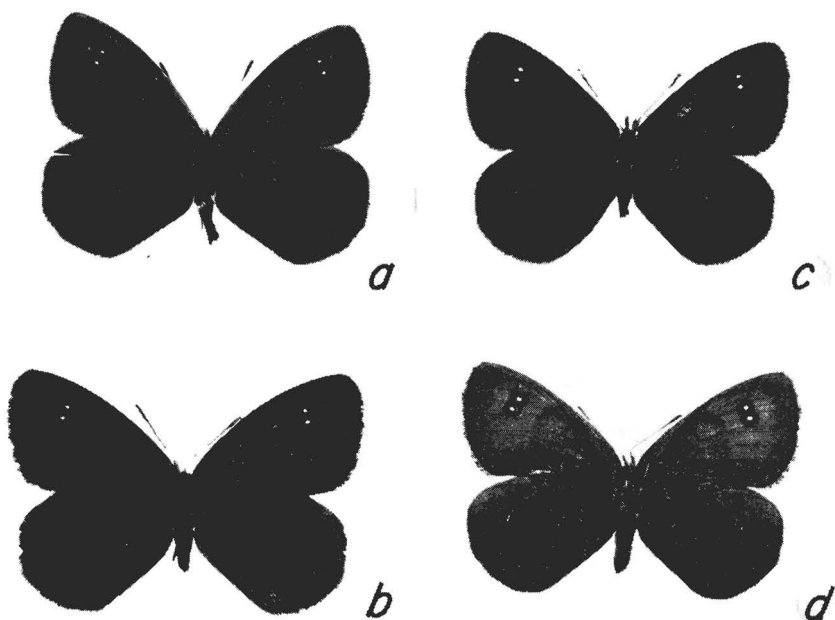


Fig. 2. "Normal" forms of *E. callias*: (a) ♂ Palmer Lake, 10,800', Sublette Co., Wyoming, 1 August 1972, genitalia Fig. 4 (b); (b), (c) ♂♂, and (d) ♀, Guanella Pass, 11,665', Clear Creek Co., Colorado, 11 August 1968.

and south of this area. Other alpine species normally associated with *callias* habitat, such as *Colias meadii* Edwards and *Parnassius phoebus* ssp., are found in the Snowy Range.

It seems strange that *callias* has not been reported from Canada or Alaska, since it occurs in Siberia. Perhaps it will turn up as more regions open to travel. It flies late in the season (early August) as alpine species go, when many of the other high altitude species have either ceased flying or are on the wane, and for this reason, may have been overlooked in some areas.

Variation

Fig. 2 illustrates three normal males and 1 female of *E. callias*. The two FW ocelli are fully developed and there is a HW submarginal row of three ocelli. Normally the FW ocelli are well-pupiled, while the HW ocelli vary in pupil size. This is the usual form found in Colorado, Utah, and central Wyoming.

Fig. 3 illustrates the variation in *callias* that occurs along the Montana-

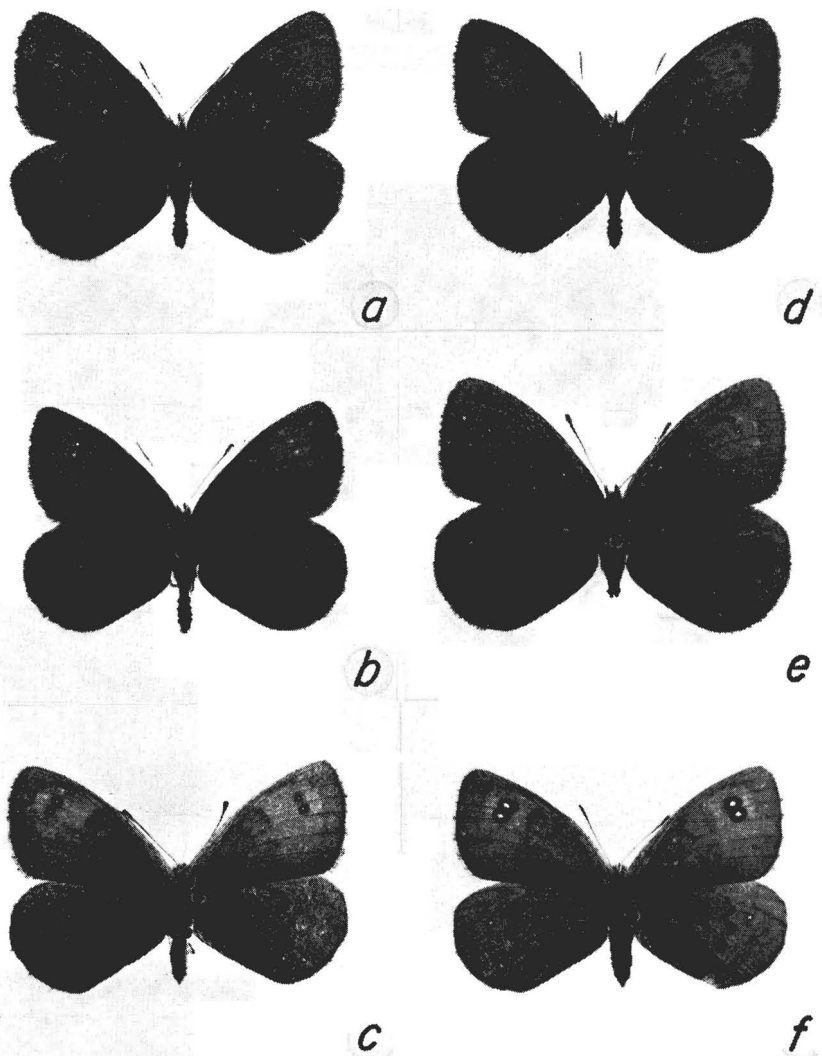


Fig. 3. *E. callias* from Beartooth Pass area, U.S. Hwy. 212, Carbon Co., Montana, 4,5 August 1972: (a,b,d,e) ♂♂; (c), (f) ♀♀. Some ♀♀ lack ocelli entirely. Genitalia of (e) in Fig. 4 (a).

Wyoming border on the Beartooth Plateau. "Normal" forms are found, but the majority of the specimens collected from this region are atypical when compared with Colorado material (Type Locality: Mosquito Pass, Park Co., Colorado).

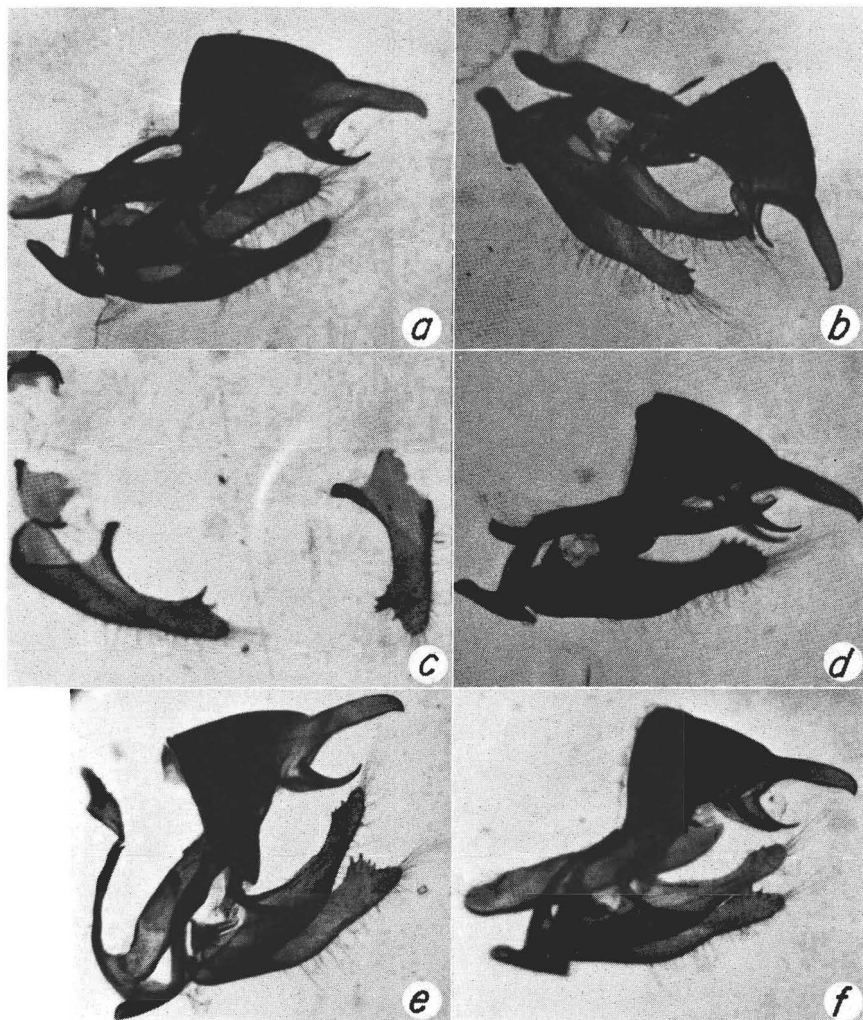


Fig. 4. Genitalia: (a) ♂ shown in Fig. 3 (e); (b) ♂ shown in Fig. 2 (a); (c) ♂ from Beartooth Pass area, Carbon Co., Montana, 5 August 1972; (d)–(f), Guanella Pass, Clear Creek Co., Colorado, 11 August 1968.

With respect to the dorsal wing surfaces, all ocelli are absent in the extreme case, and only a fulvous patch appears on the FW. In most of the specimens, the HW ocelli are lacking. Only the pupils occur in other examples (FW) and the surrounding dark iris is absent. Other specimens exhibit FW ocelli that are substantially diminished in

size, and in some cases, the pupils are reduced to the point of obsolescence. Although subspecific names have been applied to *E. callias* in the Old World, it does not appear reasonable to propose another taxon for the Beartooth Plateau segregate. *E. callias* is a highly variable insect in both facies (Figs. 2, 3), and in genitalia (Fig. 4). There is no firm character, other than geography, upon which to erect a new taxon. B. C. S. Warren (pers. comm.) concurs in this matter. Warren (1936, p. 303) has also commented on the genitalic variation in the Old World races, and has identified two clasper types.

No explanation is offered regarding the variation in the U.S. populations. A parallel situation occurs with *E. tyndarus* in Europe and the non-ocellated form was described by Westwood (1851) as an aberrant *vesagus*. The *vesagus* form of *tyndarus* occurs locally as a form and in "normal" populations of *tyndarus* infrequently as an aberrant. In facies, *tyndarus f. vesagus* is identical with the Beartooth Plateau non-ocellated *E. callias*. Warren (1936) figures French material of *vesagus* (Plate 89). Perhaps the form name *vesagus* could be applied to Wyoming-Montana *callias*, but infrasubspecific names have no standing in the I. C. Z. N. Code.

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LITERATURE CITED

- BROWN, F. M., J. D. EFF & B. ROTGER. 1957. Colorado Butterflies. Denver Museum, Denver.
- CALLAGHAN, C. J. & K. B. TIDWELL. 1971. A checklist of Utah butterflies and skippers. J. Res. Lepid. 10: 191-202.
- DE LESSE, H. 1955. Nouvelles formules chromosomiques dans le group d'*Erebia tyndarus* Esp. (Lépidoptères, *Satyrinae*). Comptes rendus hebdomadaires des séances de l'Académie des Sciences 240: 347-349.
- EHRLICH, P. H. & A. H. EHRLICH. 1961. How to Know the Butterflies. Brown, Dubuque, Iowa.

- FERRIS, C. D. 1971. An annotated checklist of the Rhopalocera of Wyoming. Sci. Monogr. 23. Agri. Exp. Stat., Univ. of Wyoming, Laramie.
- HOLLAND, W. J. 1898. The Butterfly Book. Doubleday, New York.
- WARREN, B. C. S. 1936. Monograph of the Genus *Erebia*. British Museum (Natural History), London.
- WESTWOOD, J. O. 1851. In Doubleday, Gen. diurn. Lepid. 2: 380.

"ATTACKS" BY *POLYGONIA INTERROGATIONIS* (NYMPHALIDAE)
ON CHIMNEY SWIFTS AND INSECTS

Re-reading a note by Pyle (1972, J. Lepid. Soc. 26: 261) on a Lorquin's Admiral (*Limenitis lorquini burrisonii* Maynard) that chased after a Glaucous-winged Gull brought to mind some observations I made this past summer in Bartlesville, Washington County, Oklahoma on bird and insect-chasing by *Polygonia interrogationis* (Fabricius).

On 8 July 1973 I was exploring a field that contained a few trees surrounding a small marsh. Chimney Swifts (*Chaetura pelagica*) were often observed hunting over this area, sometimes making passes within 6 ft. of the ground surface. When a swift passed near a particular tree I noticed a butterfly in pursuit for some 20–30 ft. before breaking off with the chase. The butterfly, a male Question Mark, then returned to the tree and began a methodical patrol of one section of the tree, flying back and forth in front of it with periodic darts and chases after other flying insects including beetles, dragonflies, and other butterflies. I sat down next to the tree and decided to observe the butterfly's behavior, when another swift flew by. The Question Mark immediately took pursuit as before. After a brief chase the butterfly returned to the tree and resumed its patrolling. I was able to observe this behavior for several days but only in the evenings after 1800 hrs. At this time the butterflies were out patrolling and the Chimney Swifts were hunting over the field and marsh.

Pyle suggested that the chasing behavior exhibited by his Lorquin's Admiral was most likely a courtship chase, presumably the pursuit of a possible female. This possibly applies to the Question Mark since any flying object was pursued until it was apparently recognized. Another possibility is that these animals are exhibiting aggressive territorial behavior and are attacking all flying intruders. I observed some prolonged chases by two of the Question Marks in which they flew head-on at each other and beat the opponents wings with their own. Usually, however, one would make a "sneak attack" on the other and pursue it from the rear until it either chased the first temporarily away or was out-maneuvered. A third possibility would be a combination of the first two in which the butterfly leaves its post in pursuit of a possible female. When the butterfly identifies the object it either ceases pursuit or continues after in either an aggressive attack or a courtship chase.

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