

SOME UNUSUAL BUTTERFLY RECORDS FROM CENTRAL CALIFORNIA

KEITH S. BROWN, JR.

Faculdade Nacional de Farmacia, Rio de Janeiro, Brasil

The year 1963 in central California, marked by heavy rains from March through May in the lowlands and snows lasting into July in the Sierra Nevada, produced a very rich season for butterflies, although it was as much as six weeks late in some areas. Some of the unusual records resulting from the author's collecting are described in this paper.¹

PLEBEJUS SAEPIOLUS (Boisduval)

A trip to the dry portion of the San Bruno Hills overlooking Brisbane, San Mateo County, on 11 June, to collect typical *Speyeria callippe callippe* (Boisduval) also yielded a single female of *Plebejus saepiolus*. The specimen possesses considerable blue basal scaling, although not as much as is present on specimens from the Plantation area in Sonoma County to the north, at an elevation of about 1,000 feet. No other records of *P. saepiolus* from the San Francisco peninsula region are known to the writer; none could be located in the American Museum of Natural History.

LYCAENA XANTHOIDES (Boisduval)

A male of *L. xanthoides* which is unusual in coloration was collected on the same trip to the San Bruno Hills. The forewing is bright orange on the underside, while the hindwing is gray on the underside, far darker than any other *xanthoides* seen by the author in the San Francisco Bay area or in the American Museum collection. Many of the spots of the underside of the hindwing tend towards obsolescence. Deepening of the ground color with greater abundance of melanins are tendencies correlated by Hovanitz (1941) with butterflies' occurrence in cold, moist areas. Possibly the cool, foggy summer conditions characteristic of the San Bruno Hills play a role in alteration of the phenotypic expression of certain butterflies there.

INCISALIA FOTIS DOUDOROFFI DOS PASSOS

A single specimen of *Incisalia fotis* was collected on Chew's Ridge, south of Jamesburg in the Santa Lucia Mountains in Monterey County,

¹ For clarity, all nomenclature follows the recent list of dos Passos (1964).

at an elevation of about 5,000 feet, on 29 June. The specimen corresponds closely to the race *doudoroffi* found at Carmel and Big Sur, coastal localities in Monterey County. The Santa Lucia Mountains site is about 30 miles inland from Big Sur, and the collection evidently represents an elevational and geographical range extension for *doudoroffi*.

VANESSA CARDUI (Linnaeus)

A single, very fresh male of this species was taken at Chew's Ridge along with the preceding species. As no great migration of this species was reported in the season summary for 1963 in central California, and the *cardui* seemed freshly emerged, it seems likely that it appeared in the Santa Lucia Range from a breeding stock rather from migratory movement from the south. This contrasts with the opinion of Abbott (1962) that *V. cardui* overwinters irregularly, if ever, as far north as central California.

POLYGONIA FAUNUS RUSTICUS (Edwards)

Garth and Tilden (1963) report only a single rather ill-defined record for this species in the Yosemite Park area, an old specimen labeled merely "Yosemite," 26 June. However, *P. f. rusticus* seemed quite common on 17 May 1963, at the northwest entrance to the park on the Big Oak Flat road, at an elevation of about 4,000 feet, where it was flying with *P. zephyrus* (Edwards). Thus, *rusticus* seems to be a bona fide member of the Yosemite Park Lepidoptera fauna.

SPEYERIA CALLIPPE JUBA (Boisduval)

A minor aberration of *S. callippe juba* was taken along the North Fork of the Tuolumne River, Tuolumne County, on 26 July. A large assemblage of *Speyeria*, including *zerene* (Boisduval), *hydaspe* (Boisduval), and *callippe*, was sampled at the locality, which is about four miles north-east of the town of Tuolumne (near Camp 8). The aberrant individual has the basal and median spots between veins Cu_2 and 2^1A on the underside of the hindwing fused together. Examination of the specimens of all species of *Speyeria* in the American Museum collection did not reveal another example comparable to this striking aberration.

EUPHYDRYAS EDITHA NUBIGENA (Behr)

Unusually lightly marked specimens of *E. e. nubigena* and other species appeared to be present in exceptional numbers during late July at moderate elevations in Tuolumne County. A colony of *E. editha* was

discovered about one mile southwest of the Clark's Fork turnoff on Highway 108 (just west of Dardanelles). Although visits were made to the site on three consecutive days (26–28 July), the terrain was too formidable to permit extensive collecting, and only butterflies on or near the road could be captured. This is regrettable because the specimens taken show a high incidence of aberrant coloration. Single individuals of the typical form (Fig. 1) were captured 26 and 27 July. These two compare closely in size and maculation with a typical male taken two weeks later and 4,000 feet higher, at Sonora Pass. A partially orange-suffused male (Fig. 2) was also captured 27 July; it approximately matches the most extreme specimens in the large collection of *nubigena* at the American Museum of Natural History. Two additional specimens taken on 26 July (Fig. 3, ♂) and 28 July (Fig. 4, ♀) correspond closely to the named aberration *rubrosuffusa* Comstock, described from the Mammoth Lakes area in Mono County, California.

Although this sampling of the Clark's Fork colony is too small to be of real significance, it is tempting to suggest that it might be representative of phenotypic variation extant at the time. The five specimens were captured on three different days, in morning, noon, and late afternoon. Further information is provided by J. C. Montgomery (*in litt.*) of Redwood City, California, who in a previous year during mid-July collected a number of *editha* from a colony at Dardanelles, at an elevation of about 6,000 feet. This locality is also on Highway 108, but at a large meadow along the Stanislaus River, about three miles from the Clark's Fork site. Montgomery's specimens also tend to be relatively light and orange-washed, although not averaging as much so as the examples illustrated (Figs. 3, 4). It is possible, as Mr. Montgomery suggests, that colonies of *E. editha nubigena* from moderate elevations characteristically tend toward the orange-suffused form. There may well be other forces acting, since a number of unusually light or orange-washed specimens representing *Melitaea palla* Boisduval (see Fig. 5, typical, and 6, light example from Clark's Fork, taken together), *Vanessa virginiensis* (Drury), *Polygonia zephyrus* (Edwards), *Oeneis chryxus stanislaus* Hovanitz, and *Papilio zelicaon* Lucas, were captured in the general area of the *editha* colony on 26–28 July. This suggests that the "aberration" tendency may have been caused by climatic conditions during the earlier part of the same generation. The weather at moderate elevations in the central Sierra Nevada was moderately warm during May, 1963, and it is possible that most of the above-mentioned species could have undergone normal larval stages at that time. However, cold weather with heavy snows followed during June. Whether this climate sequence had any connection with the number of light and orange-washed specimens captured in the

area in rather casual collecting during the three-day period in late July could be tested under properly controlled systems in the laboratory, or by assiduous collecting in the Sierra Nevada at moderate elevations in years similar to 1963.

EUPHYDRYAS CHALCEDONA SIERRA (Wright)

A substantial colony of *E. c. sierra* was discovered unusually late in the season on the very summit of Mt. Tallac, above Lake Tahoe, at an elevation of 9,900 feet, with only fresh males in evidence despite the date, 22 August. A colony of *E. sierra*, which normally has its peak flight in July, exists in Glen Alpine Creek below Mt. Tallac at an elevation of 6,500 feet, and the species was unexpected at the summit in late August. Other species flying at Mt. Tallac included *Oeneis chryxus ivallda* (Mead) (fresh to worn) and various *Vanessa*, but no *E. editha nubigena*, the expected *Euphydryas*, were observed.

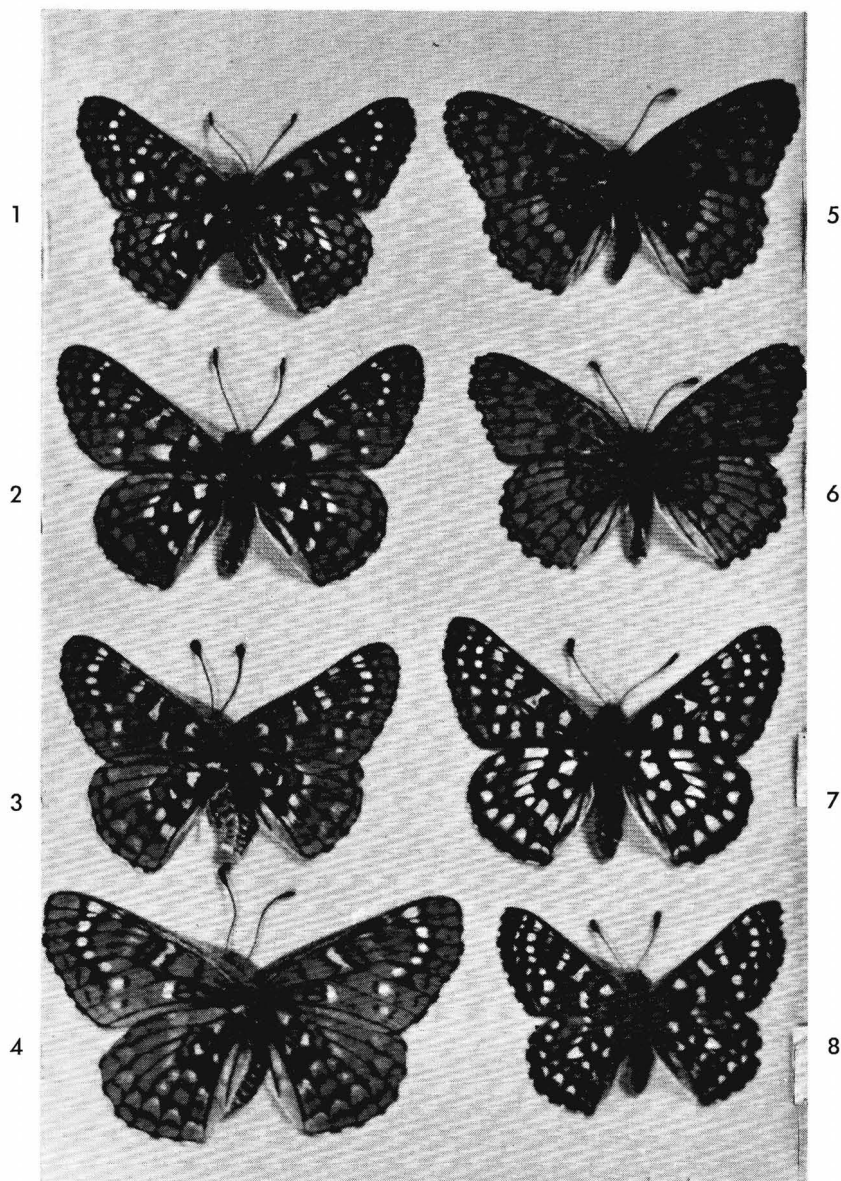
A very small *Euphydryas* taken in the Sonora Pass area (elevation 9,800 feet) on 28 July, at first was presumed to be *E. nubigena*, but was later determined to be a dwarfed individual of *E. chalcedona sierra*. Collected at an unusually high altitude, this specimen measured 8 mm less in wing-span than the average of 37 mm exhibited in the series taken from Mt. Tallac one month later (see Figs. 7, 8). The relationships between the various named and unnamed forms of *E. chalcedona* in the central Sierra Nevada are indeed complex, and like many specimens, the Sonora Pass individual does not seem to fit any well-known pattern. Another very worn specimen, probably assignable to *E. chalcedona sierra*, of natural size and somewhat orange-washed, was also taken in the Sonora Pass area on 21 August.

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LITERATURE CITED

- ABBOTT, C. H., 1962. A migration problem—*Vanessa cardui* (Nymphalidae), the painted lady butterfly. Jour. Lepid. Soc., 16: 229–233.
DOS PASSOS, C. F., 1964. A synonymic list of the Nearctic Rhopalocera. Lepid Soc., Mem. 1, New Haven, Conn., 145 pp.
GARTH, J. S., & J. W. TILDEN, 1963. Yosemite butterflies. Jour. Res. Lepid., 2: 1–96.
HOVANITZ, W., 1941. Parallel ecogenotypical color variation in butterflies. Ecology, 22: 359–284.



EXPLANATION OF PLATE

Figs. 1-4. *Euphydryas editha nubigena* (Behr), near Dardanelles, Tuolumne Co., Calif., 1, ♂, 27 July 1963; 2, ♂, 27 July 1963; 3, ♂, 26 July 1963; 4, ♀, 28 July 1963. Figs. 5, 6. *Melitaea palla* Boisduval, Iceburg Meadow near Dardanelles, Tuolumne Co., Calif., ♂♂, 27 July 1963. Figs. 7, 8. *Euphydryas chalcedona sierra* (Wright), 7, Mt. Tallac, summit, El Dorado Co., Calif., 22 August 1963; 8, dwarf, Sonora Pass, Tuolumne Co., Calif., 28 July 1963.