

dozen or so larvae each and they were located near the base of leaves just above the ground. *Euphydryas editha* has been known to feed upon other species of *Castilleja* (e.g., *C. nana* Eastw. and *C. lapidicola* Heller), but not on *C. pilosa* which is a very different looking plant to be a "paintbrush." For a review of the known foodplants of *Euphydryas editha* see White and Singer (1974, J. Lepid. Soc. 28: 103-107).

On 5 June 1978, I was collecting in the Pine Nut Mountains of Douglas Co., Nevada with David L. Bauer. About 11 mi S of U.S. highway 50, on the Brunswick Canyon-Sunrise Pass Road, we discovered a large colony of *Euphydryas chalcedona* (Double-day) on a dry slope (ca. 5,000-6,000 ft in elevation) in the pinyon-juniper zone. This is the first time that a colony of *E. chalcedona* has been located east of the Carson Valley (although Bauer noted that he had taken a few individual specimens in the Pine Nuts previously). The butterflies appear to be assignable to subspecies *macglashanii* (Rivers), but the usual *macglashanii* foodplants (*Penstemon brevifloris* Lindl. and *Penstemon lemmonii* A. Gray) could not be located in the vicinity; nor could we find any other known foodplant of *E. chalcedona*. Adults of both sexes were avidly nectaring at wild onion (*Allium* sp.) and we noticed that females were paying quite a bit of attention to a small *Orthocarpus* sp. with long filamentous leaves. I caged two females with several sprigs of the *Orthocarpus* plant. These females subsequently oviposited on the plants—demonstrating the probability that this is indeed their foodplant. Previously recorded foodplants for *E. chalcedona* have included a number of species of Scrophulariaceae, including *Penstemon*, *Castilleja*, *Mimulus*, *Diplacus* and *Scrophularia* but not *Orthocarpus*. Thus this is the only report of *E. chalcedona* making use of an annual for oviposition. (Is it possible that competition for food between this species and *E. editha*, which frequently feeds on annual scrophs, has occurred in other areas?)

I am indebted to Robert Gustafson of the Los Angeles County Museum of Natural History for identification of the two foodplants. Because the specimens of the *Orthocarpus* sp. were not in flower, they could be identified only to genus and not to species.

JOHN H. MASTERS, 25711 North Vista Fairways Drive, Valencia, California 91355.

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NYMPHALIS MILBERTI (NYMPHALIDAE) NEAR SEA LEVEL IN CALIFORNIA

Nymphalis milberti Latreille is regarded as a rarity on the Pacific Coast and is usually recorded at high elevations. Shapiro (1974, J. Res. Lepid. 13: 157-161) pointed out that it is occasionally taken below 300 m in northern and central California and that such occurrences seem to involve only overwintered females. It was suggested that *N. milberti* overwinters at low elevations and breeds there in April, the resulting offspring dispersing upslope. Because of the low numbers, such movements would be very difficult to detect. *N. milberti*, unlike *N. californica* Bdv., is not considered a migratory species. Its suggested movements, however, parallel those proposed by Shapiro (1975, J. Res. Lepid. 14: 93-97) for *N. californica*. In the northeast *N. j-album* Bdv. & LeC. shows a seasonal pattern of occurrence suggesting the same phenomenon (fresh adults at high elevations in July; overwintered ones at low elevations November-April; Shapiro 1974, Search (Agriculture) 4(3): 12).

On 2 April 1978 Mr. Noel LaDue took a worn female *N. milberti* at Rancho Cordova, Sacramento Co., California (about 20 m). On 26 May 1978 I took two fresh male *N. milberti* on vetch flowers about 1.5 km from the site of LaDue's capture. Both native and introduced stinging nettles (potential host plants) occur in the vicinity in riparian forest. The implication that breeding took place is clear and is bolstered by a report

(J. Brock, *in litt.*) of early spring breeding near Bakersfield in the San Joaquin Valley (in another year). It is worth noting that populations of *N. milberti* were unusually high in the Sierra Nevada (Nevada, Sierra counties) and the Trinity Alps (Trinity Co.) in late 1977. On 16 August 1977 several dozen fresh individuals were observed on *Monardella* flowers on the south slope of Mount Shasta, 1,425 m. If enough low-elevation records can be accumulated it may be possible to demonstrate regular altitudinal dispersal even in a species so rare that tagging is unlikely to bring significant results.

ARTHUR M. SHAPIRO, *Department of Zoology, University of California, Davis, California 95616.*

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HISTORIS ODIUS (NYMPHALIDAE) SUCKING ON COCOA SEEDS (STERCULIACEAE) IN NORTHEASTERN COSTA RICA

Although many genera of the subfamily Nymphalinae in the American tropics suck juices from dung, rotting fruit, and sap flows on trees (e.g., Seitz 1924, *Macrolepidoptera of the World*, Vol. 5, American Rhopalocera, A. Kernan Verlag, Stuttgart, 615 pp.; Gilbert 1972, *Proc. Natl. Acad. Sci. USA*, 69: 1403-1407), among the best known for such behavior are *Historis* and *Prepona*. *Historis odius* Fabricius is a large, robust, and swift-moving species widespread throughout the West Indies, Mexico, and Central and South America (Seitz, *op. cit.*). Although a familiar species in forest light gaps and borders in tropical rain forest regions generally below 600 m elevation (*pers. obs.*), *H. odius* adult food records are scarce. From the available literature, one must assume that they feed on rotting fruit, fermenting sap, and dung. While this is very likely the case, I wish to report *H. odius* sucking on the drying seeds of the well known commercially-cultivated, tropical cash crop, *Theobroma cacao* Linnaeus (Sterculiaceae) commonly known as "cacao" or "cocoa."

The farm complex Compañía Agrícola Huntro S.A. (CAHSA) includes extensive plantings of cacao. During the latter part of the wet season each year, large quantities of seeds are extracted from pods and placed on drying tables. Before being shipped, the seeds must be dried. In sunny weather this process usually takes 2-3 days, with 4-7 h exposure each day. When extracted from the pods and placed on the drying tables, the 30-40 mm long ovoid seeds are individually encased in a white pulp which is known to be sweet, highly aromatic, and palatable to mammals, which act as dispersal agents (Cuatrecasas 1964, *Contribut. U.S. Nat. Herbarium*, 35: 379-614), even though the seeds are scentless and tasteless to humans. These properties of the pulp apparently attract small mammals which remove the seeds, suck the pulp, and disperse the seeds (*ibid.*). Little is known about invertebrates being attracted to the seeds and pulp. Between 30 July and 2 August 1978, I had the opportunity to observe *H. odius* and other insects visiting the freshly extracted and drying seeds (with pulp intact) at "Finca La Tirimbina," a part of the CAHSA complex near La Virgen (220 m elev.), Heredia Province, Costa Rica. Although the weather is generally rainy and overcast at this time of the year, the three days of observation were clear and sunny.

At 1100 h 30 July, I noticed three individuals of *H. odius* sucking on the sticky, moist surfaces of the drying seeds; all of the butterflies were on the same drying table (about 4 × 5 m) and each had its proboscis wedged down between the seeds (Fig. 1). This table was shaded under a roof, and other tables in direct sunlight and containing seeds which had been drying for longer periods had attracted no butterflies or other insects. Other insects seen on the shaded table included one freshly eclosed *Hamadryas februa*