BIOLOGICAL OBSERVATIONS ON *CALLOPHRYS VIRIDIS* (LYCAENIDAE)

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Clench (in Ehrlich and Ehrlich, 1961) states that the larval food plant of *Callophrys viridis* (Edwards) is "probably *Eriogonum latifolium*." In fact, the mature larva and pupa of this species (given as *Thecla dumetorum*) were described in detail by F. X. Williams (1910) in his paper on the butterflies of San Francisco. The present note will present some additional observations made by the present authors and by J. A. Powell of the University of California, Berkeley.

On April 16, 1966 at about 11:00 A.M. the authors observed two females of *C. viridis* in the act of oviposition. The locality is on a ridge leading west from the peak of Mt. San Bruno, San Bruno Mountains, San Mateo County, California. The day was warm and sunny with no wind (an unusual occurrence at this site) and *C. viridis* was flying in large numbers. Just below the ridge top one individual was noted to be displaying the habit of a female in search of an oviposition substrate, *i.e.* making short flights from plant to plant with brief "inspections." After alighting on five or more plants (not *Eriogonum*), the female lit upon a clump of *Eriogonum latifolium latifolium* Sm. The female then slowly walked up one of the developing bloom stalks and back down, whereupon she deposited a single pale green egg on the underside of a young leaf near the base of the bloom stalk. The female spent about one or two minutes on the plant, a period which terminated with the deposition of one egg. The butterfly rubbed its hindwings in an antero-posterioral movement which seemed more vigorous than is usual for this species.

The second female observed in the act of oviposition went through a sequence of events which were essentially identical to those described above.

Coolidge (1924) noted that females of *Callophrys dumetorum perplexa* B. & B. in southern California oviposited "upon the sepals of just unfolding buds, rarely on the leaves" of its food plant, *Lotus scoparius* (Nutt.) Ottley. He noted that females sometimes spent a half hour or more before selecting a suitable site for oviposition.

Both of these species of *Callophrys* feed upon the reproductive portions of their host plants in the larval stage, hence it may be possible that eggs of *C. viridis* are occasionally laid upon the reproductive portions of the plant. However, this is probably an atypical occurrence as almost none of the plants are in bloom while the adults are in flight.

J. A. Powell has corroborated the observations made by Williams that the larvae of *viridis* strongly resemble the color of the blooming flower heads of the *Eriogonum*. On June 5, 1963, while collecting in the San Bruno Mountains, Powell found several larvae of *viridis* resting in exposed areas eaten out of flower heads of *Eriogonum latifolium*. He noted that the larvae, which were pale whitish with pink markings, "closely simulated the general appearance of the flowers." Powell's observations, that the larvae change apparent coloration during their development and that the larvae become a dull reddish just prior to pupation, supplement the detailed description of the variation in larval coloration of this species made by Williams (1910). Reared adults of *C. viridis* were obtained from the larvae collected by Powell and are contained in the collection of the California Insect Survey, University of California, Berkeley. The pupal shells have been examined by John Downey, Southern Illinois University, and are cited in his review of the structure and function of the pupal stridulatory apparatus of Lycaenidae (1966).

It is also noted that *C. viridis* has been found to occur only within the limits of the distribution of nomenotypic *E. latifolium* and not where its other subspecies occur.

LITERATURE CITED

CLENCH, H. K., 1961. *In*: Ehrlich and Ehrlich, How to Know the Butterflies. Wm. C. Brown Co., Dubuque, pp. 176–228.

COOLIDGE, K. R., 1924. Life history studies of some Californian Rhopalocera (Lepidoptera). Trans. Amer. Ent. Soc., 50(4): 319–335.

DOWNEY, J. C., 1966. Sound production in pupae of Lycaenidae. Jour. Lepid. Soc., 20: 129–155.

WILLIAMS, F. X., 1910. The Butterflies of San Francisco, California. Ent. News, 21(1): 30–42.

RANGE EXTENSION OF *CALLOPHRYS COMSTOCKI* (LYCAENIDAE)

The authors found *Callophrys comstocki* Henne relatively abundant in a large canyon on the north slope of Clark Mountain, San Bernardino County, California, on April 15, 1966. The habitat is similar to that of the type locality in the Providence Mountains, California, being typical Pinyon-Juniper Woodland in the Upper Sonoran Life Zone. The butterfly was found mainly in the small side canyons of the larger canyon, from 5200 feet to 6000 feet elevation. The new locality is 40 airline miles north of the type locality, which was previously the only known locality. This species should also occur in the New York Mountains, which lie between the Providence Mountains and Clark Mountain.—JOHN F. EMMEL, THOMAS C. EMMEL, *Stanford University, Stanford, California* and JON H. SHEPARD, *Notre Dame University of Nelson, Nelson, British Columbia, Canada.*