

A NEW *EUPTYCHIA* SPECIES FROM NORTHWESTERN MEXICO (SATYRIDAE)

LEE D. MILLER AND JACQUELINE Y. MILLER

Allyn Museum of Entomology of the Florida Museum of Natural History,
3621 Bay Shore Road, Sarasota, Florida 34234

ABSTRACT. A new euptychiine satyr, *Euptychia rubrofasciata*, is described based on 15 males and 4 females from NW Mexico, and compared with other similarly red-suffused species. A possible *Selaginella* foodplant association is discussed, and a mimetic assemblage involving satyrids is suggested.

Additional key words: Euptychiini, *Euptychia rubrofasciata*, mimicry, *Selaginella*.

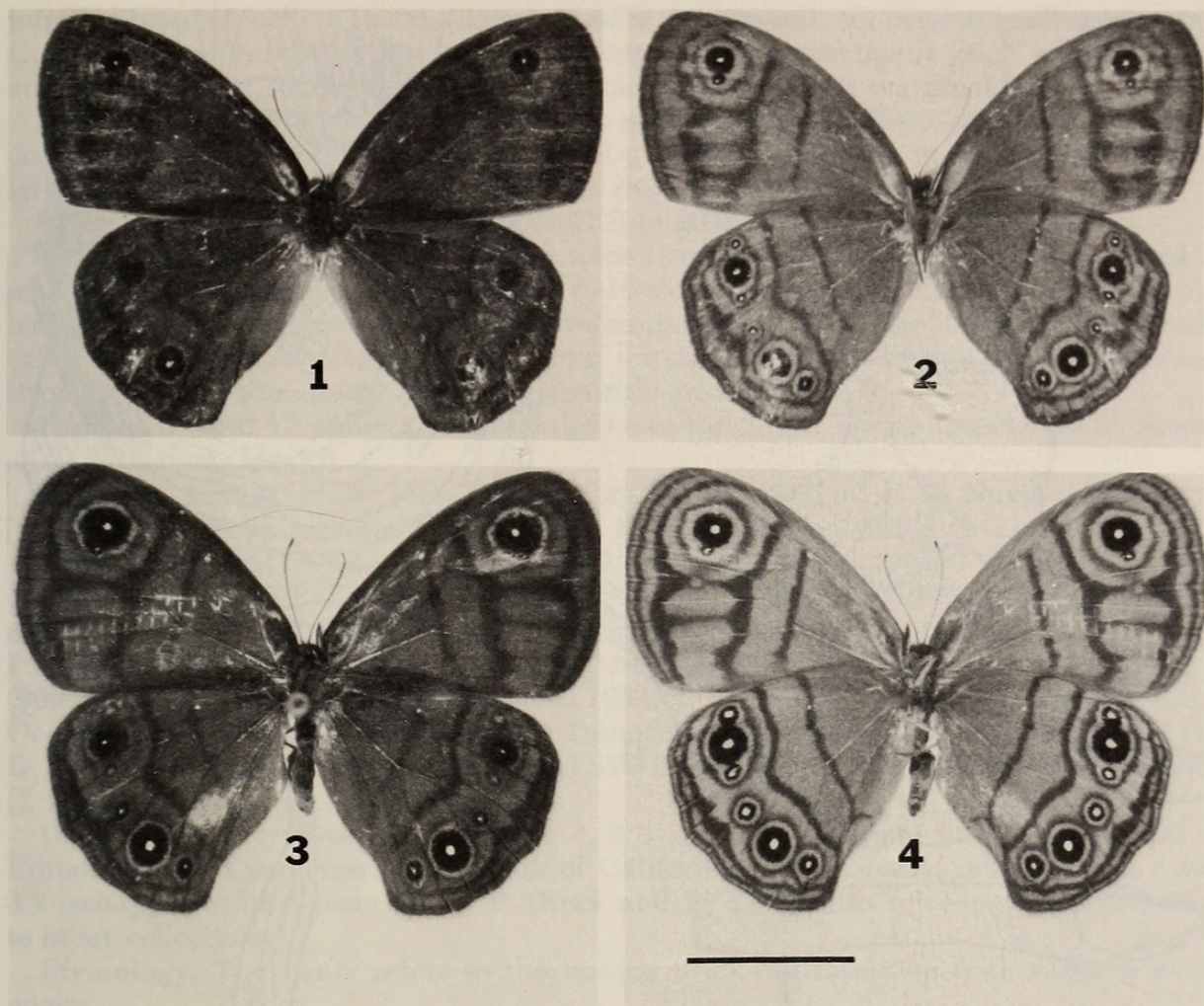
Mexican and northern Central American euptychiine Satyridae are unusual in that several species are strongly laved with red on the upper surface. This condition is shown in such diverse species as *Euptychia fetna* Butler, *Megisto rubricata* (W. H. Edwards), a few species of *Cyllopsis* (L. Miller 1974) and *Paramacera* (L. Miller 1972), *Cissia pellationia* (Godman & Salvin), and *C. cleophes* (Godman & Salvin). These red-patterned elements are rare in Euptychiini, and they are almost unknown in members of the tribe outside Mexico and northern Central America. Recently, Douglas Mullins showed us a series of a red-patterned species from Sonora, Mexico, that is totally unlike any other in this complex of "look alike". Later, James Brock and Jerry Powell sent additional specimens. This insect is the most ornate of the Mexican red-laved euptychiines, and is undescribed. A name for it is required for Brock and Mullins's forthcoming book on the butterflies of Sonora.

Euptychia rubrofasciata L. & J. Miller, new species (Figs. 1-9)

Male (Figs. 1, 2). Head clothed with fuscous dorsal setae and somewhat paler hairs ventrad; area immediately behind eye narrowly white. Eyes rich brown, only slightly hirsute. Antennae plain brown above, light brown and narrowly ringed on shaft, dark brown beneath; tip black. Palpi clothed with long fuscous ventral setae and short lateral white hairs. Thorax and abdomen clothed with short fuscous dorsal and gray-brown ventral hairs. Legs clad with short gray-brown hairs.

Upper surface of forewing fuscous, grayer and paler distad of cell, with a darker fuscous submarginal shade and a single smooth, dark fuscous marginal line; wing laved with brick-red in posterior part of cell and just posteriad of cell, and with a darker red fascia from end of cell to middle of Cu_2-2A , a blackish fuscous subapical black ocellus in M_1-M_2 , and a smaller one in M_2-M_3 , each with a single silver pupil and narrow, dull ochereous ring. Upper surface of hindwing also fuscous, slightly paler subapically, with submarginal darker fuscous shade and a double dark fuscous marginal line. Wing laved with brick-red just outside and posteriad of cell, a red fascia outside cell from apex to near inner angle, blackish fuscous ocelli in $Rs-M_1$ (large and diffuse), M_1-M_2 (very small, almost a point and occasionally absent), and a well-defined, quite large ocellus in Cu_1-Cu_2 , all ocelli consisting of a white pupil and a narrow, dull ochereous iris.

Under surface of forewing light gray-brown slightly shaded with red in and just posteriad of cell, with three brick-red fascia from near costa to inner margin, one across



FIGS. 1-4. *Euptychia rubrofasciata*. 1, 2, Holotype ♂, upper (1) and under (2) surfaces. 3, 4, Paratype ♀, upper (3) and under (4) surfaces. Scale line represents 10 mm.

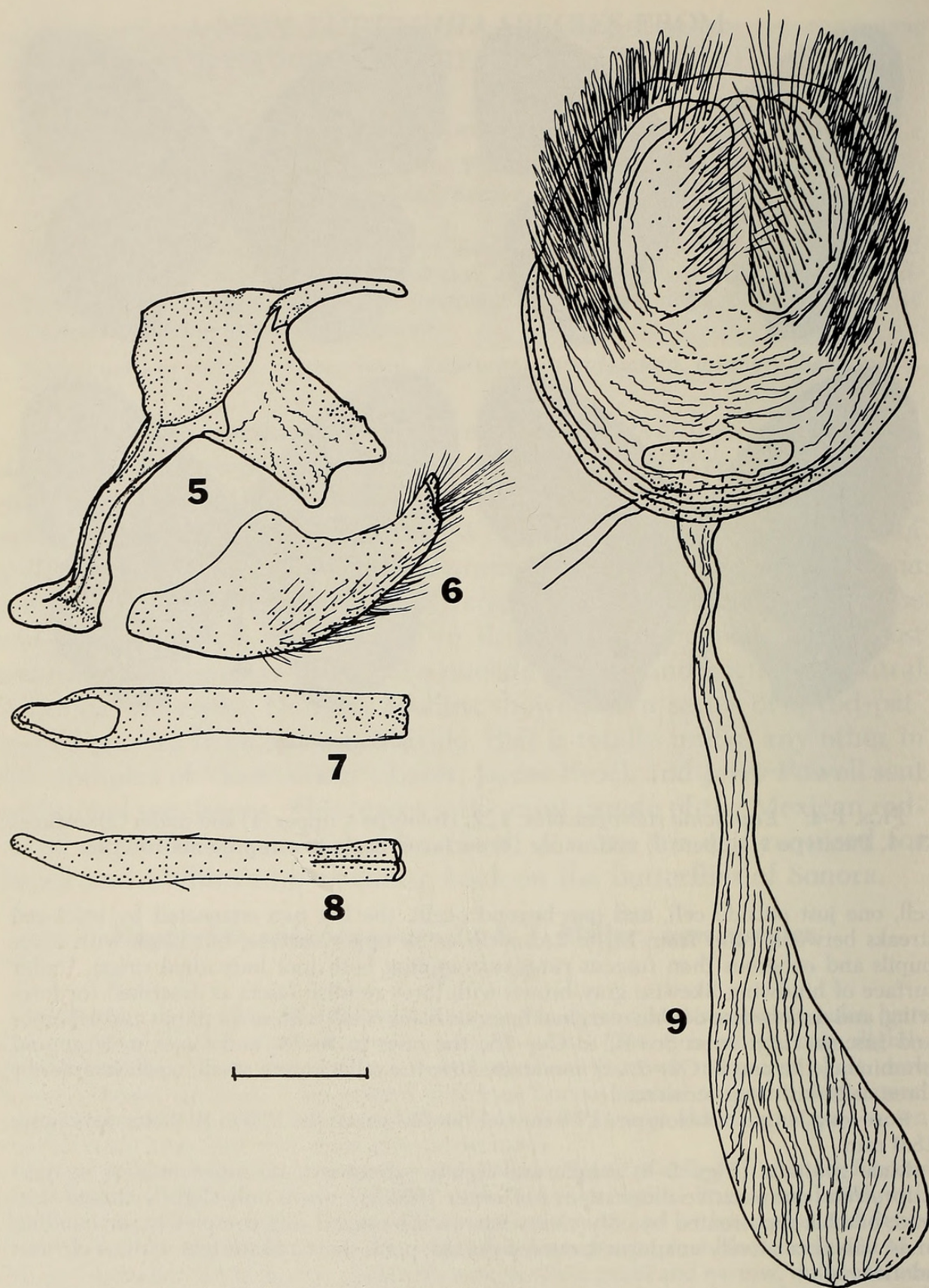
cell, one just outside cell, and one beyond ocelli, the last two connected by brick-red streaks between veins from M_3 to $2A$; ocelli as on upper surface, but black with silver pupils and ocherous then fuscous rings surrounding both (not individual rings). Under surface of hindwing likewise gray-brown with three reddish fascia as described for forewing, and dark brown double marginal lines; six black ocelli with silver pupils and ocherous and fuscous rings from $Sc+R_1$ to Cu_2-2A , the ones in $Rs-M_1$ and Cu_1-Cu_2 large and prominent, the one in Cu_2-2A of moderate size, the others quite small; ocelli in anterior three cells with rings coalesced.

Forewing length of holotype ♂ 17.6 mm, of the 14 ♂ paratypes 17.3 to 19.2 mm, averaging 18.0 mm.

Male genitalia (Figs. 5-8) simple and lightly sclerotized; no superuncus as in most *Euptychia* (comparative illustrations in Forster 1964:81); uncus only slightly curved ventrad; brachia represented by only a very narrow sclerotized ring completely surrounding anus; valvae relatively unadorned, curved dorsad; penis short and straight with no obvious adornment.

Female (Figs. 3, 4). Head, thorax, abdomen, and appendages as in ♂, except thorax and abdomen below somewhat tanner.

Upper surface of forewing somewhat lighter than that of ♂ and more extensively laved with reddish fulvous, rusty fascia across cell and just beyond it, reddish streaks between veins from M_3 to $2A$, a fuscous submarginal fascia and double marginal fuscous lines; blackish-brown coalesced ocelli with silver pupils in M_1-M_2 (large and prominent) and M_2-M_3 (very small) with coalesced narrow ocherous and fuscous rings. Hindwing above with similar ground color, red shading slightly more extensive than in ♂, and white-



FIGS. 5-9. Genitalia of *Euptychia rubrofasciata*. 5-8, Holotype ♂. 5, Uncus, tegumen, saccus, and associated structures, left lateral view. 6, Right valva, internal view. 7, Penis, dorsal view. 8, Left lateral view. 9, Paratype ♀, ventral view, genit. prep. M-7336-6 (J. Y. Miller). Scale line represents 0.5 mm.

pupilled fuscous ocelli in Rs-M₁ (large), M₃-Cu₁ (very small, not present in all specimens), Cu₁-Cu₂ (large), and Cu₂-2A (small and absent in one specimen), each with ocherous and fuscous rings; red-brown submarginal fascia, two fuscous marginal lines.

Under surface of forewing somewhat less gray than in ♂ with similar markings except ocelli. Under surface of hindwing also less gray than in ♂, but marked similarly with larger ocelli and more prominent ocherous rings.

Forewing length of the 4 ♀ paratypes 17.6 to 20.0 mm, averaging 19.2 mm.

Female genitalia (Fig. 9) very lightly sclerotized with 8th segment heavily clothed in scales; papillae anales densely setose with 6-10 elongated setae posteriad; sterigma simple, lamella postvaginalis membranous with numerous folds, and lamella antevaginalis indicated by a lightly sclerotized plate; ductus bursae and corpus bursae membranous and strongly folded; attachment of ductus seminalis near atrium.

Described from 15 males and 4 females from the Sierra Madre Occidental of Sonora and Chihuahua, Mexico.

Holotype ♂ (Figs. 1, 2). MEXICO: Sonora, 13 mi (21 km) E El Novillo, 12 August [19]85 (J. P. Brock); ♂ genitalia preparation M-7341-v (Lee D. Miller).

Paratypes. All MEXICO: Sonora, 8 ♂, 1 ♀, same data as holotype, 1 ♀ (Figs. 3, 4), Rte. 16, 10 mi (16.1 km) E Trinidad, "Cypress" Canyon, 7 August [19]86 (D. D. Mullins); 2 ♂, 2 ♀, San Nicholas-Yecora Rd., 4.1-10.3 mi (5.6-16.5 km) E Santa Rosa, 7.viii.1986 (J. P. Brock) (1 with ♀ genitalia preparation M-7346-v (J. Y. Miller)); 3 ♂, creek at 3000 ft (909 m), 6 mi (9.6 km) W Yecora, 31.vii.1984 (J. P. Brock); Chihuahua, [Sierra] Madre Occid[ental], Yepachic Rd., Canyon Rio Tomochic (oak/grass hillside), 31 July [19]84 (D. D. Mullins); Sinaloa, 1 ♂, 2 mi (3.2 km) SW Potrerillos, 4200' (1280 m) viii.7/8.[19]86 (J. Brown & J. Powell).

Disposition of type-series. Holotype ♂, 2 ♂ and 1 ♀ paratypes in Allyn Museum of Entomology; 1 ♂ paratype in collection of California Insect Survey; remaining 11 ♂ and 3 ♀ paratypes to be returned to J. P. Brock and D. D. Mullins for eventual distribution to other collections.

Etymology. The name refers to the unique brick-red fascia on both surfaces of all wings.

Discussion. That this insect proved to be a member of *Euptychia* came as a surprise. It is the largest known *Euptychia*, and superficially more closely resembles *Cissia*. However, the ♂ genitalia are unmistakably *Euptychia*, the abbreviated brachia fused with the tegumen. The ♀ genitalia are simple and very lightly sclerotized, this also in keeping with the apomorphic condition for *Euptychia*.

The only published life history information about *Euptychia sensu lato* is that by Singer et al. (1971) who found the white congener, *E. westwoodi*, feeding as a larva on the lycopsid *Selaginella*. Those authors suggested that *Selaginella* might have "rather potent biochemical defenses," since few herbivores attack them, and that these defenses might convey some protection to *Euptychia*. These toxic chemical defenses have yet to be proven (J. Beckner pers. comm.), but seem reasonable. The Mexican *E. fetna* feeds also on *Selaginella* (J. Llorente and others pers. comm.). *Euptychia westwoodi* appears to be in a mimetic complex involving lycaenids and riordinids (Singer et al. 1971:1342).

We suggest that *E. rubrofasciata* also feeds as a larva on *Selaginella*. This is supported by Brock (pers. comm.), who writes "... nearly all the *Euptychia* were found on a shady [canyon] wall loaded with a *Selaginella* species." He further mentioned that he identified the *Selaginella* because it was so abundant and conspicuous at the spot where the new species was most abundant. Mullins (pers. comm.) independently confirms this habitat preference.

Assuming the above foodplant and its toxicity to predators, the present new species and *E. fetna* may be Muellerian mimics, and the other red-laved euptychiines (and perhaps other butterflies) could be Batesian mimics of them.

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discussions concerning *E. fetna* and to J. Beckner for discussions about the properties of *Selaginella*.

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