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A NEW SUBSPECIES OF *CALISTO* (SATYRIDAE) FROM HISPANIOLA, WEST INDIES

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I have recently (Schwartz, 1983) named *Calisto galii* as a new species of satyrid butterfly from the Cordillera Central in the República Dominicana on the Antillean island of Hispaniola. The closest relative of *C. galii* is *C. chrysaoros* Bates, 1935, whose distribution is removed some 150 km to the south of that of *C. galii*. These two species occur not only allopatrically at high elevations but also occur on two different physiographic sections of Hispaniola. These two sections are called the north and south islands (see Schwartz, 1980, for details); this terminology refers to the fact that modern Hispaniola represents a fusion of two palaeoislands, each with a distinctive fauna, which have been joined, by lowering sea levels, in the area that is now the Cul de Sac-Valle de Neiba plain in Haiti and the República Dominicana.

Calisto chrysaoros is now known from two of the three mountain ranges (Massif de la Hotte, Sierra de Baoruco) that form the west-east spine of the south island. *Calisto galii*, on the other hand, has been known only from the major north island range, the Dominican Cordillera Central, at elevations between 549 m and 2227 m. But there are other high elevation mountain ranges in the República Dominicana that seem likely to harbor this species. The most notable is the Sierra de Neiba. This range reaches a maximum elevation of 2261 m at Pico Neiba and is totally isolated by lowlands from the Cordillera Central to the north (Valle de San Juan) and from the Sierra de Baoruco to the south (Valle de Neiba). Both species are confirmedly high elevation butterflies and do not occur in the lowlands, even if these lowlands are mesic, and surely not if they are xeric (see Schwartz, 1983, for details of habits and habitats).

The butterflies of the Sierra de Neiba are now just becoming known. In the República Dominicana, this range consists of a pair of parallel ranges separated by a relatively high (750 m) mesic valley. As the Sierra de Neiba crosses the Dominico-Haitian frontier, these two ranges diverge, the more southern forming the Haitian Montagnes de Trou-d'Eau and the more northern, the Montagnes Noires. Access to the Sierra de Neiba by vehicle is limited to two roads. One, the road between Elías Piña and La Descubierto in the República Dominicana, follows the border between the two countries and ascends and descends both ranges, where one reaches elevations of about 1900 m. In addition, this road passes from low to moderate elevation cultivation into high elevation deciduous forest. The second

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road is in Haiti at the extreme western end of the Montagnes de Trou-d'Eau, between Croix des Bouquets and Mirebalais. Maximum elevation reached in this portion is about 600 m; the entire range is much more xeric than that portion to the east and has been extensively deforested and cultivated. There is no road that crosses the Haitian Montagnes Noires section of the Sierra de Neiba, but observations from the adjacent lowlands suggest that it is an open, almost barren, and extremely rocky and boulder-strewn range, of little apparent interest to the lepidopterist.

In 1981, Frank Gali and I ascended the northern range of the Sierra de Neiba (south of Elías Piña as far as the army border post of Puesto Calimete, which lies near the crest of the north range). Although we secured a new subspecies of *Greta diaphana* Drury (Schwartz, 1982) and a new species of *Calisto* (Schwartz and Gali, 1984), no member of the *chrysaoros-galii* pair was taken. Again, in 1982, we ascended this same road as far as Puesto Calimete; a stop at the type-locality of the new species of *Calisto* (collected in 1981) yielded no more specimens of that taxon, but Gali took a single much tattered and worn ♀ of the *chrysaoros-galii* pair. Knowing that one or the other species occurs in the Sierra de Neiba, we later ascended the south range, on the road from Hondo Valle toward La Descubierta. This road, after traveling along the valley floor for 6 km, abruptly ascends the northern slope of the mountains, beginning at the army post of Caña Miguel, passes Puesto Aniceto Martínez 6 km further, and finally reaches Puesto Pirámide 204, near the highest portion of the range, 6 km distant from Aniceto Martínez. The uplands (from about 2 km NE Puesto Pirámide 204) still have excellent and in places virgin deciduous forest, and the road beyond the post travels through this same forest on a rolling plateau for many kilometers. It was within this wooded region in the Neiba uplands that we collected a series of one of this pair of species. Due to the interposition of the Sierra de Neiba between the Cordillera Central and the Sierra de Baoruco, we were curious (and made even more so by the condition of the ♀ specimen taken previously) as to which species (*chrysaoros* or *galii*) occurred in this range. The specimens from the Puesto Pirámide 204 region showed that we were once more dealing with *C. galii*, which is quickly distinguished from *C. chrysaoros* by the presence of a bold white unhw costal dot.

Comparisons of the series of ten Sierra de Neiba specimens with the type-series of *C. galii* also demonstrated that the two lots were not identical. This is not surprising, since we are dealing here with two mountain ranges, isolated from each other by an intervening valley, and also with a confirmed upland butterfly. Geographic isolation is doubtless complete; the differences between the two populations are not subtle, nor do these butterflies show any tendencies toward *C. chrysaoros* (which might be expected in this range). Accordingly, I hereby propose that the Sierra de Neiba butterflies be called:

Calisto galii choneupsilon, new subspecies

Fig. 1 - holotype; Fig. 2 - ♂ paratype

Diagnosis. Males: fw length 15 - 17 mm (\bar{x} = 15.7 mm; N = 7); up dark brown (Pl. 16C12; color designations from Maerz and Paul, 1950); un rich brown (Pl. 16C11), unfw slightly paler (less rich) than unhw; unfw with an ocellus, outlined in dull yellow to tan and a single slightly eccentric (displaced costad) white pupil, the ocellus lying in R_5-M_3 but primarily in M_1-M_3 , the edges only extending into R_5-M_1 , the pupil in M_1-M_2 ; unhw pattern consisting of two pale white "lines," the discal line crossing and encompassing the marginal one-quarter of the cell, its inner margin regular, that portion between the cell and the inner margin pale tan, that from and including the cell to the outer costal margin clear bold white; a

second "line" beginning about one-third the width of M_3 - Cu_1 , and extending into 2_A - 3_A , continuous but irregular, consisting of: 1) a small white semicircle in M_3 - Cu_1 , joined by a pale line along M_3 to the white inner "line" in the cell end, 2) a large white triangular figure in Cu_1 - Cu_2 , capping an ocellus marginally and connected to the inner "line" discally by an obvious white line, resulting in the separation of a small dark brown triangular area from the rest of the ground color in the base of Cu_1 - Cu_2 ; 3) a reversed comma-shaped white marking in Cu_2 - $2A$, whose tail (4) may or may not continue into 2_A - 3_A . Marginal to this outer "line" is a series of ocelli or dots. There is a complete ocellus ringed with tan and with one (occasionally two) centrally placed pupil in Cu_1 - Cu_2 , a white dot or a very tiny complete ocellus in M_2 - M_3 , a small but complete ocellus in M_1 - M_2 , and usually a white dot in R_5 - M_1 (one exception). A hw midcostal white dot is present in all but one ♂ (FG 892), and the holotype has a white dot tucked between the base of the comma and the beginning of its tail in Cu_2 - $2A$. Three other ♂ agree in all details with the holotype except that the pale tail of the comma in Cu_2 - $2A$ is usually faint or absent. Most striking is the broad contact between the inner and outer "lines" in M_3 - Cu_1 and Cu_1 - Cu_2 , thereby resulting in a dark brown triangle or even rectangle (FG 900). In the three other ♂, the contact between the two "lines" is less obvious, but the outer white triangle in Cu_1 - Cu_2 is attenuate basally and comes close to contacting the inner "line." No ♂ shows a reduced pattern as in *C. g. galii* ♂. An additional difference between the two subspecies is the noticeably larger size of the unhw ocellus in Cu_1 - Cu_2 in *C. g. choneupsilon*. Male genitalia as in the nominate subspecies (Schwartz, 1983: Fig. 2).

Females: fw length 16 - 18 mm (\bar{x} = 17.3 mm; N = 3); upfw slightly paler (Pl. 16A9) than in ♂; uphw concolor with upfw and without a dull orange wash. The un is in general duller than the up; the unfw ocellus is like that in ♂. All unhw markings are as in ♂; with contact between, or close approximation of, the two pale "lines" in M_3 - Cu_1 and Cu_1 - Cu_2 , with a dark triangle cut off by this junction in one ♀ (AS 8615). The pale unhw "lines" are duller in ♀ than in ♂ and do not show the reduction in pattern that occurs in some ♀ *C. g. galii*. One ♀ (AS 8550), which is badly damaged and well-flown, lacks an obvious midcostal hw dot. On this basis alone, one might assign it to *C. chrysaoros*, but the wear of the specimen precludes any definitive statement, and I consider it *C. g. choneupsilon*.

Described from 10 specimens, seven males and three females, from the Sierra de Neiba, Republica Dominicana.

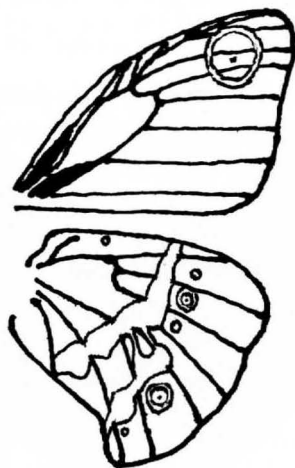


Fig. 1 *Calisto g. choneupsilon*, ♂ holotype, underside.

HOLOTYPE ♂; REPUBLICA DOMINICANA: PROVINCIA DE LA ESTRELLETA: 2 km NE Puesto Pirámide 204, 5200 ft. (1586 m), 6.VIII.1982 (F. Gali), *ex colln.* Frank Gali, now in the Allyn Museum of Entomology, Florida State Museum.

PARATYPES (all from República Dominicana, Prov. de La Estrelleta): FG 892 (♂), 1 km SW Puesto Pirámide 204, 1890 m, 5.VIII.1982, F.Gali; FG 913-914, AS 8614-8616, 8645 (4 ♂♂, 2 ♀♀), same data as holotype but collected by F. Gali and A. Schwartz; FG 900 (♂), same locality as holotype, 6.VIII.1982; AS 8550 (♀), 15 km S Eliás Piña, 9200 ft. (976 m), F. Gali.

Comparisons: *Calisto g. choneupsilon* does not need comparison with *C. chrysaoros*; the new subspecies differs from that species in the same ways as does the nominate subspecies of *C. galii*. From *C. g. galii*, *C. g. choneupsilon* differs in having all ♂♂ and ♀♀ fully patterned (not with various gradations of intensity of the unhw pale pattern), and in having the outer "line" white figures in M_1 - Cu_1 and Cu_1 - Cu_2 enlarged and connected to the inner "line" by white scales, the figures so large and extensive that a triangular or rectangular area of dark brown ground color is cut off by white from the remainder of the dark brown of the unhw. The ♂♂ of *C. g. choneupsilon* have a slightly smaller fw length than ♂♂ *C. g. galii* (15.7 mm versus 16.8 mm), and ♀♀ show the same phenomenon (17.3 mm versus 18.2 mm).

Remarks. *Calisto g. choneupsilon*, like *C. g. galii*, is a forest inhabitant. The specimen from south of Eliás Piña was taken at the edge of a dense deciduous woods (the conditions were very dry) between 1115 - 1215 h ($T = 34^\circ C$). On 5.VIII.1982, at the locality where Gali secured the holotype, Schwartz saw an individual sunning on the gravel road as it passed through dense deciduous forest, and another was seen as it flitted above a high bank of tall (1 m) ferns. The day was generally overcast; we collected between 1200 - 1400 h ($T = 27^\circ C$). On the following day, 2 km NE Puesto Pirámide 204, we collected between 1130 - 1430 h ($T = 27^\circ C$). At this locality, the road crosses a small stream, with an open field with *Cynoglossum amabile* (Boraginaceae) above the road. Along the edges of the road are "curtains" of a climbing grass, and *C. g. choneupsilon* were abundant in this immediate area, flying in front of the "curtains" and feeding on low roadside flowers. This entire area consists of an open field (in which we did not search) and dense mesic forest with grassy "curtains" along the immediate roadside. The behavior of *C. g. choneupsilon* here is typical of the species; their appearances were sporadic, and they are expert at dodging and seeking refuge, when disturbed, in the dense forest above the road. My contention that *C. galii* is typically a forest *Calisto* was amply confirmed; it is rare indeed to encounter the species away from the potential sanctuary of mesic forest. Since the only known food plants of larval *Calisto* are members of the Poaceae, one wonders if the "curtains" of climbing grasses, so common at this precise locality, are the larval food plant.

Etymology. The subspecific name is derived from the Greek; "choneuo" meaning "fuse,"



Fig. 2. *Calisto g. choneupsilon*, ♂ paratype (FG 892).

and "upsilon" which equals the Arabic letter Y, in allusion to the fusion of the Y-shaped unhw pattern in this population. The name is used as an appositional noun.

ACKNOWLEDGMENTS

Once more my debt is to Frank Gali, who not only secured a major portion of the type-series of the new subspecies and who also allowed me to study material in his collection (FG), but also took the photograph of the ♂ paratype. His companionship, enthusiasm, and cooperation in the field are always a pleasure to recognize. Specimens in my collection are designated by AS.

LITERATURE CITED

- Maerz, A., and M. R. Paul, 1950. A dictionary of color. McGraw-Hill Book Co., Inc., New York: pp. vii + 208.
- Schwartz, A, 1980. The herpetogeography of Hispaniola, West Indies. Stud Fauna Curaçao and Carib Is., 189:86-127.
- , 1982. Variation in Hispaniolan *Greta diaphana* (Ithomiidae). Bull. Allyn Mus. Ento., (69):1-10.
- , 1983. A new Hispaniolan *Calisto* (Satyridae). Bull. Allyn Mus. Ento., (80):1-10.
- , and F. Gali, 1984 Five new species of *Calisto* (Satyridae) from Hispaniola. Bull. Allyn Mus. Ento., (85):1-18.

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