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Description of a new species of *Forsterinaria* GRAY from the Pantepuy (Lepidoptera: Nymphalidae: Satyrinae)

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ABSTRACT. A new species of montane butterfly, *Forsterinaria hannieri* n. sp. (Nymphalidae, Satyrinae) is described from the Guyana Shield in Venezuela. It is most similar to *F. inornata* (C. FELDER & R. FELDER, 1867) known from western slopes of the Andes in Colombia and Ecuador, but it shows unequivocal differences, especially in the male genital morphology.

Key words: Euptychiina, *Forsterinaria*, new species, Pantepuy, taxonomy, Venezuela.

INTRODUCTION

The subfamily Satyrinae (Nymphalidae) is one of the most diverse groups of butterflies, including about 2500 species, and at least 120 genera and over 1100 species in the neotropical realm. Neotropical satyrines are generally divided into three major groups, Euptychiini, Pronophilini and Haeterini, attributed tribal or subtribal ranks depending on the author (LAMAS et al. 2004, PYRCZ 2004). Montane satyrines of the neotropical realm belong mostly to the Pronophilini (PYRCZ, 2004). The tribe Euptychiini, comprising 41 genera (VILORIA 2003), is mostly lowland and premontane. The only strictly montane genus of the Euptychiini is *Forsterinaria* GRAY (1973) which is the subject of this paper. Montane butterfly fauna of the cloud forests of the Guyana Shield in southern Venezuela, referred to by a biogeographical term of Pantepuy, can be characterized as species poor compared to the Andes but, at the same time, as rich in endemics (NEILD 2008). The known Pronophilini species occurring in the Guyana Shield have been documented in several papers (VILORIA & PYRCZ 1994 1999; PYRCZ & FRATELLO 2005), however, there has been no reference to montane Euptychiini of the Pantepuy so far.

The genus *Forsterinaria* is mostly Andean, with one representative in the mountains of Mesoamerica and three species known so far from the Atlantic Mountains of Brazil. The centre of diversity is central and northern Peru where 18 species (ZUBEK in. prep.) occur sympatrically and parapatrically along an altitudinal gradient. The species of *Forsterinaria* occur within well defined altitudinal bands from 800 to 3400 m. The caterpillars of the genus *Forsterinaria* feed on Poaceae. Specific food plants were identified for four species (BECCALONI et al. 2008). Caterpillars of *F. necys* (GODART, [1824]) from southern Brazil and northern Argentina feed on grasses *Poa annua* (SILVA et al. 1968) and *Eleusine indica* (BIEZANKO 1960). Andean species probably feed predominantly on *Chusquea* bamboos. In the first revision of the genus, PEÑA & LAMAS (2005) recognized 23 species of *Forsterinaria*. During the study of the material of *Forsterinaria* deposited at the Museum of Zoology of the Jagiellonian University, carried out by the first author, further ten new species were identified. One of them, occurring in the mountains of south-eastern Venezuela, is the subject of this paper.

MATERIAL AND METHODS

Abbreviations and collection acronyms:

FW: forewing

DF: dorsal surface of the forewing

DH: dorsal surface of the hind wing

VF: ventral surface of the forewing

VH: ventral surface of the hind wing

MIZA: Museo del Instituto de Zoología Agrícola de la Universidad Central de Venezuela, Maracay, Venezuela

MZUJ: Muzeum Zoologiczne Uniwersytetu Jagiellońskiego, Kraków, Poland

This article was prepared on the basis of the material deposited at the Muzeum Zoologiczne Uniwersytetu Jagiellońskiego (Kraków, Poland) and the Museo del Instituto de Zoología Agrícola de la Universidad Central de Venezuela (Maracay, Venezuela). Species described previously were identified based on published descriptions and types examined in major European and American museums. Adults were identified using wing pattern, male and female genitalia morphology. Following characters of wing pattern were taken in consideration: presence and shape of VF and VH lines; presence, size and number of VH ocelli; presence, size and shape of VF subapical spots; presence of submarginal dots and their position relative to the postdiscal and submarginal lines; presence and shape of DF and DH androconial patch. Male and female genitalia were separated from the abdomen after boiling in 10% KOH solution for five to ten minutes. Pictures of dissections were taken with a Canon C5050Z camera and Olympus SZX9 stereomicroscope. Pictures were processed using Combine ZP and Corel PHOTO-PAINT X3 programs to improve focus and quality. All duly marked male and female genital dissections are kept in glycerol vials pinned under the specimens. Genital terminology follows RAZOWSKI (1973) and KLOTS (1957). Wing pattern terminology follows PEÑA

& LAMAS (2005). Some extra terms were used to clarify descriptions. Wing venation nomenclature follows COMSTOCK (1961). The first author conducted field work in 2009 and 2011 in Cordillera de Merida and Cordillera de La Costa in Venezuela. The second author carried out research in the Andes from 1987 – 2011 and in the Guyana Shield in 2005. Observations of natural environment in the area inhabited by the species of *Forsterinaria* were made.

RESULTS

***Forsterinaria hannieri* ZUBEK et PYRCZ sp. n.**

[*Forsterinaria inornata* C. FELDER & R. FELDER, 1867: 466; PEÑA & LAMAS, 2005: 41 (misidentification)].

MATERIAL EXAMINED

HOLOTYPE ♂: VENEZUELA: Estado Bolívar, La Escalera km 130, 1400 m, 04.I.2004, M. COSTA leg., [prep. genit. 11/25.08.2009/A.ZUBEK], [MZUJ], to be deposited in [MIZA]; PARATYPES (2 ♂ and 5 females): VENEZUELA: 1 ♂: Estado Bolívar, La Escalera km 123, 1400 – 1450 m, 14.IX.2003, M. COSTA leg.; 1 female: same data; 1 female: same data but km 129, 23.II.2004, [prep. genit. 08/08.04.2010/A.ZUBEK]; 1 female: same data but km 130, 04.I.2004; 1 female: same data but 31.XII.2003, [prep. genit. 10/25.08.2009/A.ZUBEK]; 1 female: same data but km 132, 13.IV.2003; 1 ♂: Estado Bolívar, Sororopán, 1700 m, 30.XII.2009, M. COSTA leg., [MZUJ]; 1 ♂: Kavanayen, 1300, 20.IX.1974, J. L. GARCIA, [MIZA].

Type locality: VENEZUELA, Estado Bolívar, La Escalera, Santa Elena road Km 130.

DIAGNOSIS

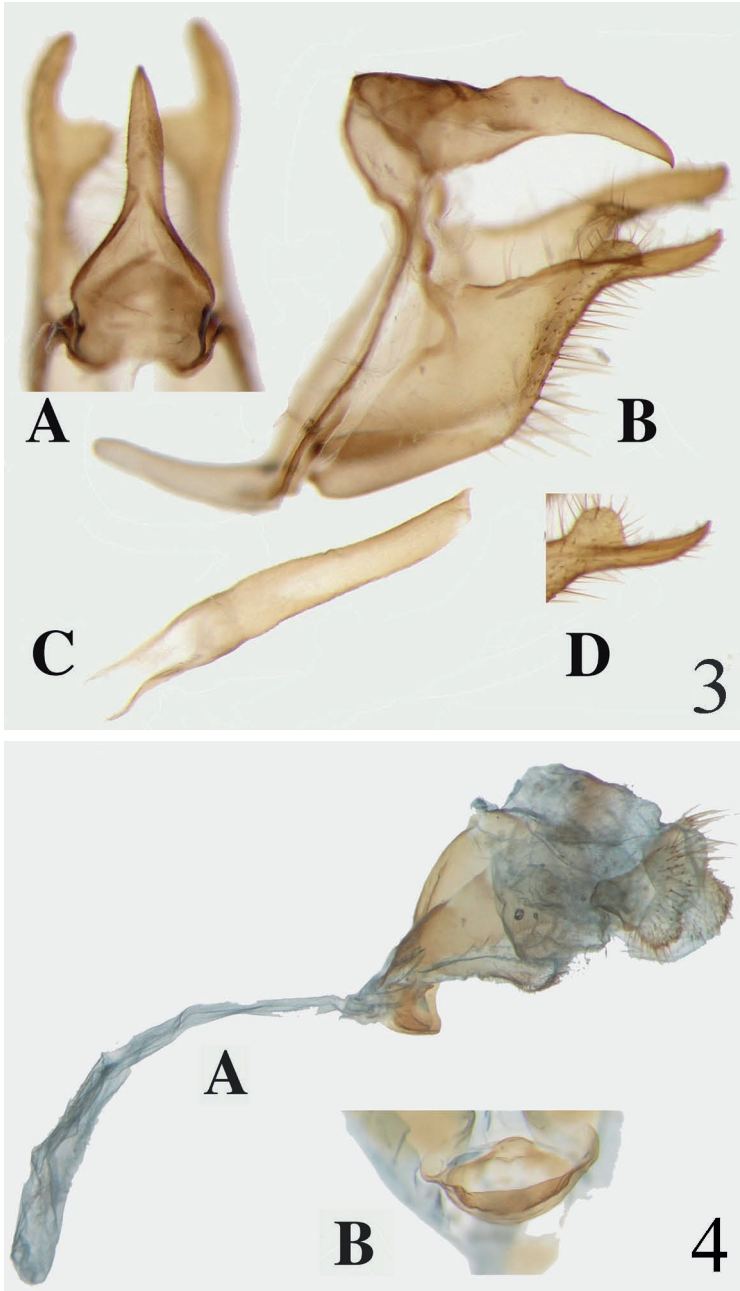
F. hannieri differs from the most similar species, *F. inornata* (C. FELDER & R. FELDER, 1867) in having the postdiscal line arched on the VH discal area; in male genitalia valva displays an elongated, finger-like apex and a very large, rounded lateral process.

DESCRIPTION

MALE: **Head:** eyes dark brown and densely hairy; antennae slightly shorter than the half of costal FW margin, with dorsal surface brown and ventral yellowish, with scales covering the basal half of the antenna; club slightly thicker than shaft, composed of 11 segments; labial palpi covered with long, dark brown scales and shorter, yellowish scales, concentrated on the inner side. **Thorax:** dorsal surface covered with long, copper-brown, hair-like scales; all segments of legs hairy with additional short black bristles; hair on tibia generally brighter than those on femur and tarsus, tibial spurs present. **Abdomen:** densely covered with brown scales, similar to those on thorax. **Wings:** FW length: 23.5 m, n=3; **DF:** brown, dark beige- shaded; androconial patch extending from basal to median area, covering more than two thirds of the wing; long, hair-like scales in basal area; **DH:** color same as on DF; androconial patch covering entire discal cell and slightly extending towards distal margin; **VF:** slightly brighter



1, 2. *Forsterinaria hannieri*: 1 – holotype male, La Escalera, Venezuela; 2 – paratype female, La Escalera, Venezuela



3, 4. *Forsterinaria hannieri*, genitalia: 3 – holotype male (A – tegumen and uncus in dorsal view, B – genitalia in lateral view (excluding aedeagus), C – aedeagus in lateral view, D – valva apical part; 4 – paratype female (A – in lateral view, B – ostium bursae in ventral view (magnified))

than DF; no discal line; postdiscal line arched towards the outer wing margin in costal area, then bent softly towards the wing base in discal area, fading in cell CuA_1 - CuA_2 ; submarginal line softly undulated, not touching marginal line, fading in cell CuA_2 - 2A; marginal line very thin, without undulation, parallel to the outer wing margin; subapical dot creamy-white and faint; **VH**: slightly darker than VF; discal line softly and irregularly undulated; postdiscal line bent towards wing base in costal area, arched towards outer wing margin in discal area and softly undulated in anal area; submarginal line thinner, with shallow semicircular cuts, not touching the marginal line; marginal line softly bent, parallel to the outer wing margin; five creamy-white subapical dots in two thirds of the distance between postdiscal and submarginal line. **Male genitalia** (Fig. 3): uncus long, arched, with a narrowed tip and pronounced dome; valva rhomboidal, longer than uncus, with a strongly elongated apex pointing backwards and very large, rounded lateral process; saccus as long as uncus; gnathos absent; aedeagus thin and slightly curved in the middle.

FEMALE: same as male but slightly larger (FW length: 25 mm, n=5) and brighter.

Female genitalia: ostium bursae funnel-like with a wavy margin; postvaginal plane semicircular and wide, antevaginal plate narrow and curved ventrally; corpus bursae oval, as long as ductus bursae, there is no narrowing between the two; signa length: more than $\frac{3}{4}$ of corpus bursae.

ETYMOLOGY

This species is dedicated to a Colombian entomologist, Hannier W. PULIDO B. from Bogota, currently at the University of Boyacá in Tunja, in recognition of his contributions to the study of the Colombian faunas of montane butterflies.

DISCUSSION

Forsterinaria hannieri presents some similarity to *F. inornata*. The latter species was described from Colombia ("Bogota") and was recently collected in western Colombia (Tambito) and western Ecuador (Golondrinas, Las Juntas) (ZUBEK, unpubl. master thesis). A related taxon was recognized in Bolivia, either a subspecies of *F. inornata* or a related species found in the Venezuelan Cordillera de La Costa (ZUBEK, op. cit.). Its relationships require further studies.

Forsterinaria hannieri inhabits the cloud forests of the Guyana Shield in southern Venezuela (Pantepuy). It is known so far from three localities (La Escalera, Sororopán and Kavanayén), which suggests it could be widespread. It syntopically occurs with *Pedaliodes roraimae* STRAND, 1912 which is also known from the Roraima - Kukenan massif, where *F. hannieri* was not found as yet. Its altitudinal range spreads from 1300 - 1700 m.

PEÑA and LAMAS (2005) examined the pictures of *F. inornata* from Pantepuy. Since there have been no other reports on the occurrence of *F. inornata* in that area, and this species is likely to be mistaken with *F. hannieri*, we presume that the pictures they have examined actually represented *F. hannieri*.

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