

**Description of a new species of the genus *Pedaliodes*
from the Cerro de La Neblina, Venezuela**

(Lepidoptera, Satyridae)

by

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Abstract: *Pedaliodes demarmelsi* spec. nov. is described and figured from material collected in the Cerro de La Neblina, Amazonas, Venezuela. This is the first *Pedaliodes* (s. str.) known to be endemic from the Guayana Plateau highlands.

Resumen: Se describe e ilustra *Pedaliodes demarmelsi* spec. nov., en base al único material conocido, procedente del cerro de La Neblina, Estado Amazonas, Venezuela. Este es el primer registro de un *Pedaliodes* (s. str.) endémico de las tierras altas del escudo guayanés.

Introduction

The genus *Pedaliodes* (s. str.) is the largest of the Neotropical Satyridae. It comprises nearly 150 species, most of which occur in the South American Andes. Recent taxonomical works (ADAM, 1986; ADAMS & BERNARD, 1977, 1979, 1981) have demonstrated the extraordinary diversity and specialization in this genus, and the particular ability of most of its species in approaching a restricted altitudinal level in the cloud forests or páramos. Therefore, it is possible to find a great amount of different and often endemic species in a single altitudinal gradient in the Andes (sympatrics or parapatrics), or among close but discontinuous ranges (allopatrics) (ADAMS, 1977, 1985). Out of the Andes, a handful of species have been observed living in the mountain forests of Central America and Brazil.

As good members of the tribe Pronophilini, the *Pedaliodes* inhabit undisturbed forests above 1000m, which can be found not only in the Andes but in the Central American range, the Venezuelan Coastal Cordillera, and the Guayana Plateau Highlands, shared among Brazil, Guayana, Venezuela and Colombia (the Serranía de La Macarena). None of the latter has been completely sampled, and it is expected to find several new species belonging to this rich genus.

The Guayana Plateau area contains several flat mounts (Tepuyes) of Precambrian age, which are quite isolated from each other. The cerro de La Neblina is one of these mounts, reaching 3014m in altitude and regarded as the highest peak in South America out of the Andes. It is considered a biogeographical unit of the "Pantepui" (MAYR & PHELPS, 1971; BREWER, 1988) whose invertebrate fauna is still not well documented. No satyrids had been reported from this range until the present, in spite of the sure occurrence of representatives of all the Neotropical tribes.

Mr. JÜRG DE MARMELS, who was collecting insects during the International Scientific Expedition to the Cerro de La Neblina in 1983–1987, showed me an interesting series of an

undescribed *Pedaliodes* from this remote range in the Brazilian-Venezuelan border; afterwards three additional specimens of this taxon were obtained through a kind loan from the Smithsonian Institution (USNM), USA, where an important insect collection from the Neblina massif is held. Therefore, I considered the material presented herewith adequate for offering the following description.

Pedaliodes demarmelsi spec. nov. (colour plate XVIIa, fig. 1)

Holotype ♂: Venezuela, T. F. Amazonas, Depto. Río Negro, Cerro de La Neblina, foot of Pico Phelps, 15./18.III.1984, mt. 2000, leg. J. DE MARMELS, in coll. Museo del Instituto de Zoología Agrícola, Universidad Central de Venezuela (MIZA) (Maracay/Venezuela).

Paratypes. 2 ♂♂, 1 ♀: same data as holotype (in coll. MIZA); 1 ♂: Venezuela, T. F. Amazonas, Cerro de La Neblina, Camp X, 0° 54' N, 60° 2' W, 13.II.1985, scrub forest near a stream & canyon rim, mt. 1690, leg. W. E. STEINER; 1 ♂: Venezuela, T. F. Amazonas, Cerro de La Neblina, Camp II, 0° 50' N, 65° 59' W, 31.I.1985, around open bog, mt. 2100, leg. W. E. STEINER; 1 ♀: Venezuela, T. F. Amazonas, Cerro de La Neblina, Camp II, 0° 49' N, 65° 59' W, 16./18.III.1984, mt. 2100, leg. J. A. LOUTON, in coll. USNM (Washington, D.C., USA).

Description

Male. Forewing length: 30–32 mm, mean 31.5 (N = 5). eyes hairy, dark brown with black hairs. Palpi twice as long as head, light brown with brown and black hairs; first and third segments similar in length, second segment three times as long as those. Antennae reaching the first half of the Costa; shaft and club brown, scarcely scaled with brown and white; club gradually formed, cylindrical, near a quarter of the total length of the antenna, comprising 14 or 15 segments. Forewing triangular, tornus slightly rounded. Hindwing rounded, external margin softly crenate as in all characteristic *Pedaliodes*. Body dark brown, slightly lighter towards the ventral part of the abdomen. Both wings hairy on the basal half. Upperside ground colour dark brown, lustrous, gradually lighter towards the distal third of both wings; wings showing the shadow of a darker submarginal line, following the same sinuosity of the margin and diffusing before reaching the anal margin. Hindwing showing a brilliant orange colour over the anal angle region, covering from the middle of the anal margin to the middle of the external one; reddish brown on the anterior half of the external margin area and the basal half of the anal margin area. Underside ground colour drab, with a lighter wide post-discal band on both wings. Forewing bearing cream-white in the center of the cell, and dusted over the postdiscal band, especially dense towards its antero-basal extreme; as a result of the colour contrast, the discal area appears darker than the rest of the wing; external margin region reddish chestnut, delicately limited with fuscous; anal margin light brown; a series of six (or seven) cream-white postdiscal dots from cell R5 to cell Cu2 (or A2); chestnut colour sparsely over the anterior half of the basal and postbasal regions; the whole ventral surface of the wing shows brown grumes, that gives it a marble appearance. The hindwing has a more marble appearance because of the colours distributed in fine clots; ground colour brown; anal angle area brilliant yellow; dark brown clots over the whole wing; reddish chestnut on the marginal region, and producing a stripe between the discal area and the postdiscal band, also as clots over the entire wing, except where dusted with cream-white (mainly towards the inner limits of the light postdiscal band and the anterior part of the subdiscal

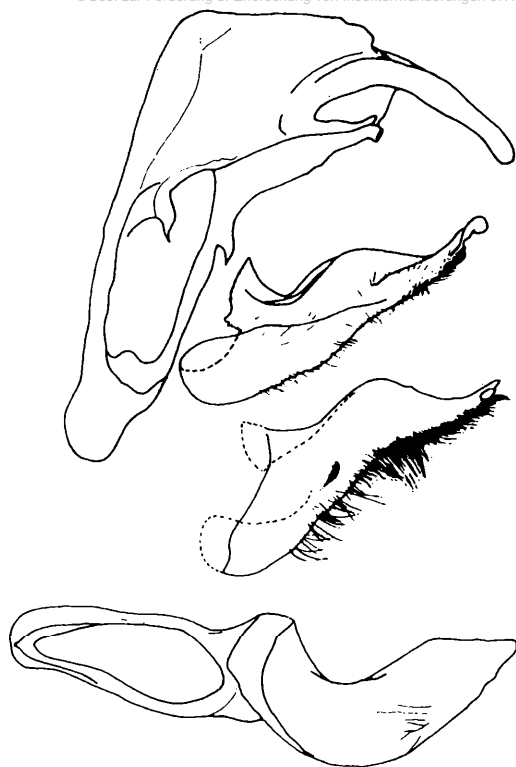


Fig. 2: Male genitalia of *Pedaliodes demarmelsi* spec. nov.

region); a series of cream-white postdiscal dots (inside the band) from cell M1 to cell A2, sometimes only vestigials except the dot Cu2. Wings hairy in the basal half. Genitalia as in fig. 2.

Female. Forewing length: 32–35 mm, mean 33.5 ($n = 2$). It is not possible to distinguish any significant variation in colour pattern between males and females. Females appear to be larger than males in average, but there is no evidence of an additional sexual dimorphic character.

Derivatio nominis

I am very pleased to dedicate this new species to my friend JÜRG DE MARMELS, who firstly discovered it in the Cerro de La Neblina, and for his constant encouragement in my studies of the Venezuelan Satyridae.

Distribution

Pedaliodes demarmelsi spec. nov. is known only from the type locality the Cerro de La Neblina ("mount of the mist"), where it flies exclusively in open bogs and scrub forest between 1960 and 2100 m (DE MARMELS, pers. comm.). BREWER (1988b) describes the habitats around

camp II and X of the Cerro de La Neblina Expedition as follows: Camp II: Flooded savanna with *Heliamorpha* and lichens, scrub forest with *Euterpe* palms, scrubs of *Tyleria* and bamboo along the streams. Side slopes of Maguire Peak (one of the prominent summits) with *Bonnetia* forest. Camp X: Zone of *Neblinaria* and *Heliamorpha*, recently burnt (supposed to be natural fire). *Euterpe* palms along drainages. These habitats are extremely *sui generis* and quite isolated from any other similar in the neighbouring ranges (which are very distant, and orographically separated by lowlands); therefore its inhabitant *P. demarmelsi* should be considered an endemic species of the Neblina massif.

Discussion

Pedaliodes demarmelsi spec. nov. has distinctive wing colour pattern and genitalia to properly appoint it as a new species; none of the comprehensive works on the genus (THIEME, 1905; WEYMER, 1910–1912; FORSTER, 1964; D'ABRERA, 1988) have reported it. It was difficult to establish the possible relationships with other representatives of the genus. Revisionary studies are necessary in order to arrange phylogenetic data for comparison with biogeographical data and probable theories. A *Pedaliodes* from La Neblina is an excentric element for assessing the value of the climatic pleistocene fluctuations (ADAMS, 1977, 1985) as the only factor in producing a complex and diversified adaptive radiation into this genus. *Pedaliodes demarmelsi* appears to belong to a modern lineage of the pedaliodine butterflies which reach their maximum diversity in the Andes, even though its origin from the Andean region is not clear. Recent evidence of a primitive pedaliodine genus from Roraima-Kukenán mounts in the Pantepui (VILORIA & PYRCZ, 1993) suggests this biogeographical area to be the focus from which a primitive stock of Pronophilini radiated to the Andes. This affirmation is supported by the controversial theories of CROIZAT (1976), where the possibility of an Pantepuian biota as ancestor of an Andean one is discussed.

Out of the biogeographical implications, I observed that *P. demarmelsi* shares genitalic characters with two probably sister species of central American *Pedaliodes*, *P. dejecta* BATES and *P. napaea* BATES (from Costa Rica, and Guatemala and Mexico, respectively). They have the tip of the valvae contorted, which following the figures of FORSTER (1964), is not found in any other species of the genus. Additionally the colour pattern of both Central American species appear to suggest a striking relationship with *P. demarmelsi*. Due to the extraordinary geographical distribution of our Pantepuian species, and the scarcity of Knowledge on the non-Andean *Pedaliodes*, any attempt to establish a suitable taxonomic position for *P. demarmelsi* could be very speculative without a detailed study.

Acknowledgements

I wish to thank JÜRGE DE MARMELS, LUIS D. OTERO and CARLOS BORDON in Maracay, Venezuela, for their hospitality, encouragement and permission in studying the material deposited in the collection of the MIZA. Also I acknowledge ROBERT K. ROBBINS (USNM) for the kind loan of part of the type series held in his institution. JOSE MOSCO, JOHN MOODY, RUDOLFO SALAS and MAGALLY QUIROS revised and criticized the early version of the manuscript.

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Colour plate XVIIIa (p. 621): Fig. 1: *Pedaliodes demarmelsi* spec. nov., holotype ♂.

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Colour plate XVIIa

VILORIA, A. L.: Description of a new species of the genus *Pedaliodes* from the Cerro de La Neblina, Venezuela (Lepidoptera, Satyridae). – *Atalanta* **25** (3/4): 525–529.

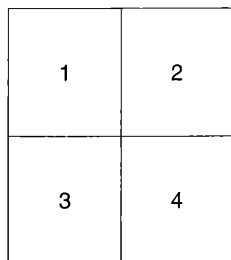
Fig. 1: *Pedaliodes demarmelsi* spec. nov., holotype ♂.

LUKHTANOV, V. A.: *Hyponephele korshunovi* spec. nov., eine neue Satyriden-Art aus Tadschikistan (Lepidoptera, Satyridae). – *Atalanta* **25** (3/4): 531–534.

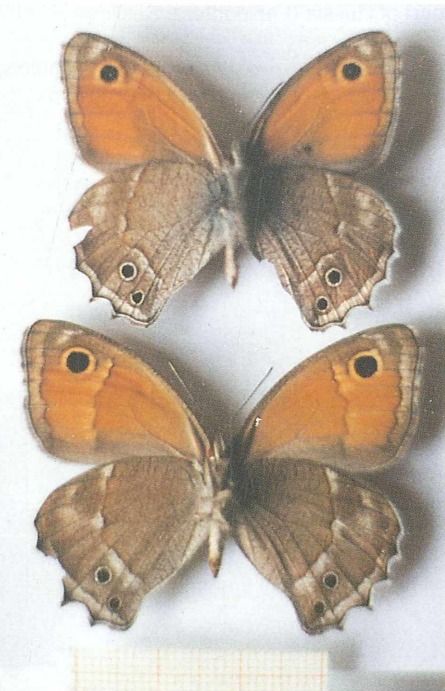
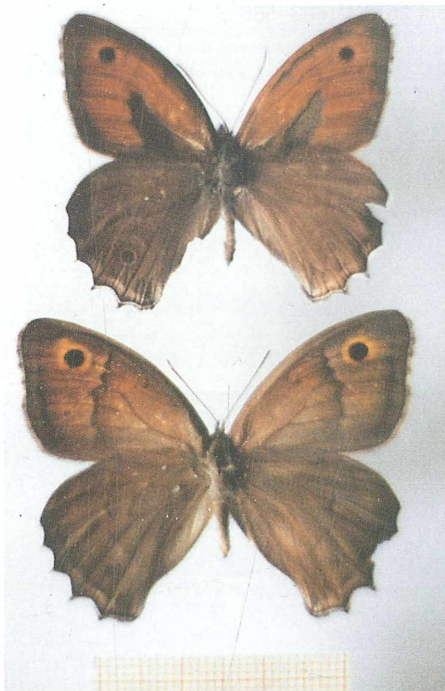
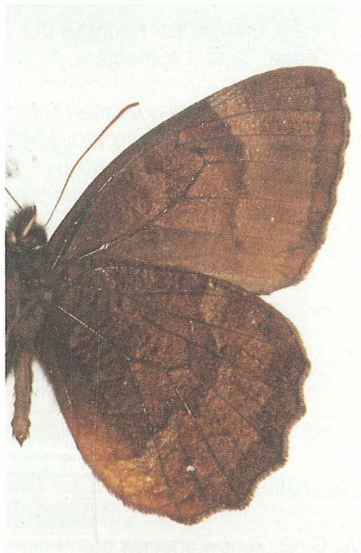
Abb. 1, 2: *Hyponephele korshunovi* spec. nov., Paratypus ♂, Tadschikistan, Westtienschan, Kuraminski-Gebirge, Altyn-Topkan-Gegend, 1600 m, 4.VI.1994, V. LUKHTANOV leg. (in EMEM). 1 – Oberseite, 2 – Unterseite.

Abb. 3, 4: *Hyponephele korshunovi* spec. nov., Paratypus ♀, Tadschikistan, Westtienschan, Kuraminski-Gebirge, Altyn-Topkan-Gegend, 1600 m, 4.VI.1994, V. LUKHTANOV leg. (in EMEM). 3 – Oberseite, 4 – Unterseite.

Aufnahmen: U. EITSCHBERGER.



Colour plate XVIIa / Farbtafel XVIIb



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