

Genus	Vol. 17(2): 283-289	Wrocław, 30 VI 2006
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Notes on the genus *Podanotum* with description of a new species (Lepidoptera: Lycaenidae: Eumaeini)

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ABSTRACT. A new eumaeine species, *Podanotum melanissimum* n. sp. is described from a site in Loja Province in Ecuador not far from the locality of the type species, *Podanotum clarissimus*. The intrageneric relationships of the newly described taxon are commented on. The previously suggested mimetic relationship of *Podanotum* and satyrid pronophiline butterflies of the genus *Lymanapoda* is briefly discussed.

Key words: entomology, taxonomy, South America, Andes, Lepidoptera, Lycaenidae, *Lymanapoda*, Nymphalidae, *Podanotum*, *Redonda*, structural colouration.

INTRODUCTION

The genus *Podanotum* TORRES et JOHNSON, 1996 (Type species: *Podanotum clarissimus* HALL, WILLMOTT et JOHNSON, 1996) was erected for two species, *P. clarissimus* and *P. metallicus* TORRES et JOHNSON, 1996. The authors pointed out that wing dorsal surface in both sexes is metallic green revealing a kind of “tin foil” hue. They suggested that the species of *Podanotum* belong to a mimicry ring encompassing blue pronophiline satyrids of the genus *Lymanopoda* WESTWOOD, 1851.

Subsequently, a brown male of another *Podanotum* species was discovered in marshy Andean paramo environment (BÁLINT 2001) and the genus was briefly reviewed (BÁLINT & WOJTUSIAK 2002).

There are eleven species of the genus *Podanotum* listed in the Neotropical butterfly checklist (LAMAS 2004). The list contains names of five previously described species and two other species that were transferred by ROBBINS (2004) to *Podanotum* from other genera. This transfer resulted in new unsupported combinations. These two species are *Podanotum vanewrighti* JOHNSON et ADAMS, 1993; (BMNH holotype female: "Colombia, Cauca, between Leticia and Purace, between km 127 and 143, eastern slope of Central Cordillera, 3150 m") and *Podanotum salaeides* (DRAUDT, 1919) ROBBINS, 2004 (type not found; type locality: "Columbien, Pacho"). The remaining four species on the list were mentioned from Ecuador as "[n. sp.] Robbins, MS".

As a result of recent field work of Polish entomological expeditions to the Andes of Ecuador, two *Podanotum* species were collected close to the locus typicus of *P. clarissimus*. The specimens with "tinfoil" green structural wing colouration were identified as belonging to the type species of the genus, and the second, represented by a unique specimen, appeared to be a male of a species hitherto unknown to science.

In addition, other *Podanotum* material consisting of three species has recently been collected in Colombia. One of them was identified as *Podanotum metallicus* (Yvan DIRINGER, Paris, *pers. comm.*), the second as *P. wanewrighti* (probably a senior synonym of *P. paramosa*) and the third one as *P. salaeides* (BÁLINT & DAHNERS, in prep.). We are also aware of the existence of a remarkable species living in the southern part of Ecuador which will be described in a separate paper (BÁLINT & ATTAL, in prep.).

This paper concentrates on *Podanotum* material collected in 2004 during two Polish entomological expeditions to Ecuador. Methods and terminology are in concordance with those already described in our previous paper concerning this genus (BÁLINT & WOJTUSIAK 2002).

Abbreviations:

MZUJ – Muzeum Zoologiczne Uniwersytetu Jagiellońskiego, Kraków, Poland;
AMNH – American Museum of Natural History, Washington, USA.

Acronyms:

FW – forewing;
HW – hindwing;
FWV – forewing ventral side.

TAXONOMY

***Podanotum clarissimus* HALL, WILLMOTT et JOHNSON, 1996**

(Figs 1-4)

Podanotum clarissimus HALL, WILLMOTT et JOHNSON in TORRES *et al.* 1996: 82, AMNH holotype male, ECUADOR: "prov. Loja, km 27 Loja-Cuenca, Cerro Palma, 3100 m" (original documentation consulted).

MATERIAL EXAMINED

ECUADOR: prov. Loja, Saraguro, 3100 m 02.II.2004, leg. Wojtusiak (MZUJ: female), ditto, 3200 (MZUJ: male).



1-4. *Podanotum clarissimus* HALL, WILLMOTT et JOHNSON: 1 - male, dorsum, 2 - male, ventrum, 3 - female, dorsum, 4 - female, ventrum; 5-6. *Podanotum melanissimum* n. sp., holotype: 5 - dorsum, 6 - ventrum

IDENTIFICATION

Hitherto no similar congener has been described from Ecuador, but probably some similarly looking sister species occur there, because, as it was mentioned above, four undescribed *Podanotum* species have been indicated as *undescribed* in LAMAS (*op. cit.*). The tinfoil hue of the wing dorsa in both sexes, plus the cryptic ventral HW pattern agree with the original description.

DISTRIBUTION

Geographical: known exclusively from southern Ecuador, province Loja (km 27, Loja-Cuenca: Cerro Palma and Saraguro). Altitudinal: known from the elevation of 3000m (Cerro Palma) and 3100-3200m (Saraguro). Temporal: specimens were collected in February (Saraguro) and April (Cerro Palma), therefore the flight period of the species extends for at least three months.

***Podanotum melanissimum* n. sp.**

TYPE MATERIAL

Holotype male in Zoological Museum, Jagiellonian University, in good condition (wing dorsa slightly worn, half of left antenna missing), fore wing length 9 mm, set dorsally, labelled "Ecuador, prov. Loja, Saraguro via Las Antenas, 15.09.2004, 3200 m, leg. Wojtusiak & Pyrcz."

DIAGNOSIS

Does not resemble any known Ecuadorian congener as the dorsal wing colour lacks the tinfoil hue and the FW anal margin is slightly shorter resulting in a more triangular wing shape (FW anal margin in *P. clarissimus* is longer giving in an impression of longer wings). HW vein CuA2 terminus without tail-like extension. This species can be distinguished from *P. clarissimus* on the basis of the following characters: (1) ground colour and pattern of FW lighter than that on the HW (both wings similarly coloured in all other known taxa). (2) HW pattern distally supplemented by white scales (lacking, or random in sympatric Ecuadorian congeners). (3) The male genital structures do not differ essentially from the generic type: (vinculum elliptic, valvae with bilobed area and causal extension, aedeagus large) except for short subzonal and long suprazonal elements (ratio cca. 1 : 4), wide membranous terminus with slightly sclerotized caecum and a pencilate cornutus turned dorsally in lateral view.

DESCRIPTION

Male (Figs 5-6), length of FW from base to apex 9 mm (holotype), dorsal side of FW and HW unicolorous warm brown without any dark border. HW with slightly marked anal lobe. Fringes light brown. FWV lighter brown with postmedian and submarginal black line between costal margin and vein CuA2 in apical

area ornamented distally with white scaling. HWV dark brown, darker than FW, basal and median area darker, bordered by a waved black medial line with white distal scaling, submarginal area with intercellular black chevron pattern ornamented with white scaling; marginal area with faint line of white scales, fringes darker brown. In male genitalia (Fig. 7a-c) aedeagus 1.72 mm in length, robust with sclerotized ventral terminus.

DISTRIBUTION

Known only from type data. Geographical (Fig. 8): single locality, Saraguro (prov. Loja, Ecuador). Altitudinal: high altitude of 3200 m. Temporal: the holotype was collected in mid September.

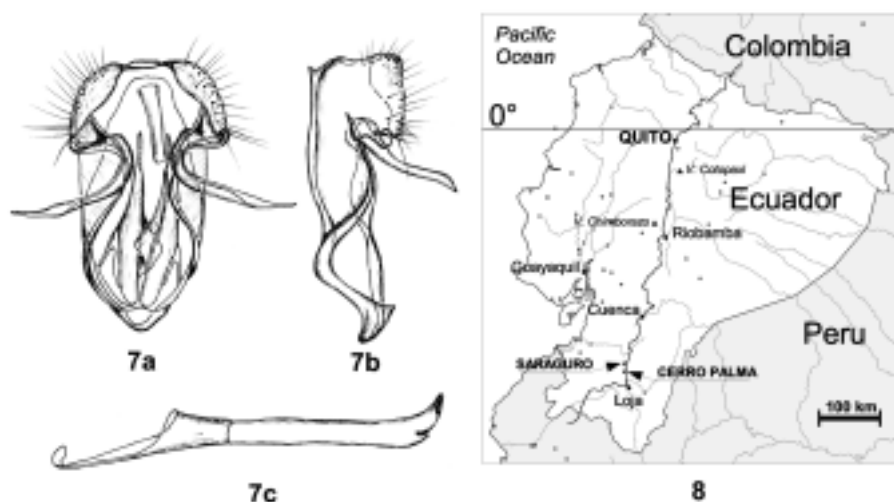
ETYMOLOGY

Melanin = the brown pigment in the scales on butterfly wings, which absorbs light. The name was used to signify that the wing dorsa are “purely melanic”.

REMARKS

The only trait by which the new species resembles *P. andrewneildi* (Colombia), besides some general similarities in genital structures, is the brown colour of the dorsal side of wings. Otherwise, the two phenotypes are completely distinct in following aspects: (1) FWV without discoidal line in *P. melanissimum* (with discoidal line in *P. andrewneildi*); (2) FW submarginal pattern elements are deep brown in *P. melanissimum* (red in *P. andrewneildi*).

In our opinion, the species belonging to the genus *Podanotum* can be split into tailed and untailed groups, according to similar HW colouration patterns: the



7. *Podanotum melanissimum* n. sp.: 7a - male genital structures in ventral (up) and 7b - lateral (right) aspects with 7c - aedeagus separated; 8. collection sites in Ecuador

tailed taxa (*P. andrewneildi*, *P. salaeides*, *P. vanewrighti*, *P. n. sp.* from southern Ecuador) are more richly patterned with red scales on the ventral side of the wings. Therefore we presume that *P. melanissimum* is more closely related to the lineage represented by the type species and by *P. glorissimum* that we have already described from northern Peru (BALINT & WOJTUSIAK 2002).

DISCUSSION

As it was mentioned above, TORRES *et al.* (1996) referring to similar colouration of dorsal wing surface of some *Podanotum* species and some pronophiline satyrids of the genus *Lymanapoda* WESTWOOD, 1851, suggested that both groups may be considered to be in the same kind of mimicry ring.

We cannot agree with such a point of view and we are not convinced that the shiny, structural blue colours of *Podanotum* butterflies may advertise unpalatability and that those insects according to classic mimicry theories can be considered as aposematic “models” mimicked by some blue coloured butterflies of the genus *Lymanopoda*. In our opinion, the bright blue light reflected from wing dorsa of some *Podanotum* butterflies may rather act as a long distance visual signal for conspecifics enabling them to find and recognize each other in their natural environment for the purpose of mating. The fact that gleaming wing colours can serve as an effective visual signal for the opposite sex has been recently discovered in a brachypterous satyrine butterfly, *Redonda bordoni* VILORIA *et al.* PRYCH, 2003 in Venezuelan Andes (VILORIA *et al.* 2003). Since only dorsal surface of the wings is blue and the ventral is brown, *Podanotum* butterflies reflect a series of blue flashes disrupted by brown colour of the underside during each up stroke. Such flashing can disturb the perception of the butterfly's flight path and makes it difficult for the predator to chase and catch the prey.

Some species of *Podanotum*, like *P. melanissimum* and *P. andrewneildi* are not iridescent blue but instead entirely brown. In these species communication between the sexes must rely on a different principle. We can put forward a hypothesis that brown males may be more sedentary and do not aggressively perch for the females as it is in the case of blue coloured ones. This kind of behaviour is currently tested in the field for the monomorphic brown species of *Polyommatus admetus* (ESPER, 1785) in Hungary (BÁLINT, in prep.). The brown male that lives in Cordillera de Mérida, Venezuela, may be considered another example of discoloration phenomenon within the genus (*cf.* BIRÓ *et al.* 2003).

At present, it seems premature to propose any reasonable hypothesis that could explain the adaptive value of wing colouration differences within the genus *Podanotum*. More research is needed to obtain sufficient amount of data on ecology and behaviour of this group before any convincing conclusions can be made.

ACKNOWLEDGEMENTS

In Hungary the work was supported by the grant OTKA 042972 via EU6 program "Specific Targeted Research" (Nest/Pathfinder/Biophot-012915). In Poland this research was supported by the State Committee for Scientific Research - KBN No 3 P04F 018 24.

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