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Rhamma tomaszpyrczi n. sp. from northeast Peru (Lepidoptera: Lycaenidae: Eumaeini)

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ABSTRACT. The eumaeine lycaenid *Rhamma tomaszpyrczi* n. sp. (Peru, Departament Amazonas, Molinopampa, 2965 m) is described. Its intrageneric relationships are discussed.

Key words: entomology, taxonomy, diversity, new species, Andes, Lepidoptera, Lycaenidae, Eumaeini, *Rhamma*.

INTRODUCTION

Among material collected along an altitudinal transect established in northeast Peru for studying pronophiline satyrid butterflies (see BÁLINT & WOJTUSIAK 2000, Fig. 14), we discovered a curious small metallic green lycaenid specimen having androconial clusters on the dorsal hindwings and ventral forewings (Figs 1-2). Based on the specimen's wing shape, ventral markings, and genital structures we have placed this individual in the genus *Rhamma* JOHNSON, 1992. It does not resemble any known member of the genus and, in our opinion, represents an undescribed species. This paper will provide a description of this species and compare it with superficially similar relatives.

We express our sincere thanks to the following lepidopterist colleagues: Mr. Phillip ACKERY, The Natural History Museum (= BMNH) (UK-London) for the access to the Neotropical eumaeine type materials, Mr. Jean François LE CROM (KL-Bogotá) for the access to the lycaenid part of his valuable collection of neotropical butterflies via CD, to Dr. Kurt JOHNSON (USA-New York) and Mr.

David Spencer SMITH (UK-Oxford) for their continuous support and for reading the manuscript, and to Dr. Tomasz PYRCZ (PL-Warsaw) for the access to the specimen and generously donating it to the Museo de Historia Natural, Universidad Nacional Mayor de San Marcos (PE-Lima).

TAXONOMIC DESCRIPTION

Rhamma tomaszpyrczi n. sp.

(Figs 1-5)

DIAGNOSIS

Reminiscent of its congener *Rh. hybla* (DRUCE, 1907), but forewing costal length markedly shorter (*hybla* holotype = 16.1 mm); dorsal ground colour of wings metallic green (not deep green as in *hybla*, cf. D'ABRERA 1995: 1114); hindwing ventral ground colour pale tawny brown with reddish brown cryptic markings (all these variously grey in *hybla*, cf. D'ABRERA 1995: 1114).

DESCRIPTION

Male. Forewing costal length: 12.8 mm. Dorsal forewing and dorsal hindwing ground colour metallic green. Forewing costal margin black with distally wide submarginal border. Hindwing apical area black, medial and submedial area with contrasting bluish iridescence between veins M3 and Rs, anal lobe pronounced. Forewing ventral ground colour light reddish brown with slight metallic green basal suffusion; medial and postmedial area covered with black scales between veins CuA1 and 1A+2A; submarginal wavy markings faint. Hindwing ventral ground colour pale grayish brown with reddish brown basal area, median and submedian cryptic pattern with meandering or dentate lines; marginal area with faint markings. Genitalia (Fig. 3) showing typical features of *Rhamma*: brush organ absent, uncus large and dog-face shaped, gnathos long, tegumen large with conspicuous appendix angularis, vinculum short with basal saccus, valva in ventral view divided into lobate elements with wider anal and extended caudal parts, aedeagus two times longer than valva.

Female. Unknown.

TYPE MATERIAL

Holotype male, at present in the Zoological Museum, Jagiellonian University (PL-Krakow), will be deposited in the Museo de Historia Natural, Universidad Nacional Mayor de San Marcos (PE-Lima), labelled as "PERU, Dept. Amazonas, Molinopampa, 2965 m, 29.VI.1998, leg. T. Pyrcz and J. Wojtusiak", "gen. prep. No. Zs. Bálint 809".

TYPE LOCALITY

2965 m, Molinopampa, Department Amazonas, NE Peru.

DISTRIBUTION

Geographical: NE Peru, eastern side of the Andes (known only from holotype data). Spatial: recorded at relatively high alitude, 2965m (known only from holotype data). Temporal: the holotype was collected in June.

ETYMOLOGY

Named in honour of Dr. Tomasz PYRCZ (PL-Warsaw), an expert on neotropical satyrids, and the collector of the holotype specimen.

DISCUSSION

Similar species and identification. We are aware of the existence of four nominal species of *Rhamma* having green dorsal ground colour: *Rhamma tyrrius, R. hybla*, *R. cassidyi* and *R. emeraldina*.

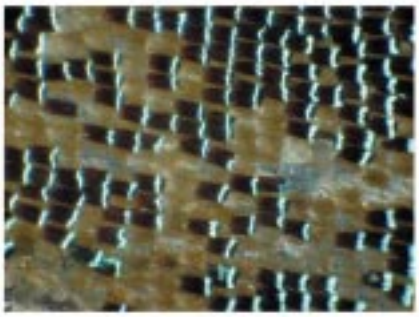
The taxon *tyrrius* was described as a species of *Thecla* from the holotype male from Ecuador (DRUCE 1907: 578) and was subsequently transferred to *Rhamma* by JOHNSON (1992: 57). We have examined the holotype in the BMNH, figured as "R. tyrrius" by D'ABRERA (1995: 1114), plus two males deposited in the Hungarian Natural History Museum (Ecuador: Pululahua Geobotanical Reserve) and seven male and four female specimens collected very recently also in Ecuador (Provinces Pichincha and Tungurahua). The males of *tyrrius* stand out with their bluish tint of the green dorsum restricted to the basal and median parts of the wings, with the remaining part fuscous brown. Similarly, *tyrrius* differs from *tomaszpyrczi* in having a dark basal area of the hindwing ventrum.

The taxon *hybla* was described as a species of *Thecla* from the holotype male from Ecuador (DRUCE 1907: 578) and was subsequently transferred to *Rhamma* by JOHNSON (1992: 142). We have examined the holotype in the BMNH, figured as "*R. hybla*" by D'ABRERA (1995: 1141). This species differs in various characters as we have pointed out in the diagnosis of *R. tomaszpyrczi*.

R. cassidyi was described from the holotype female from Peru („the peak of Huayana-Pichu, 2650 m, Cuzco department"; the taxon was not mentioned from the Cuzco area by LAMAS et al., 1997: 5) (JOHNSON & ADAMS 1993: 5), and subsequently a male specimen collected in Bolivia was associated to the holotype (JOHNSON et al. 1997:7–8). After studying the descriptions and the accompanying figures we consider *cassidyi* to be a different taxon, because (1) it is larger than *tomaszpyrczi* (forewing costal length 14.5–15.5 mm), (2) the hindwing submarginal area is black (green in *tomaszpyrczi*) and (3) it has dorsal forewing intercellular androconia, lacking in *tomaszpyrczi*. However, it must be emphasized, that we could not detect this type of androconia on the glossy photo of the holotype (JOHNSON et al. 1997, pl. IX., fig. E.), but instead a bright, clearly visible, androconial cluster situated on the tornal part of the forewing ventrum. This androconial cluster is also present in *tomaszpyrczi*.

1-2. *Rhamma tomaszpyrczi* n.sp., holotype: 1 - dorsum, 2 - venter

3



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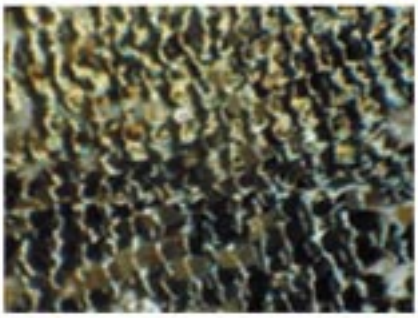

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3-5. *Rhamma tomaszpyrczi* n.sp.: 3 - genital organ in lateral view; 4, 5 male scales: 4 -androconial scales from the tornal part of forewing ventrum, 5 - iridescent (androconial?) scales from the submedial part of hindwing dorsum

Rhamma emeraldina was described from the holotype male, allotype female and paratype male from Colombia by JOHNSON at al. (1997: 7) (type locality: Mapio de Supiu, 2100 m, El Viringo, Western Cordillera, Caldas department). We have studied the descriptions of the species and the accompanying figures, as well as images of paratype specimens from the LE CROM collection and we consider *emeraldina* to be a different taxon, because (1) it is almost as large as *hybla* (forewing costal length 15–16 mm), (2) the male possesses a more elongated wingshape, (3) the male possesses an obvious intercellular dorsal forewing androconial cluster, lacking in *tomaszpyrczi* and (4) the androconial cluster situated on the tornal part of the hindwing ventrum is light, but dark in *tomaszpyrczi*.

We summarize the distinguishing characters in the key presented below, prepared for identification of the species discussed above.

1. Forewing costa dorsal ground colour not green but blue, brown or tawny .... *Rhamma* spp.

-. Forewing dorsal ground colour various shades of green (*R. tomaszpyrczi*, *R. tyrrius*, *R. cassidyi*, *R. emeraldina*, *R. hybla*) ..... 2.

2. Forewing costa longer than 14.5 mm ..... *R. cassidyi*, *R. emeraldina*, *R. hybla*

-. Forewing costa shorter than 14.5 mm (*R. tomaszpyrczi*, *R. tyrrius*) ..... 3.

3. Hindwing dorsum with bluish green colouration restricted to basal and median areas ..... *R. tyrrius*

-. Hindwing dorsum with basal, medial and submedial metallic green colouration ..... *R. tomaszpyrczi*

The above key is provided purely for diagnostic purposes. We are aware that the taxa we clustered above do not form a natural group (see below), and we are also well aware that further species of *Rhamma* with green dorsal colouration may be discovered in the future, requiring an alteration of this key. This is almost certain as all these green taxa of *Rhamma* occur on the eastern side of the Andes, between elevations 2100 and 3000 meters above sea level in the cloud forest ecotone. This is the zone where the diversity of the butterfly fauna is remarkably high, as well as the level of endemism (cf. PYRCZ & VILORIA 1999: 117-118, PYRCZ et al. 1999: 498–499, PYRCZ & WOJTUSIAK 1999: 180-181, PYRCZ 2000: 70). Unfortunately, at this stage of our studies we cannot estimate the geographical distribution of the green *Rhamma* species discussed above. The distance between collection sites where the various green *Rhamma* specimens known to us have been collected is several hundred kilometres and material available for further zoogeographical studies is very scarce in collections.

Diversity of *Rhamma*. The original arrangement of *Rhamma* included taxa of the *Thecla arria* Group of DRAUDT (1919: 758–759). Ten species were transferred from *Thecla* and placed in *Rhamma* and an additional 16 species were described as

new. Subsequently, additional species of *Rhamma* have been described revealing that the genus is widely distributed and very diverse in the Andes (JOHNSON & ADAMS 1993: 3–6, SALAZAR-ESCOBAR et al. 1997: 7-9).

JOHNSON distinguished two species groups in *Rhamma* that are defined by dorsal structural colour pattern, differential occurrence of male androconial clusters, and the prominence of the hindwing anal lobe. The two groups have been further subdivided (JOHNSON 1992: 45-57, 138-147; JOHNSON & ADAMS 1993: 6). Since the species of *Rh. tomaszpyrczi* is intermediate between several assemblages it is justified to argue that the *Rhamma* groups are non-monophyletic entities. It is a task for future research to analyze taxonomic descriptions of all available names, critically examine type material and build a character matrix for determining the natural groups within *Rhamma.* Then an identification key for all the recognized species can be prepared.

The concept of *Rhamma*. The genus *Rhamma* was described as "Clade II" of neotropical "elfin" butterflies (Lycaenidae: Eumaeini) by JOHNSON (1992: 45-57 and 136-147) with the type species *Thecla oxida* HEWITSON, 1870. Overall, most species of *Rhamma* appear superficially quite homogenous. They are of small or medium size (forewing costal length 9–12 mm) with blue dorsal colouration and with the hindwing ventrum cryptically coloured (cf. D'ABRERA 1995: *Rhamma* figures of page 1141). The conspicuous structural character of the genus is the female genital organ with short ductus bursae and heavily sclerotized complex lamella postvaginalis. Another important feature of *Rhamma* has been already pointed out by D'ABRERA (1995: 1144) when he discussed *Shapiroana shapiroi* JOHNSON, 1992. He pointed out that males of numerous species possess a patch of peculiar scales on the forewing ventrum. Similarly, JOHNSON (1992: 47–48) remarked that the males have a patch of peculiar, distinctive scales on the subbasal or medial area of hindwing dorsum and suggested that they may produce different UV light diffraction patterns. We speculate that those scales on forewing ventrum are true androconia and that those on hindwings function in spreading pheromones released from forewing androconia, or are themselves androconial scales (Figs 4-5).

It is well known that androconial scales can also be found in representatives of other, non-monophyletic (s.str.) eumaeini lineages, for example such as the type species of *Timaeta timaeus* (FELDER & FELDER, 1865), or certain species of the genera *Arawacus* KAYE, 1904, *Janthecla* ROBBINS & VENABLES, 1991 or *Strephonota* JOHNSON, KRUSE & KROENLEIN, 1997. Therefore this phenomenon may be a result of homoplasious convergence, and as such not be wholly reliable for clustering genera.

JOHNSON (1992: 40) placed in his „Clade II", beside *Rhamma*, the newly created genera *Pontirama*, *Shapiroana* and *Paralustrus* indicating that the monophyly of these assemblages is based on the complex lamella postvaginalis of the females (cf. JOHSNON & ADAMS 1993: 6). Most probably this was the inspiration of the broadened concept of LAMAS et al. (1997: 5) for *Rhamma*. JOHNSON's

approach to *Rhamma* and its relatives reflects traditional mehtods of alpha taxonomy, that primarily distinguishes and describes individual taxa and well-characterized groups, and presents a framework for further faunistic and systematic exploration of larger lineages. Although this „working" taxonomy is not necessarily compatible with a modern systematic point of view influenced by evolutionary philosophy, it is crucial for initial sampling and data gathering in the absence of full revisions based on modern methods. Consequently, the point of view of LAMAS et al. (1997: 5) about *Rhamma*, may be eventually considered more appropriate, once further research on the genus and its relatives is completed and the overall monophyly is clearly seen.

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