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Contributions to the knowledge of Neotropical Lycaenidae: Notes
on *Thecloxurina* with the description of three new species
(Lepidoptera: Theclinae: Eumaeini)

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ABSTRACT. We define the *Penaincisalia* genus group on the basis of the putative synapomorphy of male androconia. The genus group comprises the genera *Abloxurina* JOHNSON, 1992 (= *Candora* JOHNSON, 1992, syn.n.), *Pons* JOHNSON, 1992, *Penaincisalia* JOHNSON, 1990, *Thecloxurina* JOHNSON, 1992 and one genus hitherto undescribed. We characterize the genus *Thecloxurina* on the basis of the hind wing shape, considered as a generic synapomorphy. We describe *Thecloxurina alcaera* n. sp. (type locality: Balzapamba-Guaranda road, Santa Lucía, Bolívar, Ecuador), *Thecloxurina santamarta* n. sp. (type locality: Minca, Magdalena, Sierra Nevada de Santa Marta, Colombia) and *Thecloxurina sigsiga* n. sp. (type locality: Sigsig, Morona-Santiago, Ecuador). The nominal taxon *Thecloxurina contricolora* JOHNSON, 1992 is considered as nomen dubium. The genus *Thecloxurina* is divided into the three groups of species on the basis of ventral colour pattern and male scent pad shape.

Key words: entomology, taxonomy, *Penaincisalia* genus group, *Thecloxurina*, monophyly, diversity, genera, new species.

INTRODUCTION

The genus *Thecloxurina* was erected by JOHNSON (1992) with the type species *Thecla loxurina* C. FELDER & R. FELDER, 1865 for twelve species. Subsequently Ecuadorian and Peruvian taxa were surveyed, resulting in description of additional species and a review of earlier established taxa and synonymies (BÁLINT & WOJTUSIAK 2003). These approaches to this lineage of eumaeine butterflies were annulmented arbitrarily in the recently published Checklist of Neotropical

Butterflies (ROBBINS 2004) (hereafter CNB), without any scientific justification whatsoever.

The present paper is aimed (1) to present a brief definition of the *Penaincisalia* genus group and its genera hitherto recognised but lumped under *Penaincisalia* in the CNB, (2) to describe three new species of *Thecloxurina*, and (3) to demonstrate why the approach to *Thecloxurina* and its relatives (*Penaincisalia* genus group) in the present paper is a better option than the one presented in the CNB checklist.

The results of this work are based on the material stored in the following European natural history museums and private collections listed below, with their acronyms used in the text. Names of curators we acknowledge here are given in brackets.

HNHM - Hungarian Natural History Museum, Budapest;

MNHM - Museum National d'Histoire Naturelle, Paris (Dr. Jacques PIERRE);

MZUJ - Muzeum Zoologiczne Uniwersytetu Jagiellońskiego, Kraków, Poland (Dr. Tomasz PYRCZ);

NHM - The Natural History Museum, London (Dr. Phillip ACKERY);

NMW - Naturhistorisches Museum, Wien (Dr. Martin LÖDL),

and electronic documentations of the private collections abbreviated as:

SAF - Mr Stéphane ATTAL, Paris;

PBF - Mr Pierre BOYER, Le Puy Sainte Réparate, France;

FLC - Mr François LE CROM, Bogotá, Colombia.

For methodology and terminology applied in the present paper we refer to our previous works on the *Penaincisalia*-genus group (BÁLINT & WOJTUSIAK 2001, 2003).

THE *PENAINCISALIA* GENUS GROUP AND THE GENUS *THECLOXURINA*

The monophyly of the *Penaincisalia* genus group is based on the following character: male dorsal fore wing with well developed, visible scent pad situated in the discal cell apex, accompanied by a minute scent patch at the meeting point of disco cellular vein 1 and medial vein M 3 (Fig. 1). This character is supported by the ground colour of the ventral side of wings with a pinkish shade and by the lack of spots in the basic ground plan in the basal and the medial areas of the wings. This pattern is comprised of sub basal, medial and a sub medial symmetry systems *sensu* NIJHOUT (1991). This definition was given for the genus *Penaincisalia* by JOHNSON (1990) and was used to redefine the *Penaincisalia* genus group by BÁLINT (2004).

This monophylum harbours the following lineages listed here in alphabetical order that we distinguish as separate genera: *Abloxurina* JOHNSON, 1992 with type

species: *Thecla amatista* DOGNIN, 1895 (= *Candora* JOHNSON, 1992 with type species: *Candora fallacandor* JOHNSON, 1992), *Penaincisalia* JOHNSON, 1990 with type species: *Thecla culminicola* (STAUDINGER, 1894), *Pons* JOHNSON, 1992 with type species: *Pons magnifica* JOHNSON, 1992, and *Thecloxurina* plus a hitherto one undescribed genus. The monophyly of these genera are based primarily on wing shape characters, which are supported by the characters of male genitalia (*c.f.* HALL *et al.* 2005). Our previous characterizations of the *Penaincisalia* genus group were erroneous, because it was solely based on female characters (BÁLINT 2001). This was also the case for the genus *Jagiello* BÁLINT & WOJTUSIAK, 2000 (type species: *Jagiello molinopampa* BÁLINT & WOJTUSIAK, 2000), where a hitherto undescribed female of *Abloxurina* species was associated with the holotype of *Jagiello molinopampa* (BÁLINT, BOYER & WOJTUSIAK, *in prep.*), thus *Jagiello* was considered to be a close relative of *Penaincisalia* (BÁLINT & WOJTUSIAK 2000).

Abloxurina possesses an expanded vein 3A in a hind wing and often incurved anal wing margin producing a conspicuous tornal lobe (= slightly elongate anal lobe *sensu* JOHNSON 1992: 58, fig. 1H). This character can be found in both sexes. The genus is comprised of Andean cloud forest species. Its still undescribed taxa have characteristic wing shape and cryptic colour pattern of the ventral side of the wings resembling that of dead leaves. The type species of *Candora* is a subjective synonym of the type species of *Abloxurina* *sensu* CNB. We were also unable to find any character for distinguishing the nominal species *Thecla amatista* DOGNIN, 1895 (type species of *Abloxurina*) and *Candora fallacandor* JOHNSON, 1992 (type species of *Candora*). Furthermore, the type series of *C. fallacandor* contains a male syntypic species of *Thecla amatista* (BMNH 266571; BÁLINT *in prep.*).



1. *Penaincisalia* genus group synapomorphy in *Pons saraha*: fore wing dorsal androconia are comprised of a scent pad in the distal corner of discal cell and a minute scent patch at base of vein M3 from disco-cellular vein 1

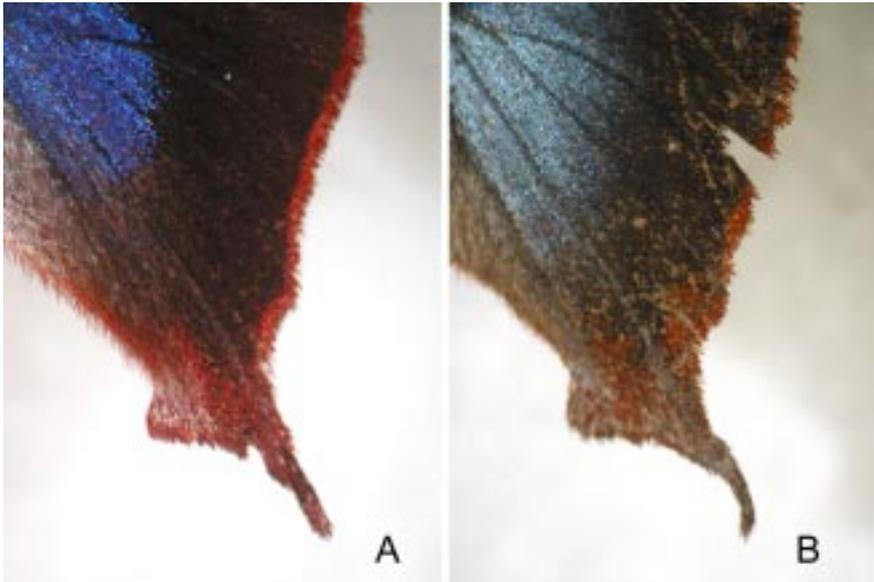
Therefore we consider the two nominal taxa as synonyms, consequently *Abloxurina* JOHNSON, 1992 is considered as a senior synonym of *Candora* JOHNSON, 1992, **syn. n.**

Penaincisalia possesses simple hind wing shape in both sexes (= lobeless *sensu* JOHNSON 1992: 58, Fig. 1K), which means that there are no tails or tornal lobes extending outwards.

Pons male possesses a large tornal lobe (= bulbous lobate anal tail *sensu* JOHNSON 1992: 58, fig. 1H), which is built along the expanded veins CuA2 and 2A. *Pons* female has the same lobe but with an additional tail at vein terminus CuA2 (= produced lateral lobe of anal tail contiguous with spike *sensu* JOHNSON 1992: 58, Fig. 1F), often with an additional short tail at vein terminus CuA1.

We characterize the genus *Thecloxurina* as follows: (1) hind wing vein CuA2 terminus extended as relatively long (>3mm) rigid tail in both sexes (= fingerlike anal tail *sensu* JOHNSON 1992: 58, Fig. 1G). Since other genera of the *Penaincisalia* genus group have differently shaped hind wings in both sexes, or the hind wing shape shows sexual dimorphism, we hypothesise that this trait is the *Thecloxurina* apomorphy within the genus group (Fig. 2).

Thecloxurina taxa on species-group level can be discriminated by the following characters: (1) shape of male fore wing scent pad, (2) dorsal wing colour pattern and the width of black marginal border, (3) ventral wing colour and pattern and (4) cornuti in the aedeagus of male genitalia. In *Thecloxurina* there are two cuticular, strongly sclerotized cornuti shaped as toothed bars located inside the posterior part of the aedeagus, bent in opposite directions. Anterior cornutus is usually longer than the posterior one. In lateral view the bars reveal their curva-



2. *Thecloxurina* apomorphy: sexes with identical hind wing shape: A - male, B - female

ture and sculpture consisted of a number of minute teeth. The size, curvature and sculpture of cornuti bars are species specific.

These taxa adapted to the life in the Andean oreol biota at high altitudes are relatively young, as is their environment. This is reflected in the similarities of their genitalia structure but not in the wing shape and colour patterns that are distinct and provide taxonomically significant characters (*c.f.* FORDYCE et al. 2002).

SPECIES DESCRIPTIONS

***Thecloxurina alcacera* BÁLINT, ATTAL, BOYER & WOJTUSIAK, n. sp.**

(Figs. 3-6)

TYPE MATERIAL

Holotype: male (MZUJ), labelled as "Ecuador, Prov. Bolívar, Santa Lucía, Balzapamba-Guaranda old road, 2600 m, 05.II.2002. leg. Wojtusiak, Pyrcz & Garlacz", prep. genit. no 10; in good condition, set ventrally. Fore wing length from base to apex 13 mm (Figs. 3, 4).

Paratypes: NHM - (2 males): Environs de Loja, Equateur, 1886, Abbé Gaujon; 32. 21, Ex Coll. Dognin, 1921; J. J. Joicey Coll., B. M. 1929-435 (paratype no. 1); Environs de Loja, Equateur, 1891; 32. 21, Ex Coll. Dognin, 1921; J. J. Joicey Coll., B. M. 1929-435. (paratype no. 2.); HNHM - (male): Vallée du Rio Alcaccer, Balzapamba, 4. XI. 1996, 2700 m, Bolívar, Ecuador (paratype no. 3), abdomen dissected (Bálint gen. prep. No. 1081, HNHM) and placed in plastic microvial attached to the pin of the specimen.; SAF - nos 4-8 (all males), data as for paratype no. 3.; PBF - (2 females): nos 9-10, 3 km Ouest de Molleturo, 2700 m, Azauy, Ecuador, 23.XI.1998, leg. P. Boyer (paratype no. 9); km 8, Zambi vers Catamayo, Loja, Ecuador, 28.XI.2002. (paratype no. 10).

DIAGNOSIS

Resembles sympatric *T. loxurina* and occurs in the field synchronically. The two taxa can be differentiated by the following male characters:

<i>Thecloxurina alcacera</i>	<i>Thecloxurina loxurina</i>
fore wing dorsal structural colour pale violet blue	fore wing dorsal structural colour shiny violet blue
dorsal wings black, basal margin indistinct	dorsal wings black, basal margin distinct
fore wing discal scent pad oval	fore wing discal scent pad circular
hind wing tornus rufous with conspicuous lobe	hind wing tornus grey with inconspicuous lobe
ventral fore wing with marked discoidal line	ventral fore wing with faint or no discoidal line
fore wing cell CuA2 with sub median marking	fore wing cell CuA2 with no marking.

DESCRIPTION

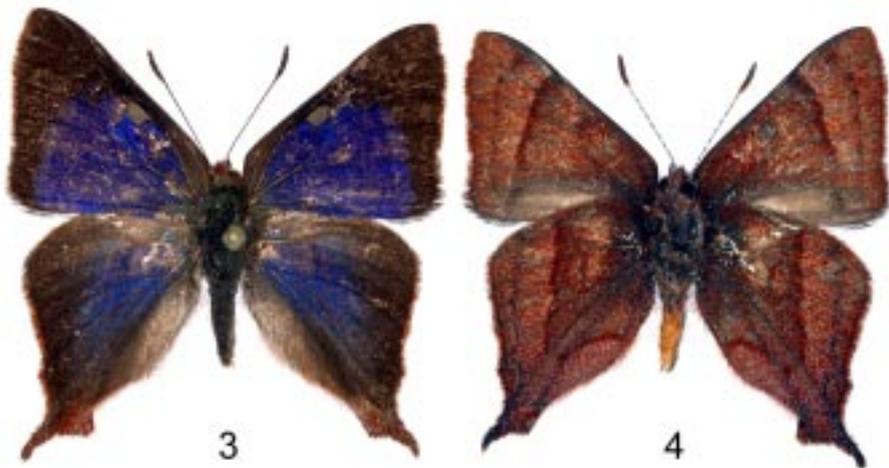
Male. – Body: head with reddish brown vertex and frontoclypeus, labial palpus reddish brown covered with white scales, flagella black with white terminal rings, club long and reddish brown; thorax dorsally black with long pilose

hairs, ventrally reddish brown, legs covered by long reddish brown and white piliform scales; abdomen dorsally black, ventrally pale orange. Genitalia as in Fig. 5.

Wings: Length of fore wing costal margin 13-15 mm as measured from the base of the cubital vein to the vein R3 terminus ($n = 4$); fore wing apex pointed, outer margin slightly bent distally at vein terminus R2 and basally at vein terminus CuA2; dorsal ground colour pale violet blue in basal area and medial areas with brown outer margin and maroon coloured fringes; costa black in basal, medial and submedial areas, apical area black, cubital vein base reddish brown, discal cell apex with oval grey scent pad pointed distally, minute scent patch at the base of vein M3; ventral ground colour mottled reddish brown, darker basally and lighter distally divided by a marked central symmetric line running to tornus; discoidal patch visible, submarginal pattern faint; costal area grey and patternless. Hind wing dorsal colouration similar to that of fore wing without scent pad and patch; vein terminus CuA1 slightly expanded, vein CuA2 terminus with 3mm long rufous tail, anal edge incurved creating a rufous tornal lobe with greyish hint; ventral colouration and pattern as that on fore wing but without discoidal patch and subbasal area in costal, Sc + R1 and discal cells yellowish, central symmetry line bent at vein CuA2 at 90 degrees running to anal margin, tornal lobe and tail CuA2 dark reddish grey.

Male genitalia as in Fig. 5. Aedeagus length 2.25 mm. Anterior cornutus 0.65 mm, slightly bent, in its posterior bearing few small teeth. Posterior cornutus 0.28 mm, spoonlike, strongly concave, on its convex surface saw-like with many small and flattened teeth (Fig. 6.).

Female. – Similar to male in ventral pattern and colouration except of silvery blue colouration at basal and medial part of dorsal side of wings.



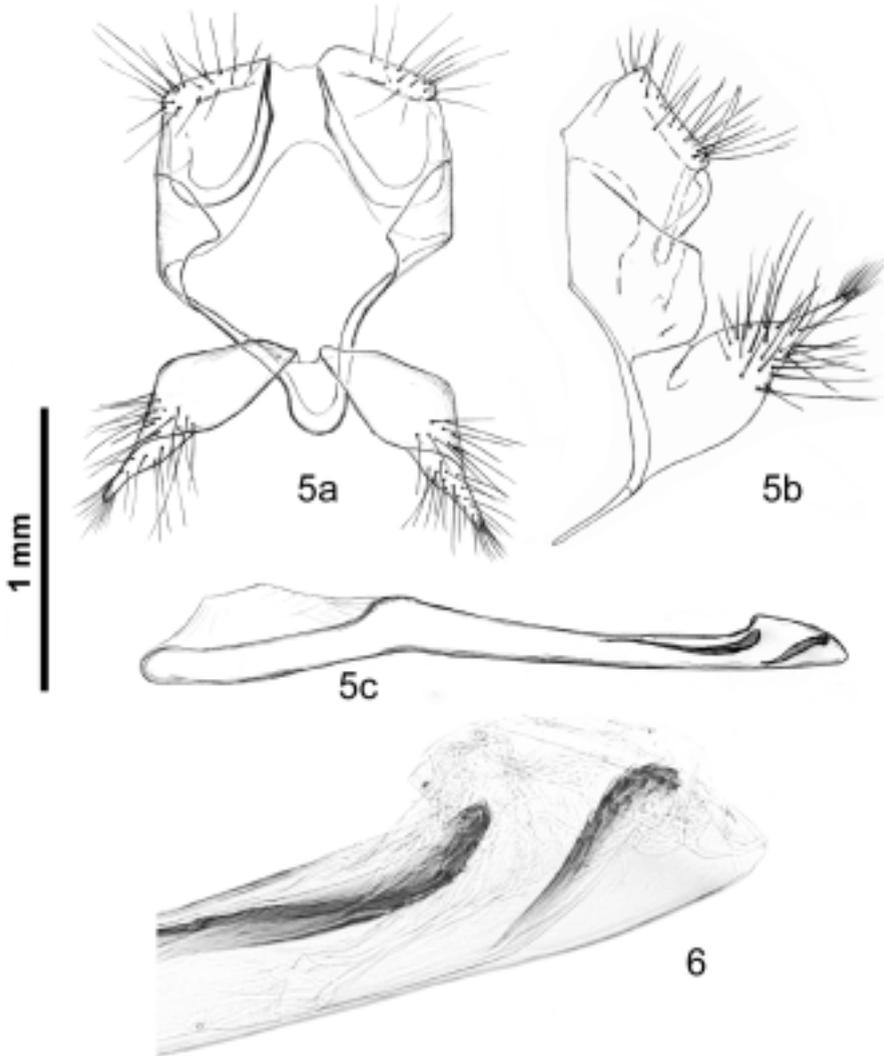
3, 4. *Thecloxurina alcacera* n. sp.: 3 - holotype dorsum, 4 - holotype ventrum

BIONOMICS

Males were collected in November and February, and the females in November. Known to occur at moderate elevations between 2200-2700 m.

ETYMOLOGY

Named after the valley of Rio Alcacer, in Bolívar state, Ecuador, where some of the paratype specimens have been collected by Stéphane Attal and his wife, Magaly.



5, 6. *Thecloxurina alcacera* n. sp., genitalia: 5a - ventral view, 5b - lateral view, 5c - aedeagus, lateral view; 6 - cornuti in aedeagus, lateral view

REMARKS

In the NHM collection there are two specimens collected by P. DOGNIN by the end of the 19th century. The specimens were curated as *Thecloxurina loxurina*. Most probably these specimens are the vouchers of DOGNIN's "Thecla loxurina" (DOGNIN 1886: 13; 1891: 36), as we did not find any *T. loxurina* individuals collected by DOGNIN in the collection of NHM nor MNHN.

The holotype specimen was mentioned as *Thecloxurina contracolora* JOHNSON, 1992 by BÁLINT & WOJTUSIAK (2003: 374, figs. 24-25). The type material of *T. contracolora* has been reviewed by one of us (Zsolt BÁLINT) recently, with the conclusion that the *T. contracolora* type material was probably mishandled. On the dorsal side of wings the holotype shows a curious kind of blue and on the ventral side their ground colour is grey. This kind of discolouration is also apparent in the colouration of the tornal half of the allotype hind wing ventrum (see the original description JOHNSON 1992: 28, figs. 22). However, the *T. contracolora* holotype is very similar in wing shape and markings to *T. alcacera*, and probably it was mislabelled, as it was in the case of other historical specimens labelled as "Bogotá" (BÁLINT & GOODGER 2003: 86). Therefore, we consider *T. contracolora* as nomen dubium, not as synonym of *T. loxurina*, as stated in the CNB.

It is worthy to note that the identity of *Thecloxurina contracolora* sensu BÁLINT & WOJTUSIAK has been pointed out to Zs. BÁLINT by Jason P. W. HALL (National Museum of Natural History, Smithsonian Institute, Washington DC, USA) *via* personal communication.

***Thecloxurina santamarta* BÁLINT & WOJTUSIAK n. sp.**

(Figs. 7-10)

TYPE MATERIAL

Holotype: male (MZUJ), labelled as: "COLOMBIA: Sierra Nevada de Santa Marta, Minca (via Cerro San Lorenzo), Magdalena, 2400 m, 20. X.1990, Jean François Le Crom", prep. genit. No. 11. The specimen is in good condition, half of left antenna is missing, fore wing costal length from base to apex 13 mm (Figs. 7, 8).

Paratypes: NHM – (paratype no. 1) male: [Colombia], E. above San Pedro, 2300 m., 5.VIII.1972.; (paratype no. 2) male: [Colombia], E. above San Pedro, 2900 metres, 7.VIII.1972.; (paratype no. 3.) male: North Colombia: 1906, Sierra Nevada de Santa Marta Exped.; M. J. Adams & G. I. Bernard; W. Cuchilla Cebolleta (?); (paratype no. 4) male: North Colombia: 1913, Sierra Nevada de Santa Marta Exped.; M. J. Adams & G. I. Bernard; W. Cuchilla Cebolleta (?), E. above San Pedro, 2900 metres, 9.VIII.1972, Adams & Hardy, 1987-319; (paratype no. 5) female: North Colombia: 1921, Sierra Nevada de Santa Marta Exped.; M. J. Adams & G. I. Bernard; W. Cuchilla Cebolleta (?), E. above San Pedro, 2900 metres, 9.VIII.1972, Adams & Hardy, 1987-319.

DIAGNOSIS

Resembles the allopatric *T. loxurina*. The two taxa can be distinguished by the following characters:

<i>Thecloxurina santamarta</i>	<i>Thecloxurina loxurina</i>
fore wing dorsal structural colour deep violet blue	fore wing dorsal structural colour shiny violet blue
fore wing radial veins shorter than medial veins causing remarkably pointed apex	fore wing radial and medial veins of approximately the same length
dorsal wing black border below vein CuA1 inner margin running parallel to outer margin	dorsal wing black border below vein CuA1 with inner margin not running parallel to outer margin, but approaching
hind wing vein CuA2 terminal area at tornus black and red	hind wing vein CuA2 terminal area and tornus black and grey
hind wing tornal lobe with two times width of CuA2 vein terminal tail length	hind wing tornal lobe with four times width of CuA2 vein terminal tail length
female dorsal ground colour green with metallic hue	female dorsal ground colour blue with metallic hue.

DESCRIPTION

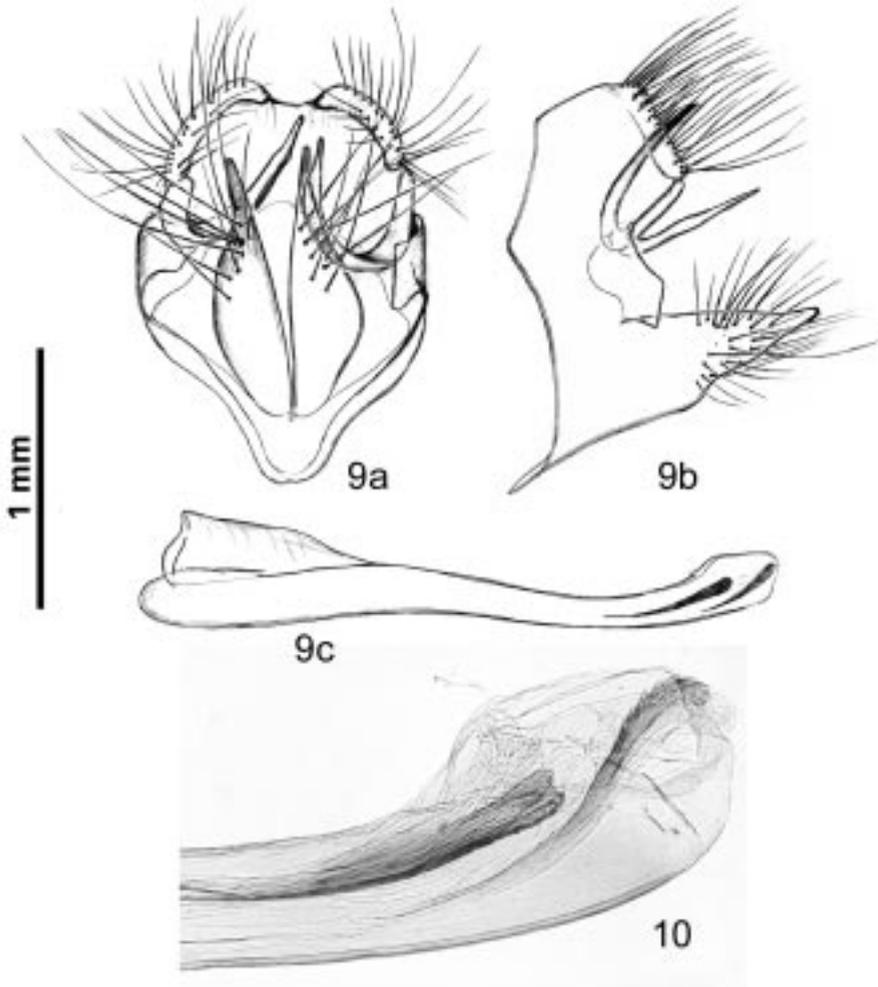
Male. – Head: vertex and frontoclypeus reddish brown, labial palpus reddish brown covered with white scales, flagella black with white terminal rings, club long and reddish brown; thorax dorsally black with long pilose hairs, ventrally reddish brown, legs covered by long reddish brown and white piliform scales; abdomen dorsally black, ventrally pale orange; genitalia as in Fig. 9.

Wings: Fore wing costal margin 12-13 mm long as measured from the erection of the cubital vein to the vein R3 terminus (n=4); fore wing apex pointed, outer margin bent distally at vein terminus R3; dorsal ground colour violet blue in basal and medial areas with brown outer margin and fringes coloured brownish grey; costa black in basal, medial and submedial areas, apical area black, discal cell apex circularly shaped, grey scent pad pointed, vein M3 erection area with minute



7-8. *Thecloxurina santamarta* n. sp.: 7 - holotype dorsum, 8 - holotype ventrum

grey scent patch; ventral ground colour mottled reddish brown, slightly darker basally and lighter distally, divided by a marked central symmetric which runs to costa and is irregularly waved; discoidal patch not visible, submarginal pattern faint; costal area grey and pattern less. Hind wing dorsally similar to that of fore wing without scent pad and patch; but vein CuA2 terminus with 3mm long greyish brown tail, anal edge incurved creating a grey tornal lobe; ventral colouration and pattern similar to that on fore wing but basal area close to costa lighter, anal and tornal areas heavily mottled with light greyish scales, central symmetry line broken at vein CuA2 at 90 degree running to anal margin.



9, 10. *Thecloxurina santamarta* n. sp., genitalia: 9a - ventral view, 9b - lateral view, 9c - aedeagus, lateral view; 10 - cornuti in aedeagus, lateral view

Male genitalia as in Fig. 9. Aedeagus length, 2.4 mm. Anterior cornutus 0.6 mm, almost straight, at posterior part widened and indented at its edge. Posterior cornutus 0.38 mm, strongly bent, spoon like, concave, and its convex surface covered with small teeth pointing posteriorly (Fig. 10).

Female. – Similar to male in colouration of ventral side with the exception of wings which on dorsal side are silvery green at basal and at medial part.

BIONOMICS

All known individuals were collected in August and October at 2300-2400 and 2900 m.

ETYMOLOGY

The species was named after the Sierra Nevada de Santa Marta, an isolated mountain massif in N Colombia.

REMARKS

Because of the massive isolation, the butterfly fauna of the Sierra Nevada de Santa Marta paramo belt is highly endemic, as it was confirmed for Pieridae (ACKERY 1975), Nymphalidae (ADAMS & BERNARD 1977; ADAMS 1985) and also for Lycaenidae (JOHNSON 1992).

The species *T. santamarta* described above is another evidence for the phenomenon that the oreala biota in the Neotropical region evolved rapidly resulting in many endemic taxa often restricted to small geographic areas (see Discussion).

***Thecloxurina sigsiga* BÁLINT, LE CROM & WOJTUSIAK, n. sp.**

(Figs. 11-14)

TYPE MATERIAL

Holotype: male (MZUJ) labelled as: "ECUADOR: Prov. Morona-Santiago, Sigsig, via Chiguinda, 2900 m, 16.09.2004, leg. Wojtusiak & Pyrcz", prep. genit. No 12. The specimen is in almost perfect condition, fore wing costal length from base to apex 14 mm (Figs. 11, 12).

Paratypes: JFLC - (paratype no. 1) male: ECUADOR, Prov. Tungurahua, Puela; dissected, gen. prep. Bálint no. 864; (paratype no. 2) female: data as for paratype no. 1., gen. prep. Bálint no. 865.

DIAGNOSIS

There are no similar *Thecloxurina*. Dorsally wings are pale orange red. The discoidal scent pad is trapezoid with an expanded costal margin. Veins are covered with black scales. Ventrally, wing colour and pattern typical for *Thecloxurina*. On the fore wing brick red medial line gradually disappears between costa and vein CuA1.

Male. – Body: head with reddish brown vertex and frontoclypeus, labial palpus reddish brown covered with white scales, flagella black with white terminal rings, club long and reddish brown; thorax dorsally black with long pilose hairs, ventrally reddish brown, legs covered by long reddish brown and white piliform scales; abdomen dorsally black, ventrally pale orange.

Wings: Costal margin of fore wing length 13 mm measured from the base of the cubital vein to the vein R3 terminus (holotype); fore wing apex pointed, outer margin straight; dorsal ground colour pale orange red in basal and medial areas with black outer margin and maroon grey coloured fringes, veins black; costa black in basal, medial and submedial areas, apical area also black, discal cell apex with trapezoid scent pad with long costal edge, basal area of vein M3 with minute grey scent patch; ventral ground colour mottled orange brown, fore wing discoidal line hardly visible, brick red medial pattern straight and reduced to area between costa and vein CuA1, submarginal pattern darker brown, anal area lighter with yellowish tint. Hind wing dorsally similar to that of fore wing without scent pad and patch; vein CuA2 terminus with 3mm long orange brown coloured tail, anal edge incurved creating an orange tornal lobe; ventral colouration and pattern as that on fore wing but with more extensive medial pattern extending from costa to the terminus of vein 3A, basal area brick red as that of medial pattern, anal and tornal areas heavily mottled with light greyish scales, submarginal area darker than medial one.

Genitalia as in Fig. 13. Aedeagus length 2.0 mm. Anterior cornutus 0.52 mm, strongly bent, at posterior slightly concave slightly intended at its edge. Posterior cornutus 0.2 mm, spoon like, slightly concave, its convex surface covered with small teeth pointing posteriorly (Fig. 14).

Female. – Ventral pattern and colours similar to the male.



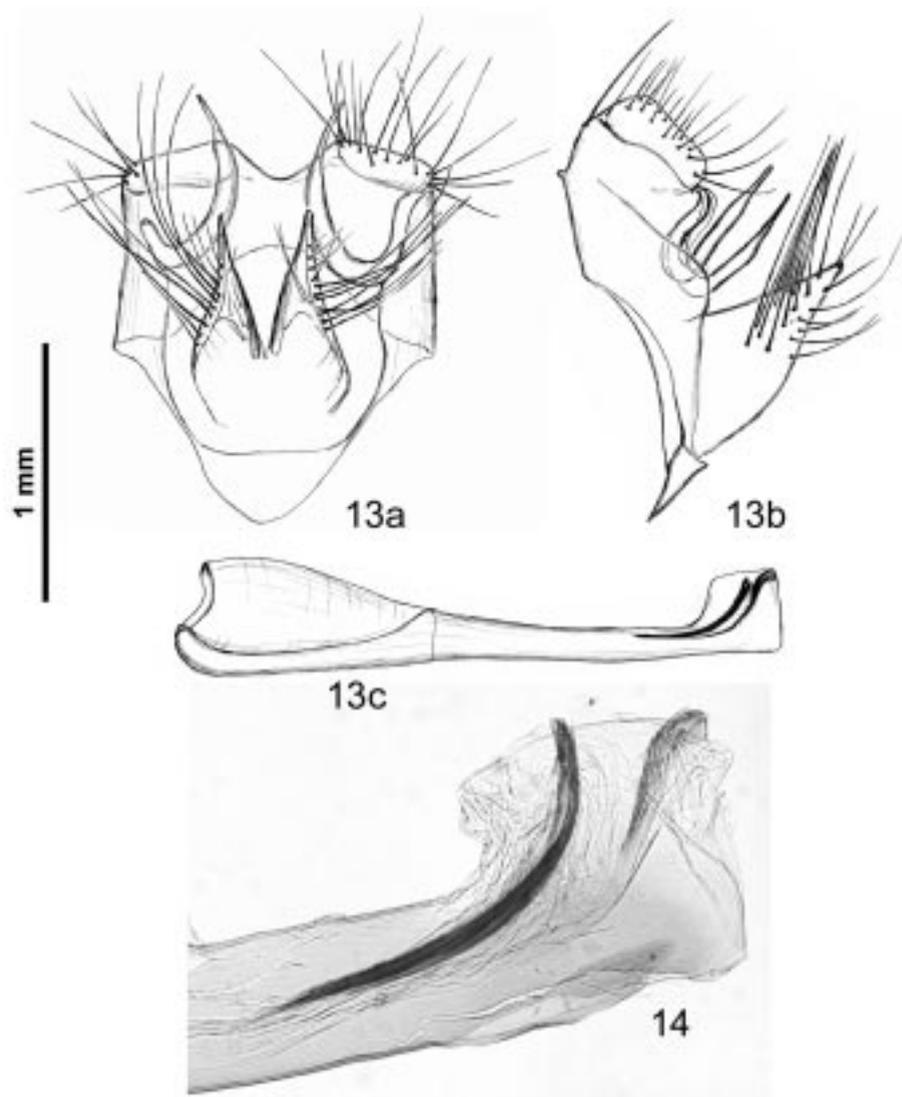
11, 12. *Thecloxurina sigsiga* n. sp., holotype: 11 - dorsum, 12 - ventrum

BIONOMICS

The holotype male was collected in September, at the elevation of 2900 m.

ETYMOLOGY

The species is named after the type locality.



13, 14. *Thecloxurina sigsiga* n. sp., male genitalia: 13a - ventral view, 13b - lateral view, 13c - aedeagus lateral view; 14 - cornuti in aedeagus, lateral view

REMARKS

The recently described *Penaincisalia felizitas* BÁLINT, 2004 (type locality: Peru: Huancarama, Apurímac, Peru) is superficially similar, but it can be easily separated on the basis of different wing shape (fore wing outer margin not straight), dorsal colouration (basal wing areas with faint violet structural colour, medial area in apex orange), pattern (ventral hind wing medial line wavy) and male genitalia (noticeably longer anterior cornutus in aedeagus, sclerotized zonal area).

The taxon *T. atymnides* (DRAUDT, 1919) described from the Quindiu pass in Colombian Cordillera Central has *loxurina*-like wing shape and pattern. It seems to be restricted to Colombia only.

DISCUSSION

Thecloxurina is a Pan-Andean eumacine lycaenid genus distributed from Costa Rica throughout the Andes to the province Jujuy in Argentina. JOHNSON (1992) distinguished twelve taxa of *Thecloxurina*. Excluding four earlier established names (*atymna*, *atymnides*, *cillutincare* and *loxurina*) all the taxa introduced subsequently have been synonymized in the CNB. In that work a simplistic method was applied by the compiler: "I generally treat montane taxa with geographically variable wing patterns, such as *Penaincisalia loxurina* (C. FELDER & R. FELDER, 1865), as one geographically variable species unless it has been shown that this argument is incorrect" (ROBBINS 2004: xxv). This bias resulted not only in the megalumped taxon *P. loxurina* with nine synonymies, but also in the large and diverse genus *Penaincisalia* with four synonyms.

The approach to *Penaincisalia* presented in CNB is correct from phylogenetic point of view. *Penaincisalia sensu* CNB, although not defined, represents indeed a monophyletic taxon, as it was proposed for the genus by JOHNSON (1990). Nevertheless, the concept of how monophyly is defined in the CNB is not clear. The genera erected or reviewed by NICOLAY (1976, 1979 and 1982) were not synonymized and lumped under the oldest available name to emphasize the monophyly but instead, the *Panhiades* section was erected for 83 species that were placed in eight genera grossly similar in wing shape, pattern and genitalia. The genus *Penaincisalia sensu* CNB shows far wider diversity in this respect than the *Panhiades* section itself. When making comparisons, the genus *Penaincisalia*, as given in the CNB, harbours 41 species and belongs to the unidentified monophyly of *Micandra* section introduced for 148 species of 12 genera, many of them strikingly dissimilar in their phenotypic appearance and bionomics.

We are of the opinion that different lineages of "Penaincisalia" should be recognized as genera, because (1) they all possess synapomorphies, (2) all the genera themselves can be divided further into species groups and (3) the species of the "Penaincisalia" have analogous characters (often discoloured, or distinctively patterned and shaped wings) due to the adaptation to high altitude oral biotas of the Andes.

Regarding the genus *Thecloxurina*, synapomorphies have been presented. The genus can be divided into three species groups: (a) *alcaera* species group (male scent pad oval), (b) *loxurina* species group (male scent pad circular) and (c) *sigsiga* species group (male scent pad trapezoid).

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REFERENCES

- ACKERY, R. P., 1975. A new pierine genus and species with notes on the genus *Tatochila* (Lepidoptera: Pieridae). Bull. Allyn Mus., **30**: 1-9.
- ADAMS, M. J., 1985. Speciation in the pronophiline butterflies (Satyridae) of the northern Andes. Journ. Res. Lepidopt., Supplement 1: 33-49.
- ADAMS, M. J. & BERNARD, G. I., 1977. Pronophiline butterflies (Satyridae) of the Sierra Nevada de Santa Marta, Colombia. Syst. Entomol., **2**: 263-281.
- , 2004. Notes on certain high Andean orange eumaeine lycaenids with description of a new species from Peru (Lepidoptera: Lycaenidae: Eumaeini). Ann. hist.-nat. Mus. nat. hung., **96**: 261-272.
- BÁLINT, ZS. & GOODGER, K., 2003. The Neotropical eumaeine lycaenids of the Cajetan and Rudolf Felder collection. Part I: Review of type material of the taxa described by the Felders (Lepidoptera, Lycaenidae). Quadrifina, **6**: 67-140.
- BÁLINT, ZS. & WOJTUSIAK, J., 2000. *Jagiello molinopampa* gen. et. n. sp. from Peru. Ann. hist.-nat. Mus. nat. hung., **92**: 183-191.
- , 2001. The genus *Pons* JOHNSON, 1992 (Lepidoptera: Lycaenidae: Eumaeini). Genus, Wrocław, **12**: 373-383.
- , 2003. Notes on Ecuadorian and Peruvian species of the genus *Thecloxurina* JOHNSON, 1992 (Insecta : Lepidoptera: Lycaenidae, Eumaeini), with descriptions of three new species. Ann. Naturhist. Mus. Wien, **104 B**: 363-386.
- BÁLINT, ZS., BOYER, P., KERTÉSZ, K. & BIRÓ, L. P., 2006. Observations on the spectral reflectance of certain high Andean *Penaincisalia* and *Thecloxurina*, with the description of a new species (Lepidoptera: Lycaenidae: Eumaeini). Journ. Nat. Hist., **40**: (in press).
- DOGNIN, P., 1887. Note sur la faune des Lépidoptères de Loja et environs (Équateur). Descriptions d'espèces nouvelles. Extraire du Naturaliste. Paris: Bureaux du Journal, pp i + 5-24-64, pls I-II.
- , 1891. Lépidoptères de Loja at environs (Équateur). Description d'espèces nouvelles. Deuxième livraison. Paris: Imprimerie F. Levé, pp i + 29-64 + i, pls III-VI.
- FORDYCE, J. A., NICE, C. C., FORISTER, M. L. & SHAPIRO, A. M., 2002. The significance of wing pattern diversity in the Lycaenidae: mate discrimination by two recently diverged species. Journ. Evol. Biol., **15**: 871-879.
- HALL, J., WILLMOTT, K. & BUSBY, R. 2005. Five new *Penaincisalia* species (Lepidoptera: Lycaenidae: Eumaeini) from the Andes of southern Ecuador and northern Peru. Zootaxa, **797**: 1-20.

- JOHNSON, K., 1990. *Penaincisalia*, a new genus of the “elfin”-like butterflies from the high Andes (Lepidoptera: Lycaenidae). *Pan-Pacific Entomol.*, **66**: 97-125.
- , 1992. Genera and species of Neotropical ‘elfin’-like hairstreak butterflies (Lepidoptera, Lycaenidae, Theclinae), *Rep. Mus. Nat. Hist., Univ. Wisconsin, Stevens Point*, **22**(1): 1-135, (2): 136-279.
- NICOLAY, S. S., 1976. A Review of the Hübnerian Genera *Panhiades* and *Cycnus* (Lycaenidae: Eumaeini). *Bull. Allyn Mus.*, **35**: 1-30.
- , 1979. Studies in the Genera of American Hairstreaks. 5. A Review of the Hubnerian Genus *Parrhasius* and Description of a New Genus *Michaelus* (Lycaenidae: Eumaeini). *Bull. Allyn Mus.*, **56**: 1-51.
- , 1982. Studies in the Genera of American Hairstreaks. 6. A Review of the Hubnerian Genus *Olynthus* (Lycaenidae: Eumaeini). *Bull. Allyn Mus.*, **74**: 1-30.
- NIJHOUT, F. H., 1991. *The Development and Evolution of Butterfly Wing Patterns*. Smithsonian Institution Press, Washington and London: 297 pp.
- ROBBINS, R. K., 2004. Introduction to the Checklist of Eumaeini, pp xxiv-xxx. In: LAMAS, G., ed. *Hesperioidea – Papilionoidea*. In: HEPPNER, J. B., ser. ed. *Atlas of Neotropical Lepidoptera, Checklist: Part 4A*. Gainesville: Association for Tropical Lepidoptera & Scientific Publishers, xxxvi + 439 pp.