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Notes on Ecuadorian and Peruvian species of the genus *Thecloxurina* JOHNSON, 1992 (Insecta: Lepidoptera: Lycaenidae, Eumaeini), with descriptions of three new species

Z. Bálint* & J. Wojtusiak**

Abstract

The Ecuadorian and Peruvian species of the genus *Thecloxurina* JOHNSON, 1992 are discussed. A key is provided. Three species new to science are described: *Thecloxurina amazona* sp.n. and *T. chachapoya* sp.n., both from Peru, Dept. Amazonas, Molinopampa; *T. ludovica* sp.n. from Peru, Dept. Cuzco, St. Luis. A lectotype for *Thecla loxurina* FELDER & FELDER, 1865 is designated. Four new synonyms are established: *Thecla atymna* HEWITSON, 1870 = *Thecla loxurina f. quindiensis* DRAUDT, 1919, syn.n.; *Thecla loxurina* FELDER & FELDER, 1865 = *Thecloxurina loxurina lustra* JOHNSON, 1992, syn.n.;*Thecla loxurina* FELDER & FELDER, 1865 = *Thecloxurina truncta* JOHNSON, 1992, syn.n. and *Thecla loxurina* FELDER & FELDER, 1865 = *Thecloxurina costarica* JOHNSON, 1992, syn.n. *Thecloxurina contracolora* (JOHNSON, 1992), comb.n. is recorded for the first time from Ecuador. *Thecla loxurina* f. *atymnides* DRAUDT, 1919 is considered to be nomen dubium.

Key words: entomology, taxonomy, new species, new synonym, nomen dubium, lectotype designation, Lepidoptera, Lycaenidae, Eumaeini, *Thecloxurina*, Costa Rica, Venezuela, Colombia, Ecuador, Peru.

Zusammenfassung

Die in Ecuador und Peru lebenden Arten der Gattung *Thecloxurina* JOHNSON, 1992 werden diskutiert. Ein Bestimmungsschlüssel wird veröffentlicht. Drei neue Arten werden beschrieben: *Thecloxurina amazona* sp.n. und *T. chachapoya* sp.n., beide aus Peru, Dept. Amazonas, Molinopampa; *T. ludovica* sp.n. aus Peru, Dept. Cuzco, St. Luis. Ein Lectotypus wird für *Thecla loxurina* FELDER & FELDER, 1865 designiert. Vier neue Synonyme werden vorgeschlagen: *Thecla atymna* HEWITSON, 1870 = *Thecla loxurina* f. *quindiensis* DRAUDT, 1919, syn.n.; *Thecla loxurina* FELDER & FELDER, 1865 = *Thecloxurina loxurina lustra* JOHNSON, 1992, syn.n.; *Thecla loxurina* FELDER & FELDER, 1865 = *Thecloxurina truncta* JOHNSON, 1992, syn.n. und *Thecla loxurina* FELDER & FELDER, 1865 = *Thecloxurina costarica* JOHNSON, 1992, syn.n. *Thecloxurina contracolora* (JOHNSON, 1992), comb.n. wird erstmals für Ecuador nachgewiesen. *Thecla loxurina* f. *atymnides* DRAUDT, 1919 wird als Nomen dubium betrachtet.

Introduction

The genus *Thecloxurina* was established by JOHNSON (1992: 5) with the type species *Thecla loxurina* FELDER & FELDER, 1865 for medium sized and conspicuously tailed beautiful neotropical lycaenids, which are often figured in popular butterfly books and placed in "*Thecla*" (cf. LEWIS 1973: pl. 68, figs 35 - 36, SMART 1975: 172, fig. 19), a genus belonging to a different tribe (cf. ELIOT 1973: 429 - 430, 439 - 440). This group of lycaenids fascinated A. H. Fassl, one of the pioneers of studies on Andean butterflies,

* Dr. Zsolt Bálint, Hungarian Natural History Museum, Department of Zoology, H-1088 Budapest, Baross utca 13, Hungary, email: balint@zoo.zoo.nhmus.hu

** Dr. Janusz Wojtusiak, Jagiellonian University, Zoological Museum, PL-30060 Krakow, Ingardena 6, Poland, email: wojt@zuk.iz.uj.edu.pl

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who recorded the occurrence of "*Thecla loxurina*" several times and supplied interesting observations about the behaviour and vertical distribution of the various "*loxurina* forms" (FASSL 1910: 127 - 128, 132, 144; 1911a: 260; 1911b: 29; 1914: 26).

JOHNSON (1992: 8-12) demonstrated that *Thecloxurina loxurina* is widely distributed in the Andes from the Venezuelan Cordillea de Mérida to the Argentinian Tucumán Province, represented by a chain of allopatric subspecies, showing evidencies that the concept of "*Thecla loxurina*" of FASSL (1910: 127 - 128, cf. SEITZ 1919: 742, DRAUDT 1919: 758) is erronoeus as the high elevational "red *loxurina*" phenotype represents distinct species. In addition to the polymorphic type species, he placed five previously known species and six newly described ones in *Thecloxurina*; that made the genus distribution Panandean, extending from Costa Rica to northwestern Argentina. Subsequently, another species from Colombia was described in the genus by JOHNSON & ADAMS (1993: 2). According to these sources, the genus *Thecloxurina* is represented in the following countries by the following number of species: Costa Rica (1), Venezuela (1), Colombia (7), Ecuador (4), Peru (4), Bolivia (4), and Argentina (4).

In the present paper we review the Ecuadorian and Peruvian taxa of *Thecloxurina.* Our results are based on examination of newly collected material, some primary types, and further important historical samples. We have examined the material deposited in the following European museums: Hungarian Natural History Museum, Budapest (HNHM), Zoological Museum, Jagiellonian University, Kraków (ZMJU), Naturhistorisches Museum, Wien (NMW), and Natural History Museum, London (BMNH). Their acronyms are used throughout the text. We use three further acronyms for International Commission of Zoological Nomenclature (ICZN), for Museum Nationale d'Histoire Naturelle, Paris (MNHN) and for Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima (MUSM).

Material and methods

Standard technique is used for making dissections of genitalia. They have been placed in plastic microvials attached to the specimens, from which they were taken and given the serial number of Z. Bálint (run in the HNHM). Taxa are listed in the same sequence as they appear in the key presented below. Literature references for individual taxa are quoted only, if they are accompanied by figures. This is necessary, because descriptive texts are often too generalized or misleading, therefore difficult to apply positively. Examined specimens are listed in a temporary sequence according to the date of capture and the acronyms of their depository institutions. Descriptive texts are based on butterfly terminology given by SCOTT (1990). Capitalized colour names are taken from MAERZ & PAUL (1950).

When the genus was erected species were distinguished by characters of dorsal patterns and ventral markings of the wings, plus genital features. We find that wing characters are reliable for species discrimination. Genital configurations used as diagnostic by JOHNSON (1992) are rather homogenous; however, we have found that the medial cornutus in the male vesica and the shape of vinculum tornal edge seem to offer good characters. These features have to be tested also in larger samples. A very limited number of female specimens were available. As they are very rare in collections, we did not make dissections of all the species, but kept the specimens intact. Later, if more material of female individuals will be available, it would be advisable to check their internal structures for diagnostic characters.

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Genus *Thecloxurina* JOHNSON, 1992

Diagnosis: Body and legs of imagines black and covered by rufous hairs; eyes hairy; length of antennae reaching costal terminus of vein R2, antennal club rufous; ventral part of abdomen orange or yellow. Male: wings dorsally blue or violet with grey circular androconial cluster situated at apex of discal cell. Females blue or red. Both sexes with conspicuous tail-like extension of vein CuA2 of hind wing. Ventral marking consisting of darker basal and lighter terminal part divided by conspicuous straight, bent or slightly zigzagged median line.

Genital structures typically eumaeine (Figs. 1, 2): Male lacking brush organ, sensory hairs situated on valva and at end of last segment; genital capsule bullet-shaped with large tegumen, pair of conspicuously pointed gnathos, slender vinculum and saccus equal to vinculum; valvae relatively slender with pointed terminus, manica membranous and tight; aedeagus long, length two times valval length, vesica with pair of cornuti, basal one small, median one larger. Female with simple tubular ductus bursae divided into wide and large posterior and small anterior part; posterior part with symmetrical dorsal plates and with membranous ventral part, anterior part sclerotized; cervix bursae around erection of ductus seminalis also sclerotized, in lateral view appearing as a twice-bent sclerotized pair of flaps; bursa with two simple signa.

Ecology: The representatives of the genus are typical for humid montane forests of higher altitudes. Males are hilltopping and attracted by bait traps effective for Pronophiline butterflies. Females are rarely encountered. As far as we are aware there is no published record about the early stages or larval host of any of the species.

Key to the species of *Thecloxurina* occurring in Ecuador and Peru

1 Dorsal ground colour violet in males, red in females (Figs. 7 - 23) (*T. atymna* species group). 2

\- Dorsal ground colour blue in males, silvery blue in females (Figs. 24 - 44) (*T. loxurina* species group). 3

2 Dorsal discoidal and submedian area of fore wing rufous in male; hind wing cell Sc+R1 red in female (Figs. 7 - 18). ..... ***T. atymna***

\- Dorsal discoidal area of fore wing violet without rufous suffusion in male; hind wing cell Sc+R1 black in female (Figs. 19 - 23). ..... ***T. fassli***

3 Vein Cu1 of hind wing extended terminally (Figs. 24 - 25). ..... ***T. contracolora***

\- Vein Cu1 of hind wing not extended terminally (Figs. 26 - 44). 4

4 Dorsal submarginal area of hind wing below vein M3 blue (Figs. 26 - 36). .. ***T. loxurina***

\- Dorsal submarginal area of hind wing below vein M3 black (Figs. 37 - 44). 5

5 Ventral ground colour ochreus, median line of hind wing zigzag (Figs. 35 - 38). ..... ***T. amazona*** **sp.n.**

\- Ventral ground colour reddish, median line of hind wing not zigzag (Figs. 39 - 44). 6

6 Forewing ventrally with straight median line (Figs. 39 - 42). ..... ***T. chachapoya*** **sp.n.**

\- Forewing ventrally with bent median line (Figs. 43 - 44). ..... ***T. ludovica*** **sp.n.**

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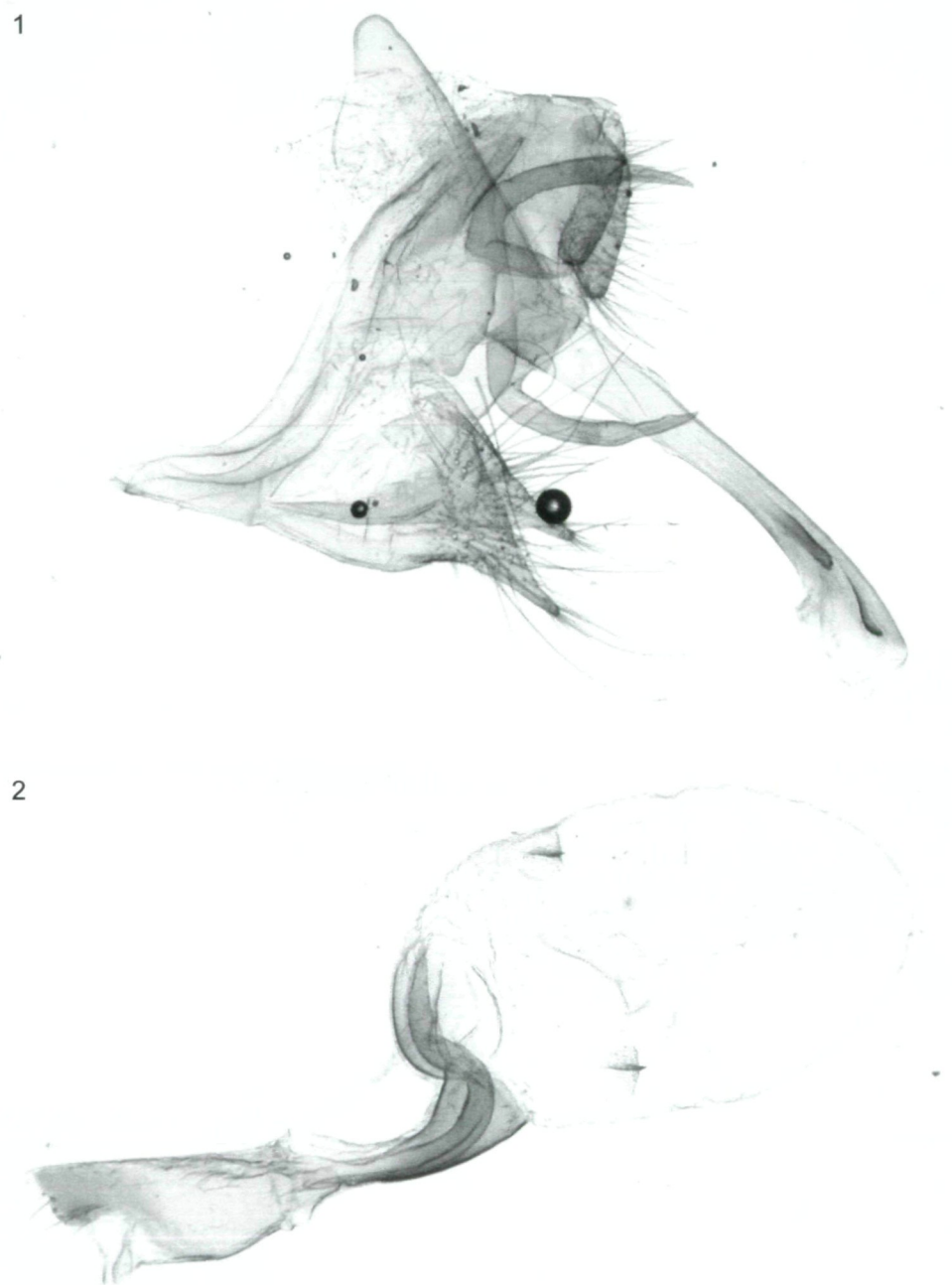

Figs. 1 - 2: *Thecloxurina loxurina*, (1) male genitalia, lateral view; (2) female genitalia, lateral view

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Thecloxurina atymna (HEWITSON, 1870) (Figs. 3, 7 - 18)

Thecla atymna HEWITSON, 1870: 170; female syntype(s): "Ecuador, Riobamba"; HEWITSON 1874: 174, pl. 58, figs. 499 (female dorsum), 500 (female ventrum), 501 (male dorsum) (redescription); DRAUDT 1919: 758, pl. 150, row g, figs "*atymna*" (female and male dorsum).

Thecloxurina atymna: JOHNSON 1992: 18 (new combination, lectotype designation), fig. 13b (female genital structures); ANONYMOUS 1997: fig. H (female dorsum and ventrum).

Thecla loxurina f. *quindiensis* DRAUDT, 1919: 758, pl. 153, row e, fig. "*quindiensis*" (male dorsum), **syn.n.**

Thecloxurina quindiensis: JOHNSON 1992: 14 (new status, new combination), figs 10a (male genital structures), 10b (female genital structures), 106a (male dorsum and ventrum); D'ABRERA 1995: 1138, figs. "*Th. quindiensis*" (p. 1139, male dorsum and ventrum); ANONYMUS 1997: fig. F (male dorsum and ventrum).

Type material examined: lectotype (female) of *Thecla atymna*: ECUADOR: Riobamba (BMNH(E) 266566); **additional material examined:** 3 males, ECUADOR: (Riobamba) (BMHN, Hewitson Collection; BMNH(E) 266567-8); Prov. Tungurahua; Tungurahua volcano, Baños-Pondoa, 17-20.I.2002., leg. Wojtusiak & Garlacz, 3300 m, (MZUJ: 1 ♂); ditto, 3375 m (MZUJ: 2 ♂♂, HNHM: 1 ♂); ditto, 3400 m (MZUJ: 2 ♂♂, HNHM: 1 ♂); Prov. Pichincha, Calacali, Pela Gallo, 3100 m, 29.I.2002., leg. Wojtusiak, Pyrcz & Garlacz (MZUJ: 1 ♂, 1 ♀, HNHM: 1 ♂); Prov. Morona Santiago, Gualaceo-Limón road, east slopes, 3150 m, 09.II.2002., leg. Wojtusiak, Pyrcz & Garlacz (MZUJ: 1 ♂); PERU: Dept. Amazonas, Pomacochas, Puente El Chido, 2180-2800 m, 18.VIII.1998., coll. Wojtusiak (MZUJ: 1 ♂); COLUMBIA: Paso del Quindiu, 3500 m (NMW, Fassl Collection: 1♂).

Genital dissections: Nos. 1024 and 1025 (males, Tungurahua volcano, Ecuador), 1057 (male, Gualaceao–Limón road, Ecuador).

Historical review: The taxon *Thecla atymna* was described by HEWITSON (1870) from an unstated number of female specimens from Riobamba, Ecuador, collected by Buckley (HEWITSON 1870: iii). HEWITSON (1874) redescribed the species and figured the male. Later, DRAUDT (1919) redescribed *T. atymna*, stating that the male has no androconial cluster. He mixed the sexes of *T. atymna* and figured the female as a male and the male as a female. JOHNSON (1992) reviewed the species, designating a lectotype, and recorded it also from Ecuador. Subsequently, the female specimen designated as the lectotype by JOHNSON (1992) was figured as a male syntype of *Thecloxurina atymna* by D'ABRERA (1995). Most recently a Colombian female specimen was figured (ANONYMOUS 1997).

Specimens in the Hewitson Collection: KIRBY (1879: 153) listed five specimens of *Thecla atymna* in the Hewitson Collection. The places of origin of the specimen were given as Ecuador and Bolivia. In the BMNH collections we could locate four of Hewitson's specimens of *Thecla atymna*, numbered as (1), (2), (3), and (4), but not the specimen with the indication of "*Thecla atymna* (5)" within the *Thecloxurina* materials. The specimen "(1)" is a dorsally red female, the remaining specimens are dorsally violet males. As HEWITSON (1870) based the description of *Thecla atymna* solely on female specimens, only the female from this series has name-bearing status. It is highly probable that the name *Thecla atymna* was exclusively based on the female specimen "(1)" (Figs. 7 - 9). However, we could not find any supportive evidence for this. The models of the subsequent figures of HEWITSON (1874) were the males "(2)" (from Ecuador; Figs. 10 - 12) and "(3)" (from Bolivia; see D'ABRERA 1995: 1139, fig. "Th. cillutincare ♂ R"), but they are not syntypes, as the name *Thecla atymna* had been already established four years before.

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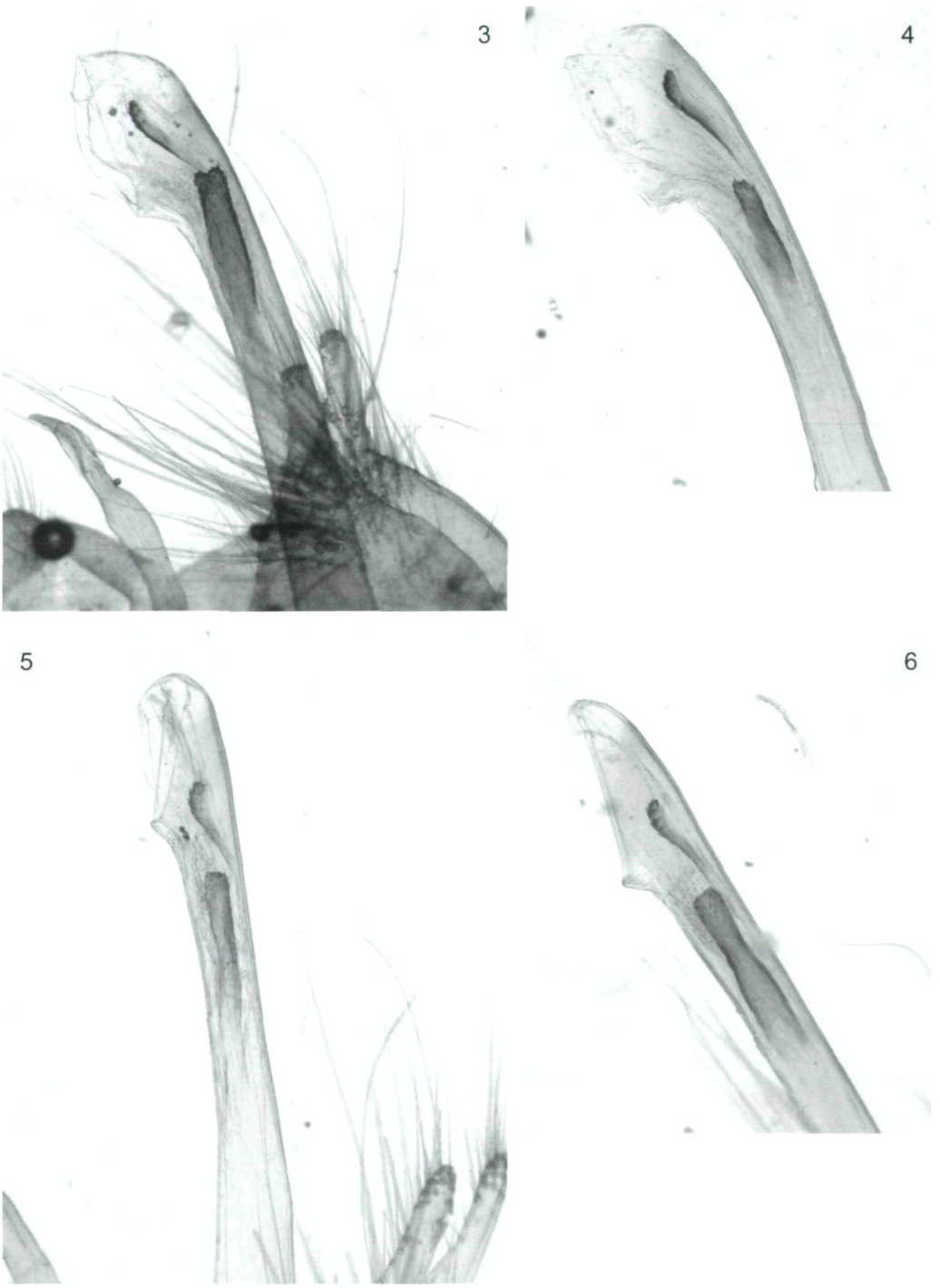

Figs. 3 - 6: *Thecloxurina* medial cornutus in male vesica: (3) *T. atymna*, (4) *T. loxurina*, (5) *T. chachapoya*, (6) *T. ludovica*

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Approximately one decade before our examinations, K. Johnson located all the five specimens of *Thecla atymna* in the Hewitson Collection in the BMNH; he selected the syntype female for lectotype designation, segregated as "B.M. Type No., Rh. 600" and labelled as such by Goodson (GOODSON 1946). JOHNSON (1992) figured the genital structures, but the specimen itself was not figured. The specimen is unambiguous according to the label data given by JOHNSON (1992) (see Fig. 9). The lectotype designation by JOHNSON (1992) is valid (ICZN, Article 74), but his notes on paralectotypes are incorrect. Subsequently, the lectotype was figured erroneously as a male syntype of *Thecloxurina atymna* by D'ABRERA (1995: 1139).

New synonymy: As we have demonstrated, the male of *Thecla atymna* was described by Hewitson four years after the establishment of the name. This fact was not mentioned by JOHNSON (1992), who reviewed the species and transferred it from *Thecla* to *Thecloxurina*. He misdiagnosed the male and provided a figure illustrating an undescribed species as "*T. atymna* male" (JOHNSON 1992: fig. 109a). Interestingly, Johnson identified the male "(2)" from the Hewitson Collection as *T. quindiensis* (cf. Figs. 10 - 12).

DRAUDT (1919) introduced this name in the combination *Thecla loxurina quindiensis* on the basis of an unstated number of male specimens from the Quindiu Pass, Colombia. The diagnostic character of *T. quindiensis* was given as the red dorsal colouration of the apex of the forewing and the apex and tornus of the hind wing. This taxon was also reviewed by JOHNSON (1992: 14 - 15), who elevated it to species rank and placed it in *Thecloxurina*. According to the material he examined (JOHNSON 1992: 15), *T. quindiensis* occurs in Colombia and Ecuador, and the taxon has been recorded also recently from Colombia (ANONYMOUS 1997, fig. F). Interestingly, amongst the material cited by JOHNSON (1992) *Thecla atymna* male "(2)" from the Hewitson Collection was not listed (see above). Moreover, *Thecla atymna* male no. "(4)" originating from Ecuador (cf. Figs. 13 - 14), designated as a paralectotype of *Thecla atymna* by JOHNSON (1992), is identical with the figure of DRAUDT (1919) given for *Thecla l.* f. *quindiensis*. The male specimens, which we identified as *Thecloxurina atymna* and which originate from Ecuador and Peru, are also identical with this phenotype as well as with the specimen in the Fassl Collection in NMW (examined). Presumably this specimen originates from the lot sold more or less individually to various private lepidopterists and several museums by Fassl himself. Because of these circumstances we are on the opinion that the taxon described by DRAUDT (1919) represents the male of *Thecla atymna*. Consequently, we establish the new synonymy *Thecla atymna* HEWITSON, 1870 = *Thecla loxurina* f. *quindiensis* DRAUDT, 1919, syn.n.

Identification: The species can be easily separated from all other congeners on the basis of the ventral median band of the fore wing, which is angulate distally in cell M3-CuA1. Both sexes possess this character. JOHNSON (1992: 14) mentioned this distinctive character in the diagnosis of *Thecloxurina quindiensis*. We have also found that the centrally hollowed basal edge of the medial cornutus (Fig. 3) characterizes males of *T. atymna*. All the three dissections we prepared showed this feature, whilst the cornutus of the other congeners were not hollowed (cf. Figs. 4 - 6).

Misidentifications: As we have already pointed out, the specimen figured by (JOHNSON 1992: fig. 109a) as a male of *Thecloxurina atymna* represents a hitherto undescribed, isolated species (BÁLINT, in prep.). Also, the specimen figured by JOHNSON (1992: fig. 109b) as "*T. atymna* female" is misidentified, and we suspect that it represents the female of *T. fassli* (see below the entry of *T. fassli*).

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Figs. 7 - 14: (7 - 9) *Thecla atymna*, lectotype, BMNH(E)266566; (10 - 12) *Thecloxurina atymna*, male, BMNH, 266567; (13 - 14) *Thecloxurina atymna*, male, BMNH, 266568; (7, 10, 13) dorsum; (8, 11, 14) venter; (9, 12) labels (courtesy BMNH).

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Figs. 15 - 18: *Thecloxurina atymna*, Ecuador (MZJU): (15) male dorsum, (16) male venter, (17) female dorsum, (18) female ventrum (fore wing costa lengths: 15 mm).

Thecloxurina fassli (DRUCE, 1912) (Figs. 19 - 23)

Thecla fassli DRUCE, 1912: 130, holotype male: "Colombia, Monte Socorro", pl. 9., fig. 10 (male dorsum and ventrum).

Thecla loxurina fassli: DRAUDT 1919: 758 (new status), pl. 153, row e, fig. "*socorrensis*" (nomen nudum)(male dorsum).

Thecloxurina fassli: JOHNSON 1992: 15 (new combination), figs. 11 (holotype genital structures), 107 (male dorsum and ventrum); D'ABRERA 1995: 1138, fig. "*Th. fassli*" (p. 1139, holotype dorsum and ventrum); ANONYMOUS 1997: fig. G (male dorsum and ventrum).

Thecloxurina atymna: JOHNSON 1992: fig. 109B, misidentification (female dorsum and ventrum).

Type material examined: holotype (male), of *Thecla fassli*: COLOMBIA: Monte Socorro (BMNH(E) 266565); **additional material examined:** ECUADOR: Prov. Tungurahua, Baños, El Tablon, 3000 m, VIII.1998., coll. Wojtusiak (MZUJ: 1 ♂).

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Figs. 19 - 21: *Thecla fassli*, holotype, BMNH(E)266565: (19) dorsum, (20) venter; (21) labels (courtesy BMNH)

Historical review: The species *Thecla fassli* was described by DRUCE (1912) from a single male ("Type") from Colombia (Figs. 19 - 21). This individual specimen is a holotype (ICZN Art. 73.1.2.). The species was redescribed by JOHNSON (1992) on the basis of the holotype male, two males originating from the holotype's lot, plus an additional male collected in Ecuador, Paramba. Latter mentioned specimen was figured by JOHNSON (1992). Subsequently D'ABRERA (1995) figured the holotype and also a recently collected male Colombian specimen has been illustrated (ANONYMOUS 1997).

The female of *Thecloxurina fassli*: Hitherto the female of *Thecloxurina fassli* was unknown. We associate the Ecuadorian female specimen (Figs. 22 - 23) with the holotype of *T. fassli* based on the following considerations: (i) on the basis of male wing colouration and pattern we suspect that *T. fassli* and *T. atymna* are sister species, therefore we presume that the female of *T. fassli* is also red dorsally; (ii) the specimen we determine as the female of *T. fassli* shares the ventral fore wing dashed submarginal line with the male of *T. fassli*, this is also consistent with the experience that the sexes of *T. atymna* share a diagnostic character that can be traced in the ventral wing pattern (see above).

Identification: Beside the ventral terminal line of the fore wing of the female specimens of *Thecloxurina atymna* and *T. fassli* can be separated on the basis of the dorsal colouration of cell Sc+R1. The intercellular area of *T. atymna* is black coloured only basally, the median and marginal areas are red. The intercellular area of *T. fassli* is completely black from base to margin. Because of this, we are on the opinion that the female of "*Thecloxurina atymna*" figured by JOHNSON (1992: fig. 109B) represents in fact the female of *T. fassli*.

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Figs. 22 - 23: *Thecloxurina fassli*, female, Ecuador (MZJU): (22) dorsum, (23) venter (fore wing costa length: 16 mm)

Thecloxurina contracolora (JOHNSON, 1992), comb.n. (Figs. 24 - 25)

Abloxurina contracolora JOHNSON, 1992: 28, holotype male: "COLOMBIA: Bogota, Crowley Bequest", figs. 22a (holotype genital structures), 22b (allotype female genital structures), 118a (holotype wing dorsum and ventrum), 118b (allotype female wing dorsum and ventrum); D'ABRERA 1995: 1139, figs. "A. contracolora" (holotype male and allotype female wing dorsum).

Type materail examined: Holotype, male: COLOMBIA: Bogotá (BMNH(E) 266572); allotype, female: COLOMBIA: Frontino, Antioquia (BMNH(E) 266573); **additional material examined:** ECUADOR: Prov. Bolivar, Santa Lucia, Balzapamba-Guaranda old road, 2600 m, 05.II.2002., leg. Wojtusiak, Pyrcz & Garlacz (MZUJ: 1 ♂).

New combination: This species was originally placed in the genus *Abloxurina* JOHNSON, 1992 (type species: *Thecla amatista* DOGNIN, 1895), which contains species with an extended vein 1A+2A of the hind wing, what results in a conspicuously elongated anal lobe. The taxon *A. contracolora* is "tailed" as all the thecloxurine species, and the vein 1A+2A is not extended. A tight *Thecloxurina* relationship is indicated also by the ventral pattern of the hind wing, which is qualitatively identical with all the taxa discussed in the present paper, whilst species of *Abloxurina* have the ventral median line of the hind wing waved (cf. JOHNSON 1992: figs. 120 - 128). The holotype specimen possesses thecloxurine male genital structures (cf. JOHNSON 1992: figs. 6d - f, 22a). Because of these character set we remove the taxon from *Abloxurina* and transfer it to *Thecloxurina*, that results in the new combination *Thecloxurina contracolora*.

Identification: This species can be easily identified by the following two characters: (i) vein CuA1 of the hind wing reaches beyond the outer margin, what is unique amongst *Thecloxurina* species, but known in females of *Pons* JOHNSON, 1992 females (see JOHNSON 1992: fig. 100; BÁLINT & WOJTUSIAK 2001: figs. 7 - 8); (ii) the ventral median line of the hind wing does not reach the submedian area along the vein CuA2, but turns

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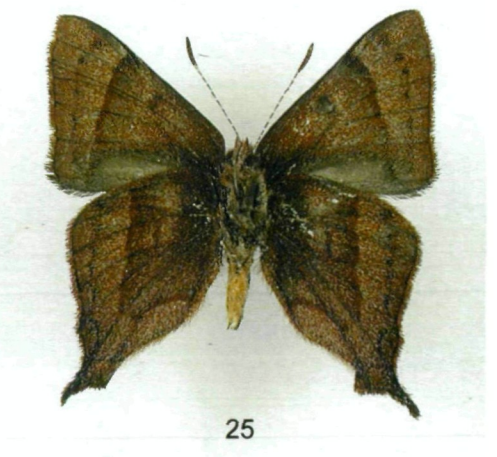

Figs. 24 - 25: *Theloxurina contracolora*, male, Ecuador (MZJU): (24) dorsum, (25) venter (fore wing costa length: 15 mm)

in 90° already in the median area and runs clearly and straight towards the inner margin. Based on these two characteristics we determine the male specimen from Ecuador listed above and illustrated in Figures 24 - 25 as *T. contracolora*; it represents the first Ecuadorian record of the species.

Thecloxurina loxurina (Felder & Felder, 1865) (Figs. 1 - 2, 4, 26 - 36)

Thecla loxurina Felder & Felder, 1865: 261, syntype males: "Nova Granada: Bogota", pl. 32, figs. 21 (male dorsum), 22 (male ventrum); Draudt 1919: 758, pl. 150, row g, figs. "*loxurina*" (male dorsum and ventrum, female ventrum).

Thecloxurina loxurina: Johnson 1992: 8 (new combination), figs. 6a (female genital structures), 6d ("holotype" genital structures), 102a (male dorsum and ventrum), 102b (female dorsum and ventrum); d'Abrera 1995: 1138, figs. "*Th. loxurina loxurina*" (male dorsum and ventrum, female dorsum).

Thecloxurina loxurina lustra: Johnson, 1992: 10, holotype male: "ECUADOR: Baños, Tungurahua, 2500 m, leg. F.M. Brown", figs. 6b (allotype, genital structures), 6e (holotype, genital structures), 102c (holotype, dorsum and ventrum), 102d (allotype, dorsum and ventrum); d'Abrera 1995: 1138, figs. "*Th. loxurina lustra*" (female dorsum); Anonymous 1997: Pl. 6, fig. E; **syn.n.**

Thecloxurina truncta Johnson 1992: 12, holotype male: "Peru Cordillera Blanca", figs. 7 (holotype genital structure), 103 (holotype dorsum and ventrum); **syn. n.**

Thecloxurina costarica: Johnson 1992: 13, holotype male: "Costa Rica, Orosi, 1200 m, leg. Fassl", figs 9 (holotype, genital structures), 105 (holotype, dorsum and ventrum); **syn n.**

Thecloxurina quindiensis: Johnson 1992: fig. 106b, misidentification.

Type material examined: lectotype of *Thecla loxurina*, male (present designation): COLOMBIA (BMNH(E) 265896); 8 paralectotypes, males, all from COLOMBIA (BMNH(E) 265897-265904); **additional material examined:** COLOMBIA: Bogota, coll. Stand (NMW: 1 ♂, 1 ♀); Ipizdes, 2600 m, 13.IV.1990., coll. Hangay (HNHM: 1 ♂); Dept. Caldas, Monte Leon, 2200 m, 9.IX.1990., coll. Hangay (HNHM: 1 ♂); Dept. Manizales, Monte Leon, 2200 m, 7.IX.1994., leg. E. Henao (HNHM: 1 ♂); Dept. Narino, Laderas de Volcan Galeras, 3700 m, 8.VIII.1994., leg. Salazar (HNHM: 3 ♂♂); Paso del Quindiu, 2500 m, coll Fassl (NMW: 1 ♂);

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Figs. 26 - 28: *Thecla loxurina*, lectotype, BMNH(E) 265896: (26) dorsum, (27) venter; (28) labels (courtesy BMNH)

ECUADOR: Prov. Carchi, Res. Forest. Golondrinas, 2200 - 2400 m, 19.VI.1999., leg. Wojtusiak & Pyrcz (MZUJ: 2 ♂♂); ditto, 2150 m, 23.VI.1.1999. (HNHM: 1 ♂); ditto, 2.VII.1999. (MZUJ: 1 ♂); Prov. Morona-Santiago, 9 de Octubre N of Macas, 1700 m, VII.2001., coll. Wojtusiak (MZUJ: 5 ♂♂ , HNHM: 2 ♂♂); Prov. Cañar, Guarumales-Mendez, 2200 m, IX.2001., coll. Wojtusiak (MZUJ: 6 ♂♂, HNHM: 2 ♂♂); Prov. Sucumbio, La Bonita, 2000 m, XII.2001., coll. Wojtusiak (MZUJ: 8 ♂♂, 1 ♀, HNHM: 3 ♂♂); Prov. Pichincha, Calacali, Pela Gallo, 3100 m, 29.I.2002., leg. Wojtusiak, Pyrcz & Garlacz (MZUJ: 3 ♂♂, HNHM: 1 ♂); PERU: Rodriguez de Mendoza, XI.1989., coll. König (NHW: 2 ♂♂), Rodriguez de Mendoza, 1500 m, X.1983., leg. König (NMW: 1 ♂♀); Dept. Amazonas, Peña Blanca, 1900 m, 2.VII.1999., coll. Wojtusiak (HNHM: 1 ♂, 1 ♀).

Genital dissections: Nos. 1020 (male, La Bonita, Ecuador), 1021 (male, Calacali, Ecuador), 1022 (female, Peña Blanca, Peru); BMNH vial number 5880 (female, Merida, Venezuela).

Historical review: The description of *Thecla loxurina* was based on an unstated number of male specimens originating from the vicinity of Bogotá, Colombia. It was redescribed by DRAUDT (1919), who wrote that it is "eine äusserst wandlungsfähige Art" [an extremely variable species]. This view was the result of DRAUDT's (1919) very wide concept for this species as he placed *T. atymna* and *T. fassli* within *T. loxurina*. JOHNSON (1992) reviewed and redescribed the species and demonstrated that it is widely distributed in the Andes from Venezuela to Argentina. He separated the Ecuadorian and Peruvian population under the new subspecies *T loxurina lustra.* JOHNSON's (1992) figures of *T. loxurina* show specimens in poor condition, but the female specimen misidentified as "*Th. quindiensis*" (JOHNSON 1992: 14, fig. 106b) is almost perfect. D'ABRERA (1995) followed JOHNSON (1992), and figured Colombian specimens as *T. loxurina loxurina* and Peruvian specimens as *T. loxurina lustra*. This latter subspecies was again figured in a collection of papers dealing with Colombian lycaenids (ANONYMOUS 1997).

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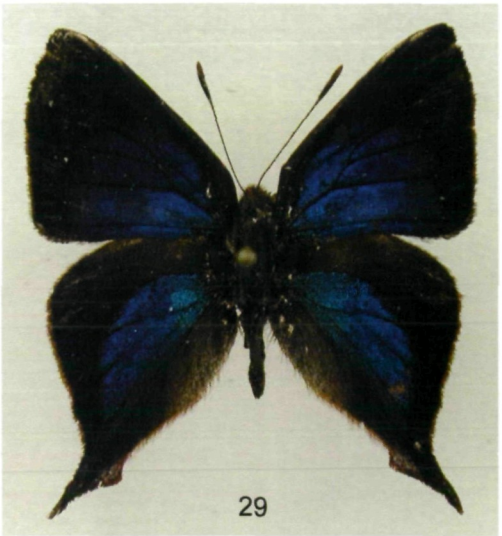
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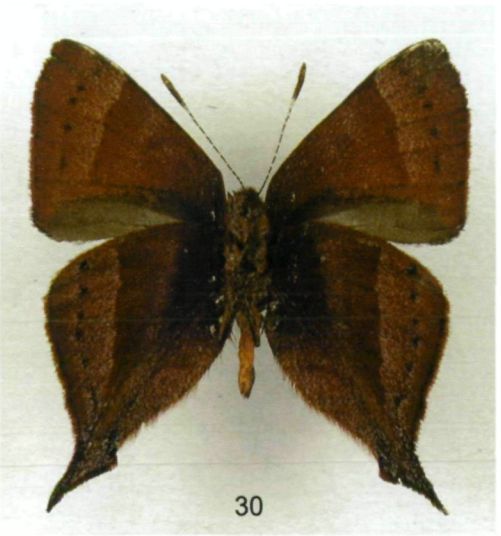
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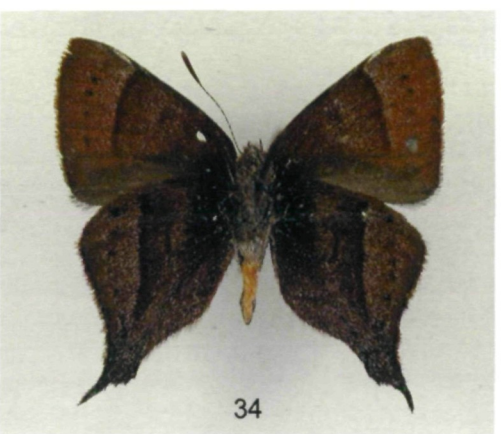
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Lectotype designation: JOHNSON (1992) dissected one specimen of the syntypes that were segregated and catalogued by GOODSON (1946) as "B.M. Type No. 596" and stated that it is the holotype (JOHNSON 1992: 9). This action cannot be regarded as an unintental lectotype designation, because it was not indicated that the specimen discussed as holotype originates from a series of syntypic specimens (IZCN Art. 74.5).

We designate this specimen here as the lectotype (Figs. 26 - 28), and the remaining eight male specimens of the syntypic series are paralectotypes. Our action is necessary because of the nomenclatural difficulties concerned with *Thecla loxurina*. Therefore we fix the name to the lectotype specimen and review the Ecuadorian-Peruvian nominal taxon we associate with *Thecla loxurina*.

Variation: The species shows no significant individual variation in the costal length of the fore wing, the dorsal colouration of the male, and the extension of the black marginal border. There is no variability in the position, form, or colour of the androconial cluster and the ventral ground colouration and markings of the wings. The dorsal marking of the hind wing, the ventral colouration and markings are identical in all *T. loxurina* individuals we examined.

In the material examined we have found a dwarf melanistic specimen (Figs. 33 - 34; from Prov. Sucumbios, La Bonita, 2000 m, XII.2001.) with costal length of the fore wing 13 mm and very wide dorsal marginal border of the forewing extending to the median part of the wing. Further, we have examined four males and one female specimens from northern Peru, Department Amazonas, which are similar to *T. loxurina*, but their dorsal ground colour is Bonnie Blue (Lyons Blue in typical *T. loxurina*), their black marginal border is more widely extending to the median part of the wings and filling three fourths of the cell M3 (only one third in typical *T. loxurina*) (Figs. 35 - 36). The ventral ground colour of the female is ochreous brown. We do not know whether these Peruvian specimens represent a distinct taxon or just a clinal variation of *T. loxurina*. One of the males is a "dwarf" with very wide dorsal marginal border on both of the wings, but dorsal colouration and ventral markings are identical with the other specimens. According to the two examples it seems that "dwarf" *Thecloxurina loxurina* specimens are tending to melanism, expressed by a more prominently developed marginal band.

Three new synonymies: JOHNSON (1992: 10) described *Thecloxurina loxurina lustra* on the basis of the following characters: (i) "structural color more lustrous and hued more bluish than violet"; (ii) ventrum of hind wing with "margin of triangulate pattern slightly undulate and less angled toward to margin"; (iii) male genitalia with "valval caudual extensions more closely alligned than in nominate". We are on the opinion that *Thecla loxurina* and *Thecloxurina loxurina lustra* are synonyms, because after examining the original description, the additional figures and new material we can state (i) that the blue colouration of the specimens can be altered either by age or during relaxation as fresh specimens from Colombia and Ecuador have identical blue dorsal ground colouration (cf. Figs. 29 - 30); (ii) that the undulate margin of the median line of the ventrum of the hind wing cannot be detected on any specimen we have examined, not even on the holotype of *T. l. lustra*, and this line and its median angulation is identical in all specimens

Figs. 29 - 34 (previous page): *Thecloxurina loxurina*, Ecuador (MZJU): (29) male dorsum, (30) male venter; (31) female dorsum, (32) female venter (fore wing costa lengths: 16 mm); (33) dwarf male dorsum, (34) dwarf male venter (fore wing costa length: 13 mm)

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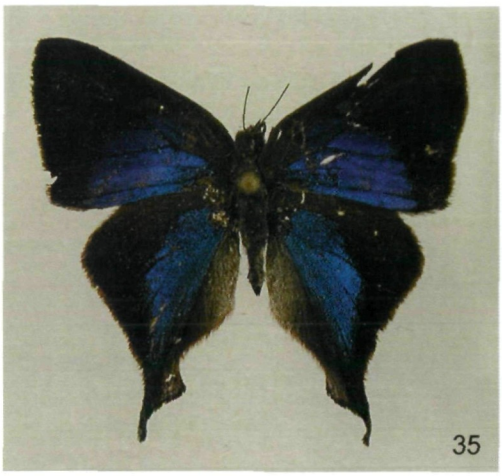

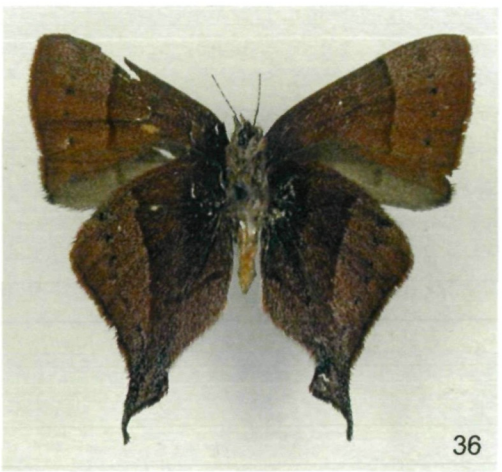

Figs. 35 - 36: *Thecloxurina loxurina*, Peru (NMW): (35) male dorsum, (36) female venter (fore wing costa length: 16 mm)

we determined as *T. loxurina*; (iii) that the alignment of the valval tips is dependent on the dissection, because if the genital armature is pressed the valvae give a wider valval caudual opening. Because of these points we consider the two taxa as synonyms, consequently *Thecla loxurina* FELDER & FELDER, 1865 = *Thecloxurina loxurina lustra* JOHNSON, 1992, syn.n.

Thecloxurina truncta was described on the basis of the holotype male and paratype male from the Cordillera Blanca, Peru by JOHNSON (1992). The types are deposited in the MNHN. We could examine the colour images of the holotype. JOHNSON (1992) speculated that *T. truncta* is the sister species of *Thecloxurina fassli*, what is indicated by the violet dorsal ground colour of the specimens mentioned in the diagnosis. On the contrary, the next entry, being the description, states that the dorsal ground colour of the wings are "lustrous iridescent azure" contradicting the information given in the diagnosis. JOHNSON (1992) stressed two characters in the legend of figure 103, which should be helpful for a positive determination: (i) the truncate anal tail and (ii) the very dark basal area contrasting the light distal part. The first character is obviously based on the broken condition of the specimen, but the tornal lobe is extant and its shape is identical with that of all *Thecloxurina* taxa. The second character is certainly not diagnostic nor helpful, because a similar contrast of the ventral colouration typifies all *Thecloxurina* species.

Studying the image of the holotype ventral side it is obvious that (i) the specimen has identical dorsal colouration with *T. loxurina* and (ii) the darkened basal and medial part of the ventral side of the wings are resulted by the poor handling of the specimen: presumably the specimen was relaxed too long, thus the body and the basal part of the wings have been covered by mould fungus, that penetrated the structures of the scales resulting the darker area considered to be diagnostic; therefore we consider the two taxa as synonyms, consequently *Thecla loxurina* FELDER & FELDER, 1865 = *Thecloxurina truncta* JOHNSON, 1992, syn. n.

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We are also sceptical about the type locality of *T. truncta*, because the upper montane cloud forest ecotone, where *Thecloxurina* species typically live, is missing in the Cordillera Blanca (cf. LAMAS AND PÉREZ 1983). We presume that the types of *Thecloxurina truncta* are mislabelled specimens.

Thecloxurina costarica JOHNSON, 1992 resembles to the dwarf specimens of *T. loxirna* we have discussed above. The taxon was described from the MNHN holotype male collected in Costa Rica, Orosi, at the elevation of 1200 m by Fassl. We could study the colour images of the holotype. It possesses exactly the same traits we have mentined for dwarf *T. loxurina* specimens: (i) shorter fore wing costa length (= 12.5 mm in the case of *T. costarica* holotype), (ii) very wide dorsal marginal border and (iii) ventral colouration and markings identical with *T. loxurina*; therefore we consider the two taxa as synonyms, consequently *Thecla loxurina* FELDER & FELDER, 1865 = *Thecloxurina costarica* JOHNSON, 1992, syn. n.

We could not study more *Thecloxurina* material from Mesoamerica. The type locality of *T. costarica* is mentioned as extreamly wet by DEVRIES (1987: 51) belonging to the premontane rain forest life zone (DEVRIES 1987: 286). This contradicts the experiences of one of us (JW), who collected the members of the genus exclusively at the edge of two ecotones, namely high montane rain forest and subalpine paramo in the high Andes from Colombia to Peru. These ecotones in Costa Rica are situated between considerably higher elevations (1600 - 3000 m) (cf. DEVRIES: 1987: 44).

Thecloxurina amazona sp.n. (Figs. 37 - 38)

Holotype (female, MUSM): "PERU / Dep. Amazonas, / Molinopampa / 29.VI.1998., 2965 m / Leg. J. Wojtusiak & T. Pyrcz" (in moderate condition, wings slightly broken, club of left antenna missing).

Diagnosis: The female of *T. amazona* sp.n. is similar to that of *T. loxurina*, but ground colour is ochreous brown (red in *T. loxurina*) with zigzagged ventral median line of the hind wing (not zigzagged in *T. loxurina*).

Description of female (Figs. 37 - 38): Body typical of the genus. Wings: costal margin length of fore wing 16 mm (= holotype); dorsal ground colour of wing Peking Blue with wide black marginal border and ochreous ciliae; dorsal marginal border of fore wing wide, almost completely filling cells R2-R5, three fourths of cell M2, one half of cells M3-CuA1, and one fifth of cell CuA2; dorsal marginal border of hind wing wide, filling one half of cells Sc+R1, three fifths of cell Rs, and one half of cells M1 to CuA1; cell CuA2 almost completely blue, only with slight submarginal suffusion of greyish scales; vein CuA2 of hind wing extended by tail-like projection with lobated brownish grey terminus; anal margin with long rufous ciliae, lobate tornal part brownish grey; ventral ground colour of wings ochreous brown, darker basally and lighter distally; discoidal line visible and brown, situated close to median line; median line of fore wing dark brown from terminus R2 to anal margin; submargin with brown spot in cells R3 and R5-CuA1; colouration and markings of hind wing similar to that of fore wing but median line zigzag, vein CuA2 with blackish brown suffusion, marginal area brown with blackish marginal line; tornal lobe similarly brown with greyish scale suffusion, marginal line black. Genitalia: not examined.

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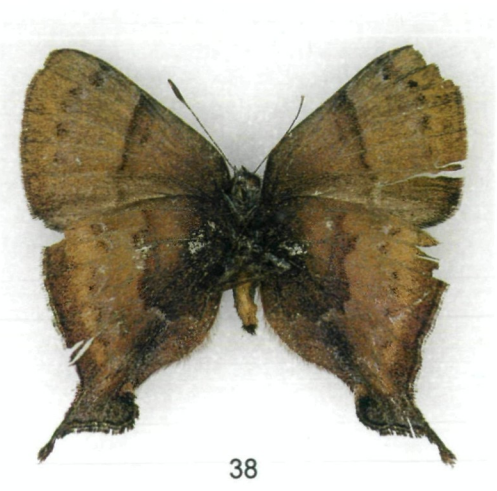

Figs. 37 - 38: *Thecloxurina amazona*, holotype (MUSM): (37) dorsum, (38) venter

Etymology: Noun, feminin, after the Peruvain political department Amazonas, where the type locality is situated; and also used to signify that the holotype is a female specimen.

Note: The ventral median line of the hind wing of *T. amazona* sp.n. is supralimital in the genus, therefore we consider it as a qualitative trait. This character can be found in certain species belonging to the genus *Pons*, which we have reviewed recently, and underlines the sister-relationship of the two genera, which we have indicated (BÁLINT & WOJTUSIAK 2001: 382). Hitherto only one single species of *Pons*, namely *Pons purpurea* JOHNSON, 1992, has been recorded from Peru, whose female has been described as *Thecloxurina browni* JOHNSON, 1992. It differs from *T. amazona* sp.n. in size, wing-shape, dorsal colouration and markings (see BÁLINT & WOJTUSIAK 2001: 379–380).

Thecloxurina chachapoya sp.n. (Figs. 5, 39 - 42, 45,)

Thecloxurina loxurina lustra: D'ABRERA 1995: 1138, fig. "*Th. loxurina lustra* ♂R", misidentification.

Holotype (male, MUSM): "PERU / Amazonas, Chachapoyas, / Molinopampa-Granada / 12.VIII.2001., 3100 m / Leg. B. Calderon / Coll. M. Bollino" (in prefect condition); **paratypes:** 2 males, 1 female (nos. 1 - 3), labelled as holotype (MZUJ: 1 ♂, HNHM: 1 ♂, MUSM: 1 ♀); 1 male (no. 4), Peru, Dept. Amazonas, figured by D'ABRERA (1995) as "Th. loxurina lustra ♂ R" (BMNH); 1 female (no. 5), Peru, Limbani, figured by D'ABRERA (1995) as "Th. loxurina lustra ♀ R" (BMNH); 1 male (no. 6), Peru, Dept. Amazonas, Road Leimebamba-Balsas, 1.-15.XII.2001., Calderon leg. (HNHM).

Genital dissections: Nos. 1018 (HNHM paratype no. 6), 1019 (MZUJ paratype male no.1).

Diagnosis: Similar to *T. loxurina*, but the dorsal blue ground colour is somewhat darker Bonnie Blue (MARZ & PAUL 1950: Pl. 42, fig. 12/E) and restricted to basal and median areas. The black marginal border is more widely extending to the median part of the fore wing and to the basal part of the hind wing of both sexes (filling only the terminal areas in *T. loxurina*). The ventral median line of the fore wing is slightly bent (straight in *T.*

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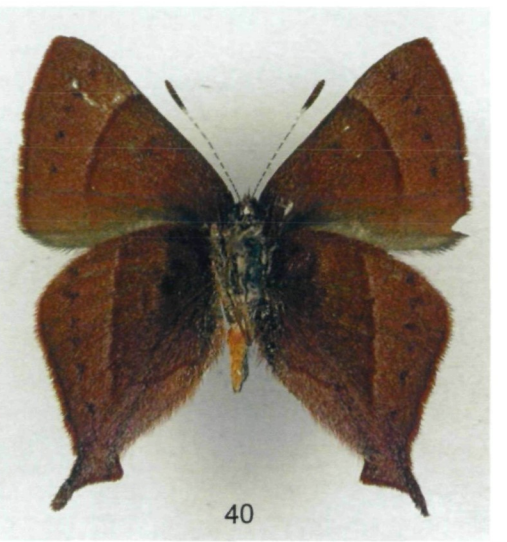

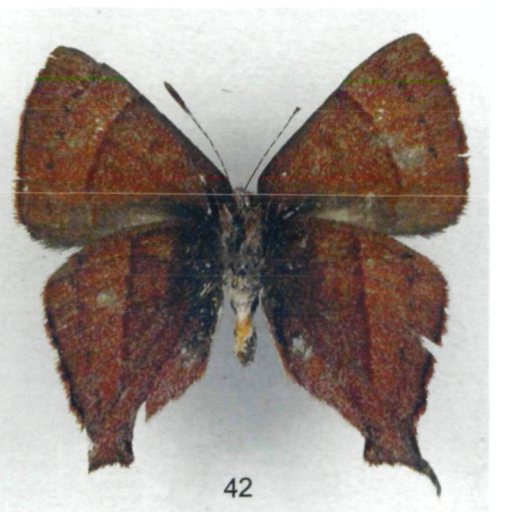

Figs. 39 - 42: *Thecloxurina chachapoya,* holotype and paratype female (MUSM): (39) holotype dorsum, (40) holotype venter, (41) paratype female dorsum, (42) paratype female venter

loxurina). The median cornutus of the vesica of the male is narrow (thick in *T. loxurina*) (cf. Figs. 4 - 5).

Description of male (Figs. 39 - 40): Body typical of genus. Wings: costal margin length of fore wing 16 - 17 mm (n = 5); dorsal ground colour of wings Bonnie Blue with wide black marginal border and rufous ciliae; apex of discal cell of fore wing with grey ovate androconial cluster; marginal border of fore wing wide, completely filling cells R2-M2, filling four fifths of cell M3, two thirds of cell CuA1, and one third of cell CuA2; marginal border of hind wing wide, completely filling cells C-M1; blue dorsal ground

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colour restricted to basal area; cell 3A grey, covered by long hairs; vein CuA2 of hind wing extended by tail-like projection with slightly lobated terminus; anal margin with long rufous hairs, lobate tornal part rufous, tail completely rufous, short, with rounded terminus. Ventral ground of wing mottled red, darker basally and lighter distally; cell CuA2 and cell 1A+2A completely ochreous grey; postbasal and submedial area in cell CuA2 with tuft of long hairs; median line of fore wing slightly bent or straight from terminus R2 to middle of vein 1A+2A; submargin with faint reddish brown spot in cells R3 and R5-CuA1; colouration and markings of hind wing similar to that of fore wing, but median line faint at postmedian part of cell CuA2, darker line connecting horizontally via cells 3a and 1A+2A; tornal lobe and tale suffused by pinkish scales. Genitalia: see Figure 45.

Description of female: costal length of fore wing 16 mm (n = 1). Similar to male in markings, but distinctive in colouration: dorsal ground colour of wings Peking Blue. Genitalia: not examined.

Etymology: Noun, feminin, after the town Chachapoyas of Department Amazonas, close to the type locality.

Thecloxurina ludovica sp.n. (Figs. 6, 43 - 44, 46)

Holotype (male, NMW): "S. Luis - 70 km östl / v. Cusco - S.O. Peru / 2800 m / 1973 leg. König / XII / (underside of the label:) TH. / LOXURINA / CILLUTINCA / RAE" (white glossy carton, upperside printed, partly filled with blue ink by hand; underside hanwritten with black ink); "NMW-coll. König / Neotropische Lycaenidae / det. Zs. Bálint Dr, Budapest / No. 170" (white paper, printed, number handwritten with black ink) (in perfect condition); **paratypes**: 2 males, labelled as holotype (no 1: NMW no. 171; no. 2: NMW no. 172, now deposited in HNHM).

Genital dissections: Nos. 1017 (paratype no. 1), 1026 (paratype no. 2).

Diagnosis: Similar to *T. loxurina*, but dorsal black margin of hind wing with parallel edge, with outer margin filling entire terminal area (black margin narrowed towards anal corner and leaving terminal area below vein M3 blue in *T. loxurina*), tornal area, lobe and tail of hind wing rufous (black in *T. loxurina*), ventral ground colour of wings vividly red, with rose shade (rosty brown in *T. loxurina*), and ventral median line of hind wing breaking towards inner margin in 90 ° at vein CuA2 in terminal area (running straight towards outer margin in *T. loxurina*). Median cornutus of vesica of male large, with angulate basal edges (Fig. 6).

Description of male (Figs. 43 - 44): Body: typical of the genus. Wings: costal margin length of fore wing 16 - 17 mm (n = 3); dorsal ground colour of wing somewhat lighter Bonnie Blue (MAERZ & PAUL 1950: Pl. 42, Fig. 12/A), with wide black marginal border and rufous ciliae; apex of discal cell of fore wing with grey ovate androconial cluster; marginal border of fore wing wide, completely filling cells R2-M1, three fourths of cell M2, and one half of cells M3-CuA2; marginal border of hind wing wide, completely filling cells C-M1; blue dorsal ground colour restricted to basal and medial area; cell 3A grey; vein CuA2 of hind wing extended by rufous, tail-like projection, slightly bent, with lobated terminus; submargin of cell CuA2 rufous, tornal lobe and tail rufous, with suffusion of pink scales, anal margin with long Henna Red ciliae. Ventral ground colour of wing with Dark Cardinal rose lustre basally, Dianthus Red medially, and Henna Red

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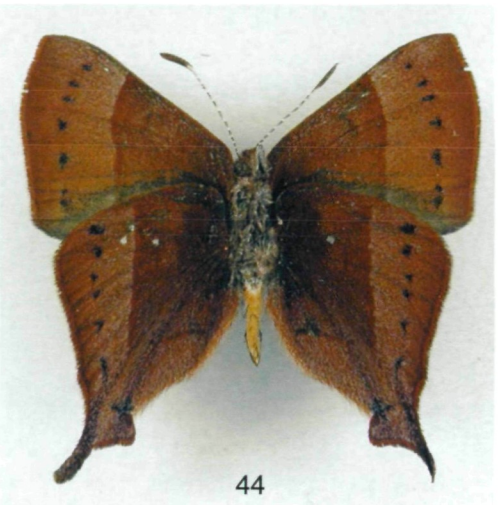

Figs. 43 - 44: *Thecloxurina ludovica,* holotype (NMW): (43) dorsum, (44), venter

marginally; cell CuA2 anally and cell 1A+2A ochreous grey; postbasal and submedial area of cell CuA2 with tuft of long hairs; median line of forewing Henna Red, crossing from terminus R2 to middle of vein 1A+2A and slightly bent at cell M1; submargin with marked dark Graphite spot in cells R3-CuA1; colouration and markings of hind wing similar to that of fore wing, but median line ending at postmedian part of cell CuA2, connected to similarly dark line horizontally crossing wing via cells 3a and 1A+2A; submarginal margins arrow-head-shaped. Genitalia: see Figure 46.

Female: unknown.

Etymology: Noun, feminin, after the type locality (Luis = Ludovic).

Notes: The type specimens were identified by König as "*Thecla cillutincare*". *Thecla loxurina* f. *cillutincare* DRAUDT, 1919 has been described on the basis of an unstated number of male specimens from Bolivia (DRAUDT 1919: 758), and reviewed by JOHNSON (1992: 16). This taxon, however, strongly resembles *T. atymna* and *T. fassli*, and is probably synonymous with one of them.

Nomen dubium

Thecloxurina atymnides (DRAUDT, 1919)

Thecla loxurina f. *atymnides* DRAUDT, 1919: 758, pl. 153, row e, fig. "atymnides".
Thecloxurina atymnides: JOHNSON 1992: 19 (new status, new combination), figs. 14 (genital structures of male and female), 110A-B (dorsum and ventrum of female).

This taxon was described from an unstated number of specimens of unstated sex from Colombia, Quindiu Pass by DRAUDT (1919). We could not find any type material (cf. JOHNSON 1992: 19). It is clear that the specimen figured is a female, because it lacks the

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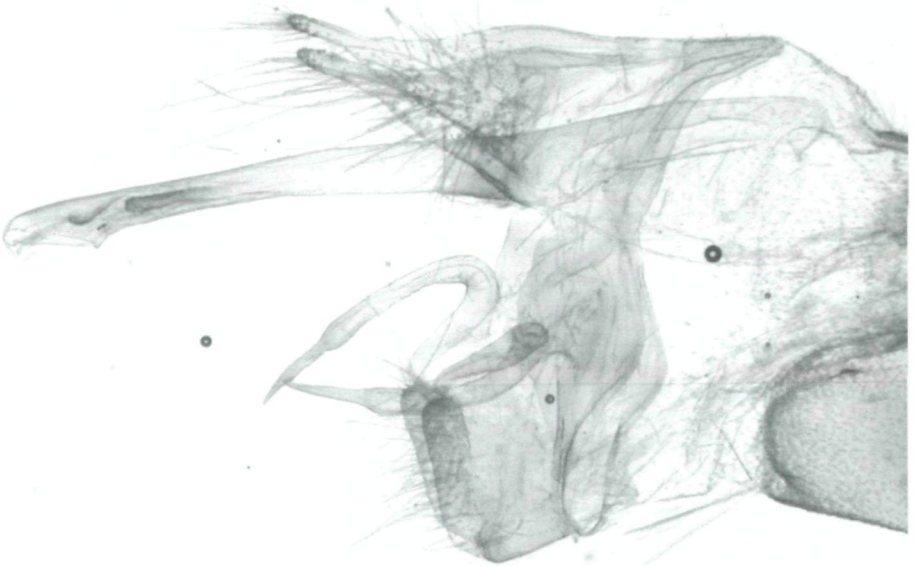

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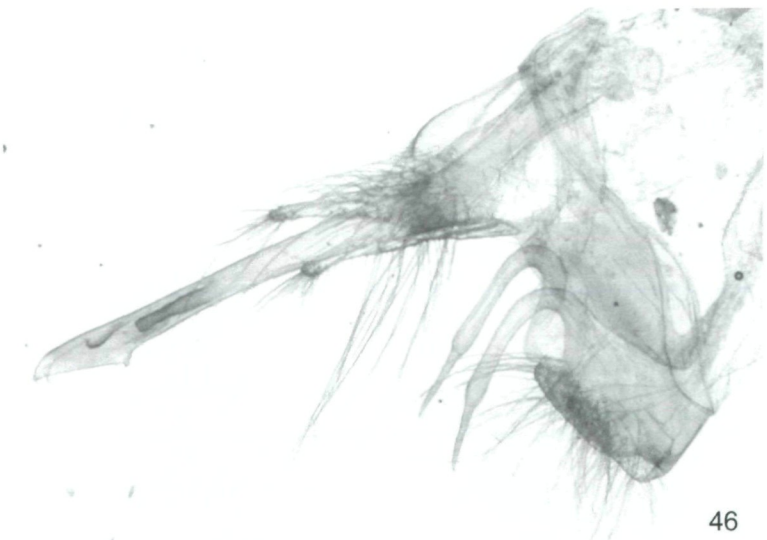

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Figs. 45 - 46: *Thecloxurina* male genitalia in lateral view: (45) *T. chachapoya*, (46) *T. ludovica*

androconial cluster. The taxon was reviewed and redescribed by JOHNSON (1992) being elevated to species rank on the basis of topotypical material. JOHNSON (1992: 19) examined specimens from Colombia, Ecuador, Peru, and Bolivia he identified as *T. atymnides*.

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Although JOHNSON's (1992) diagnosis is sufficient and the description is detailed, it is difficult to apply because of the following contradictory points: (i) as the figures are halftones, it is impossible to trace the colouration of the specimens; (ii) it is stated that the ventral triangulate pattern (= the darker basal part) of the hind wing is similar to *T. loxurina*, but the specimen figured as male by JOHNSON (1992: fig.110A) obviously contradicts this statement, and the wing of the other specimen (JOHNSON 1992: fig. 110B) is broken and the critical part is missing; (iii) the only topotypical specimen (from the Quindiu Pass in Colombia) listed by Johnson is a male deposited in MNHM, and (iv) the two specimens figured as "*Th. atymnides*" are females from Bolivia in BMNH, but only one single female is listed from Bolivia in the material examined. Obviously the *T. atymnides* material listed by JOHNSON (1992) needs a review and as the name cannot be positively applied according to the original source or the recent review of Johnson we consider it as nomen dubium. Moreover, the male needs to be discovered or the name *atymnides* has to be associated to another taxon. We presume that *Thecla loxurina* f. *atymnides* is the female of *Thecloxurina fassli*.

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