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# New taxa of pronophiline butterflies of the genus *Lymanopoda*Westwood from Ecuador (Lepidoptera: Nymphalidae: Satyrinae)

#### Tomasz W. Pyrcz

Zoological Museum, Institute of Zoology, Jagiellonian University, Ingardena 6, 30-060 Kraków, Poland, e-mail: tomasz.pyrcz@uj.edu.pl

Abstract. Three new subspecies of *Lymanopoda* are described from Ecuador, *L. hazelana viridia* n. ssp., *L. labda bilinskii* n. ssp. and *L. labineta wojtusiaki* n. ssp. An annotated checklist of the species of *Lymanopoda* in Ecuador is presented.

Key words: entomology, taxonomy, Andes, cloud forest, *Lymanopoda*, male genitalia, Pronophilina, páramo.

#### INTRODUCTION

The genus *Lymanopoda* Westwood belongs to the neotropical subtribe Pronophilina, treated previously as the tribe Pronophilini (MILLER 1968) within the tribe Satyrini (Lamas et al. 2004; VILORIA 2008). Pyrcz (2004) and Pyrcz et al. (1999, 2009, 2010) reviewed the taxonomy of *Lymanopoda* and identified two synapomorphies in the wing pattern: forewing ocelli in cells M3- Cu<sub>1</sub> and Cu1-Cu2 always displaced basally in relation to those in Cu2-1A and M2-M3; hindwing venter median band interrupted, displaced basally in the middle and connected to the postbasal band. The latter is a particular distortion of the nymphalid ground plan that has been called "pierellization" (Schwanwitsch 1925), a character not evident in some species whose ventral pattern is simplified, among others *L. nevada* Krüger, *L. huilana* Weymer and *L. prusia* Heimlich. More synapomorphies are present in the male genitalia, in particular: a superuncus, a bulbous projection of the tegumen at the base of the uncus; gnathos fused ventrally with uncus, and strongly sclerotized sub-scaphium. Possible synapomorphies have also been detected in the female genitalia, namely: a prominent elongated process anterior to the ostium bursae and an accessory gland posterior to the ostium bursae, probably

producing an egg gluing secretion (Pyrcz et al. 2009). Casner & Pyrcz (2010) compared DNA sequences of 40 species of *Lymanopoda* and proposed a preliminary phylogeny of the genus. Some aspects of the ecology of *Lymanopoda* were discussed by Pyrcz & Wojtusiak (2002) and Pyrcz et al. (2009). Early stages have been described for only one species, *Lymanopoda samius* Westwood (Schultze 1929).

Most Ecuadorian species of *Lymanopoda* were illustrated by Weymer (1912) in Seitz and D'Abrera (1988). Brown (1943) published an article entirely dedicated to the genus *Lymanopoda* in Ecuador in which he described two new species, and for the first time illustrated the male genitalia of several taxa. Pyrcz et al. (1999) described three new species and five new subspecies from Ecuador. In a preliminary check-list of Ecuadorian butterflies Rachell & Rachell (2001) listed 16 species of *Lymanopoda*. They based their report on older reports and publications, and overlooked the fact that *L. hannemanni* Miller was previously synonymized with *L. confusa* Brown (Pyrcz et al. 1999), and that the Brown (1943) report of *L. eubagioides* from Ecuador is due to a misidentification. Currently, there are records of 16 species (Tab. 1). Considered that Ecuador has been rather intensively sampled for butterflies during the last two decades, it seems likely that this is the true number of species of *Lymanopoda* occurring in this country. However, some new taxa may still be discovered at the subspecific level, and three of them are described in this paper.

#### MATERIAL AND METHODS

Collecting was carried out with entomological nets and Van-Someren Rydon traps baited with excrement. Type and comparative material was examined in BMNH, MZUJ and in other major European and Ecuadorian public and private collections. Male genitalia were dissected according to standard procedures by soaking in a warm 10% KOH solution, preserved in glycerol vials, examined and photographed, along-side other morphological microstructures, under an Olympus SZX9 stereomicroscope. Adults were photographed with an Olympus E-500 digital camera, and colour plates were composed using Adobe PhotoShop 8.0. The following abbreviations and collection acronyms are used:

BMNH: Natural History Museum (formerly British Museum, Natural History), London, UK:

KWJH: Collection of Keith Willmott and Jason Hall, Gainesville, FL, USA;

MZUJ: Muzeum Zoologiczne Uniwersytetu Jagiellońskiego, Kraków, Poland;

PBF: Collection of Pierre Boyer, Le Puy Sainte Réparade, France;

PUCE: Museo de Entomología, Pontificia Universidad Católica del Ecuador, Quito

TWP: Collection of Tomasz Wilhelm Pyrcz, Warsaw, Poland (to be integrated into MZUJ);

FW: forewing;

HW: hindwing;

V: ventral surface;

D: dorsal surface.

Table 1. Check-list of Ecuadorian species and subspecies of the genus Lymanopoda

	Species and subspecies	Distribution in Ecuador
1	L. panacea panacea (Hewitson)	East, throughout
2	L. albocincta albocincta Hewitson	East, Sucumbios
	L. albocincta issacha Butler	West, Carchi – Bolivar
	L. albocincta n. ssp. Pyrcz m/s	East, Napo
	L. allbocincta intermedia Pyrcz	East, Tungurahua – Z.Chinchipe
3	L. acraeida zigomala (Hewitson)	East, Tungurahua – Z.Chinchipe
4	L. venosa Butler	East, Z.Chinchipe? (Peru border)
5	L. obsoleta (Westwood)	East/West, throughout
6	L. altis Weymer	East, Sucumbíos - Tungurahua
7	L. confusa confusa Brown	East, Z.Chinchipe
	L. confusa n. ssp. Pyrcz m/s	East, M.Santiago
8	L. labda labda Hewitson	East, Sucumbíos, West, Carchi
	L. labda bilinskii Pyrcz	East, Napo
9	L. nadia Pyrcz, 1999	East, Tungurahua – Z.Chinchipe
10	L. excisa browni Pyrcz, Willmott & Hall	East/West, Cañar – Z.Chinchipe
	L. excisa n. ssp. Pyrcz m/s	West, Cotopaxi – Bolívar
11	L. labineta labineta Hewitson	East, M.Santiago
	L. labineta piniasi Pyrcz, Willmott & Hall	West, Azuay
	L. labineta decorata Seydel	East/West, Carchi - Sucumbíos?
	L. labineta wojtusiaki Pyrcz	West, Carchi
12	L. nivea nivea Staudinger	West, southern Pichincha
	L. nivea sororcula Thieme	East, Napo – M.Santiago
	L. nivea bingo Pyrcz, Willmott & Hall	West, Cotopaxi – Bolívar
	L. nivea n. ssp. Pyrcz m/s	West, Imbabura - northern Pichincha
	L. nivea bonita Pyrcz, Willmott & Hall	East, Sucumbios
13	L. hazelana hazelana Brown	West, Azuay
	L. hazelana summa Pyrcz, Wilmott & Hall	East/West, M.Santiago – Z.Chinchipe, Loja
	L. hazelana viridia Pyrcz	West, Cotopaxi – northern Loja
14	L. melia melia n. ssp. 1 Pyrcz m/s	East, Sucumbíos - Tungurahua
	L. melia melia n. ssp. 2 Pyrcz m/s	West, Carchi - Cotopaxi
15	L. huilana dominicae Pyrcz	East, M.Santiago
	L. huilana n. ssp. 1 Pyrcz m/s	East, southern Napo
	L. huilana n. ssp. 2 Pyrcz m/s	East, northern Napo
16	L. caracara caracara Pyrcz, Willmott & Hall	East, M.Santiago
	L. caracara ichu Pyrcz, Willmott & Hall	East, southern Z.Chinchipe
	L. caracara n. ssp. 1 Pyrcz m/s	East, central Z.Chinchipe
	L. caracara n. ssp. 2 Pyrcz m/s	East, Napo

#### SYSTEMATIC OVERVIEW

## *Lymanopoda labda bilinskii* Pyrcz, n. ssp. (Figs. 1, 12)

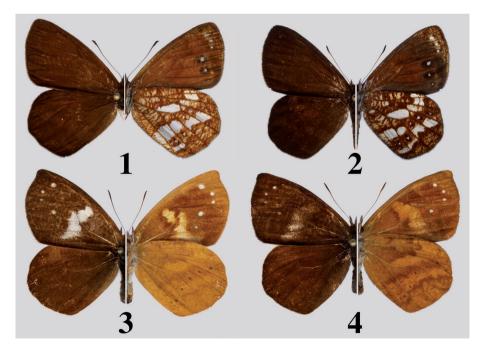
Lymanopoda labda Hewitson, 1861: 157, tab. 9, fig. 4 (underside).

#### ETYMOLOGY

This subspecies is dedicated to prof. Szczepan BILIŃSKI, a Polish biologist, currently the vice-rector of the Jagiellonian University and participant of the 1999 entomological expedition of the Jagiellonian University to Ecuador during which the new subspecies was collected.

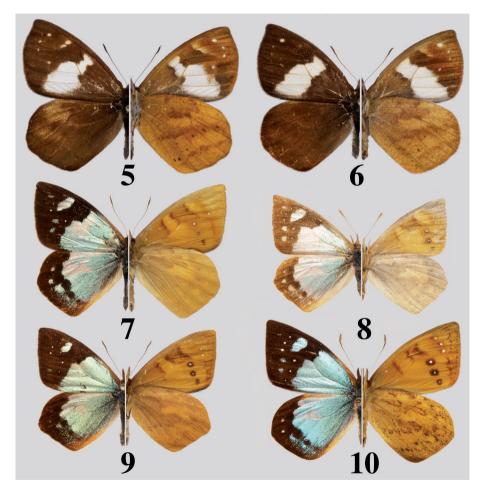
#### MATERIAL EXAMINED

ECUADOR: HOLOTYPE (male): Prov. Napo, Baeza, Río Horituyacu, 1800 m, 08.VI.1999, T. Pyrcz leg. [MZUJ]; PARATYPES (35 males): 2 males: Prov. Napo, Cuyuja, 1800 m, 05.XI.1989, 4 males: same data but 02.II.2004, P. Boyer leg. [PBF]; 1 male: Prov. Napo, San Isidro, 02.XII.1996, P. Boyer leg., prep. genit. 02/14.03.2011 J.Lorenc; 1 male: Prov. Napo, Baeza environs, 2050-2250 m, 13.IX.1995, A. Jasiński leg.; 3 males: Prov. Napo, Baeza, 1800 m, IX.1996, P. Boyer leg.; 5 males: Prov. Napo, San Isidro, 2000 m, 08.XII.1996, P. Boyer leg.; 2 males: Prov. Napo, Baeza



1-4. Adults (left: dorsum, right: venter): 1 – *Lymanopoda labda bilinskii* holotype male, 2 – *L. labda labda* male, El Retiro, 3 – *L. labineta wojtusiaki* holotype male, 4 – *L. labineta wojtusiaki* form, paratype male

environs, 2050-2200 m, 02.X.1995, A. Neild leg. (1 male prep. genit. 1010/104 T. Pyrcz); 2 males: Prov. Napo, Baeza – Papallacta, 2100 m, 07.IV.1998, A. Neild leg.; 1 male: no locality; 1 male: Baeza; 1 male: Baeza, V.1996; 1 male: Baeza, XII.1995; 1 male: Sierra de Huacamayas; 1 male: same data but 06.II.2005; 1 male: Prov. Napo, vía Papallacta, Chalpi Grande, 2700-2750 m, 18.I.2004, T. Pyrcz leg.; 6 males: Prov. Napo, Baeza, Rio Horituyacu, 1800 m, 08.VI.1999, T. Pyrcz leg. [MZUJ]; 2 males: Prov. Napo, Baeza – Tena, Reserva Yanayacu, 2100-2200 m, 07-09.IX.2003, T. Pyrcz leg., to be deposited in [PUCE].



5-10. Adults (left: dorsum, right: venter): 5 – *Lymanopoda labineta decorata* male, via La Bonita, 6 – *L. labineta labineta* male, Gualaceo – Limón, 7 – *L. hazelana viridia* holotype male, 8 – *L. hazelana viridia* paratype female, 9 – *L. hazelana hazelana* male, above Gualaceo, 10 – *L. hazelana summa* male, Loja – Zamora

#### DIAGNOSIS

Differs from the nominate subspecies (Fig. 2) by the less acute FW apex, outer margin more prominently curved at vein M3, by the lighter brown upperside, FWV sprinkled over nearly the entire surface with brick-red scales, and more prominent snow white patches on the HWV.

#### DESCRIPTION

MALE (Fig. 1): Head: frons brown with a tuft of brown hair; eyes chocolate-brown covered with short, sparse hair; labial palpi twice as long as head, ventrally covered with gray, dorsally with black hair; antennae reaching 2/5 the length of costa, with white scales at the base of each segment, club flattened laterally, concave, blackish-brown. Thorax: dorsally blackish-brown, ventrally pale gray covered with sparse hair, femora gray, tibiae chestnut. Abdomen: dorsally blackish-brown, ventrally gray. Wings: FW (length: 19-21.5 mm; mean: 20.3 mm; n=31) apex blunt, outer margin slightly curved at vein M3; HW oval, outer margin gently wavy. FWD and HWD of both wings uniform chestnut, lustrous. FWV brick-brown, apex and outer margin slightly sprinkled with chestnut and dirty-yellow scales; three minute, elongated white subapical spots in cells R5-M1, M1-M2 and M2-M3, two larger postmedian patches with white pupils in cells M3-Cu1 and Cu1-Cu2 displaced basally in relation to the subapical dots; the area between ocelli and outer margin brown. HWV golden brown, speckled over the entire surface with white ripple-like pattern; a white patch in distal 1/3 of discal-cell contiguous to a series of irregular whites patch in M1-M2, Rs-M1 and on costa suffused to a variable extent with brown scales, all forming an oblique band running from mid discal cell to outer margin; a similar row of five all white, roughly rectangular patches in postdiscal area from cell M2-M3 to inner margin; a series of minute white spots, three of which in M1-M2, M2-M3 and M3-Cu1 situated basally, three others in Cu1-Cu2 and two in Cu2-1A distally from the row of white patches. Male genitalia (Fig. 12): not differing from the nominate subspecies.

FEMALE: So far unknown.

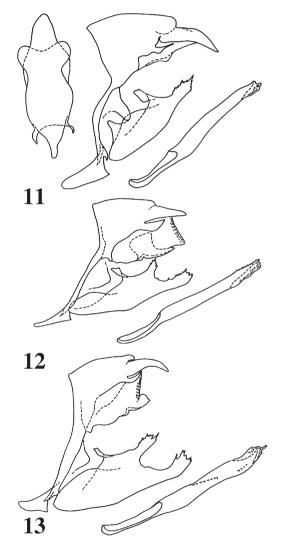
#### REMARKS

This is the southernmost known subspecies of *L. labda*. Its southern ecological vicariant is *L. nadia* Pyrcz occurring across the valley of the Río Pastaza. So far, *L. labda bilinskii* is known only from the upper valley of the Río Coca, and its affluent the Río Papallacta in Napo. The nominate subspecies has been recorded in extreme northern Ecuador on both the Amazon and the Pacific slopes (Pyrcz et al. 2009). *Lymanopoda labda bilinskii* is locally common from 1800-2000 m, and occurs as high as 2750 m.

## Lymanopoda labineta wojtusiaki Pyrcz, n. ssp. (Figs. 3, 4, 13)

#### ETYMOLOGY

This subspecies is dedicated to prof. Janusz Wojtusiak, a Polish entomologist, currently the head of the Zoological Museum of the Jagiellonian University who contributed significantly in many ways to the author's studies of Pronophilina butterflies. He participated in several Polish scientific expeditions to the Andes (1996-2010), and in 1999 was the collector of the first known individual of this taxon.



11-13. Male genitalia (in lateral position, aedeagus extracted; in *L. hazelana* also dorsal view of tegumen): 11 – *Lymanopoda hazelana viridia*, paratype, Zhud, 12 – *Lymanopoda labda bilinskii*, paratype, Horituyacu, 13 – *Lymanopoda labineta wojtusiaki*, paratype, Las Golondrinas

#### MATERIAL EXAMINED

HOLOTYPE (male): Carchi, Reserva Forestal Golondrinas, 2550 m, 24.VI.1999, J. Wojtusiak & T. Pyrcz *leg*. **[MZUJ]**; PARATYPES (3 males): 1 male: Carchi, Reserva Forestal Golondrinas, 2200-2400 m, 19.VI.1999, to be deposited in **[PUCE]**; 1 male: same date but 2600 m, 02.VII.1999, J. Wojtusiak & T. Pyrcz *leg*., prep. genit. 03/14.03.2011 J. Lorenc; 1 male: same data but 2400 m, 03.VII.1999 **[MZUJ]**.

Lymanopoda labineta decorata: 6 males: Carchi, Volcán Chiles, vía Maldonado, 3000-3050 m, 27.VIII.2004, T. Pyrcz leg. [MZUJ]; 1 male: Carchi, Tulcán-Maldonado km 40 à 50, 2800-3200 m, 07.V.1999, P. Boyer leg. [PBF]; 1 male: Carchi, Julio Andrade – Huaca, La Bonita road Km 45, 2500-2700 m, 06.V.2000, P. Boyer leg., TWP; 9 males and 2 females: Carchi, El Calvario, vía La Bonita, 2900-2950 m, 01.II.2005, T. Pyrcz leg., TWP; 1 male: same locality, 2600-3000 m, XI.1997, I. Aldaz leg., TWP.

#### DIAGNOSIS

FWD white oblique median band is either faint and strongly overcast with brown, or present but always considerably shorter and narrower than in other subspecies, the nominate (Fig. 6) or *L. labineta decorata* SEYDEL (Fig. 5) in particular. FWV ground colour is characteristically golden-brown with some reddish sheen, and the median band is always overcast with yellow or golden-brown, whereas in other subspecies it has the same whitish or milky white colour as on the upperside.

#### DESCRIPTION

MALE (Figs. 3, 4): Head: from brown with a tuft of hair of same colour; eyes chocolate-brown covered with long and rather dense hair; labial palpi twice as long as head, ventrally covered with whitish and gray longer hair scales, dorsally with black and brown, shorter hair; antennae to 2/5 the length of costa, medium brown with white scales at base of each segment and some sparse black scales, club formed of 10 segments, flattened laterally and concave, slightly darker brown than shaft. Thorax: black, covered with long and dense, golden brown and gray hair, ventrally covered with thick whitish, sandy yellow and golden brown hair; legs femora and tibiae black, tibiae chestnut covered with golden brown, yellow and white scales progressively lighter towards terminal tibial segments. Abdomen: dorsally and laterally covered with blackish-brown scales and golden brown scales, ventrally with whitish scales. Wings: FW (length: 21-22 mm; mean: 21.5; n=11) apex acute, outer margin truncate below apex and slightly concave. HW oval, outer margin regular, tornus angular. FWD varying between chestnut and reddish-brown, lustrous, an oblique whitish median band of variable width, in the extremely well marked individuals some 3-4 mm wide, in some narrow, less than 2 mm wide, in some others suffused to a different degree with brown, however, a series of three minute whitish subapical dots. HWD varying between chestnut and reddish-brown, in some individuals without any noticeable pattern, in some lighter towards apex where dusted with sandy yellow, which may take the shape of a faint yellow-brown patch extending from apex to postdiscal area. FWV golden brown, dusted with brick red in outer one-third except at apex, median band invariably overcast with golden scales,

three whitish subapical spots, slightly more noticeable than on the upperside, and two more white postmedian dots in M3-Cu1 and Cu1-Cu2 displaced basally, and one in Cu2-1A near outer margin at tornus, in some specimens the latter three ringed with brown. HWV varying between almost uniform sandy yellow and golden brown with a series of darker parallel stripes in median, postdiscal and submarginal area, a series of minute black dots, one in each cell, forming a row arched basally. Male genitalia (Fig. 13): not differing from other subspecies.

FEMALE: So far unknown

#### REMARKS

L. labineta belongs to a phylogenetically closely related, and morphologically similar group of species including the all brown L. excisa WEYMER, and predominantly white L. nivea Thieme and L. pieridina Röber (Casner & Pyrcz, 2010). It is a polytypic species with a complex, disjunctive distribution pattern. The nominate subspecies occurs in SE Ecuador (Morona-Santiago) on the eastern slopes of the Andes. In the same region it is replaced on the western slopes in the Cuenca valley by L. labineta piniasi Pyrcz, Willmot & Hall (1999) which differs in the larger FW white patch and darker, blackish-brown ground colour. To the north, L. labineta apparently does not occur on the eastern Andean slopes in Tungurahua and Napo where it is replaced there by its close relative and ecological vicariant L. nivea sororcula THIEME. L. labineta reappears in extreme northern Ecuador, on both the western and slopes of the Andes, and southern Colombia (Nariño) as the ssp. decorata. This subspecies differs little from the nominate except for the generally smaller FW white postmedian patch, and golden yellow instead of sandy yellow HWV. L. labineta decorata and L. labineta wojtusiaki are locally parapatric on the western slopes in Carchi. However, the former was found only along the upper Río San Juan, whereas the latter in the valley of Río Golondrinas, both affluents of Río Mira. The water divide between the two rivers is not an impermeable barrier as apparently some hybridising occurs. This shows in the unusually large individual variation met in the local populations of L. labineta (Pyrcz, 2010). Interestingly, L. labineta wojtusiaki occurs generally in dense cloud forests at lower elevations than other subspecies. It is found at 2400-2600 m, whereas other populations are found invariably above 2700-2800 and most frequently at 3000 m near timberline (Pyrcz et al. 2009). There are unconfirmed reports of L. labineta in the Colombian Western Cordillera (ADAMS 1986; PYRCZ & RODRIGUEZ 2007).

### Lymanopoda hazelana viridia Pyrcz, n. ssp.

(Figs. 7, 8, 11)

Lymanopoda hazelana Brown, 1943: 89, genit. fig. 1623.

#### ETYMOLOGY

The epithet of this subspecies *viridia* (Lat. adj.) meaning green, refers to the characteristic greenish shade on the dorsal surface of the wings.

#### MATERIAL EXAMINED

HOLOTYPE (male): Prov. Cañar, Chunchi — Cañar, Zhud, 3000-3050 m, 17.VIII.2003, T. Pyrcz leg. [MZUJ]; PARATYPES (25 males and 3 females): 5 males and 2 females: Prov. Cañar, 11 km north of Gun, 3000 m, 1999, I. Aldaz leg. [MBLI]; 2 males: Cañar, Pimo, Gun, Zhud-Alausi km 2, 3200 m, 14.V.1999, P. Boyer leg. [PBF]; 2 males: Prov. Cañar, Gun, V.1999, I. Aldaz leg.; 10 males: Prov. Cañar, Chunchi — Cañar, Zhud, 3000-3050 m, 17.VIII.2003, T. Pyrcz leg. (1 male prep. genit. 01/14.03.2011 J. Lorenc) [MZUJ]; 4 males: same data [PUCE]; 1 male and 1 female: Prov. Bolívar, Balzapamba, Río Alcacer, 2700 m, 04.XI.1996, S. Attal leg.; 1 male: Cotopaxi, Pilaló, 1998, I. Aldaz leg. [TWP].

#### DIAGNOSIS

*L. hazelana viridia* differs from *summa* PYRCZ, WILLMOT & HALL (1999) by the presence of whitish postdiscal areas on the FWD and HWD, and from the nominate by the larger size and the bluish green instead of brownish green dorsal ground colour.

#### DESCRIPTION

MALE (Figs. 7): Head: frons with a tuft of beige and sandy yellow hair; eyes chocolate brown covered with long and rather dense hair; labial palpi 1.5 the length of head, covered dorsally with short brown and sandy yellow, ventrally with long sandy yellow and pale yellow hair; antennae reaching 2/5 the length of costa, dorsally beige, ventrally sandy yellow covered with rather dense yellow scales, club composed of 10 segments, formed gradually, flattened laterally and concave. Thorax black, dorsally covered with sparse bluish and yellow scales, ventrally densely covered with golden and sandy vellow hair; legs vellow covered with pale vellow and golden scales. Abdomen black, dorsally and laterally sparsely hairy, ventrally covered with pale yellow scales. Wings: FW length: 19-21 mm; mean: 19.5; n=19). FWD ground colour from base to postmedian area greenish-blue, intensely lustrous; outer 1/3 black, enclosing one larger postdiscal light green patch and two smaller submarginal patches in M<sub>3</sub>-Cu<sub>1</sub> and Cu<sub>1</sub>-Cu<sub>2</sub> two to three minute subapical dots of same colour. HWD basal 2/3 light green, with an indistinct whitish lightening in the median area; a row of submarginal rounded, black patches merging with a black marginal band, leaving some green area in between. FWV ochreous-vellow; three roughly parallel, short dark-brown bands, across discal-cell, at outer edge of discal cell and distally; a row of three rounded black dots with white pupils running in a straight line from base of cell M3-Cu1 to tornus. HWV ochreous-yellow; several discontinuous dark brown stripes in the basal and median area, also within discal cell; a row of black submarginal dots parallel to outer margin. Male genitalia (Fig. 11): not differing from other subspecies.

FEMALE (Fig. 8): Similar to the male but lighter on both upper and underside.

#### REMARKS

PYRCZ et al. (1999) described the subspecies *L. hazelana summa* which occurs in southern Ecuador and pointed out that the population on the western slopes of the Andes possibly merits a subspecific status. *L. hazelana viridia* is distributed in central

(Cotopaxi, Bolívar) and south-central (Cañar) Ecuador. It occurs in the elfin forests near timberline alongside other congeners such as *L. melia* Weymer, *L. nivea* and *L. excisa browni* Pyrcz.

The species of Lymanopoda occurring in Ecuador present the whole range of geographic distribution patterns, from the tropical Panandean L. obsoleta distributed from Bolivia to Venezuela, to the Ecuadorian endemic L. nivea. The range limits of very few species coincide, and it is therefore difficult to identify strict zoogeographic regions. Notwithstanding, two species can be classified as southern elements, L. acraeida and L. venosa, because they are distributed throughout northern Argentina, Bolivia and Peru and only marginally penetrate into the northern Andes across the Huancabamba deflection. On the other hand, L. labda and L. altis are northern elements widely distributed throughout Colombia which locally occur in northern Ecuador only. Although only one species, L. nivea is a strict Ecuadorian endemic, as many as five other species are nearly endemic. L. caracara, L. hazelana, L. nadia and L. confusa are found marginally in extreme northern Peru, whereas L. labineta, marginally in southernmost Colombia. All 16 species of Lymanopoda known from Ecuador occur on the eastern slopes of the Andes. Only half of them occur also on the western slopes. As many as 10 species are polytypic in Ecuador with separate subspecies on the western and eastern slopes. L. *nivea* is represented by one subspecies on the eastern slopes and three on the western slopes. L. labineta has an unusual disjunct distribution with two subspecies found in the central south and two in the extreme north on the opposite slopes of the Cordillera. All the seven species occurring in the uppermost forest or the paramo are highly polytypic. L. ichu, originally described as a species, is not sufficiently differentiated from L. caracara, and is considered here as the southern subspecies of the latter, consequently, L. caracara ichu n. stat. In most areas of the eastern slopes of the Andes 10 species occur sympatrically and parapatrically along an elevational gradient. On the western slopes no locality harbours more than five species along a transect.

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#### REFERENCES

Adams, M. J. 1985. Speciation in the Pronophiline Butterflies (Satyridae) of the Northern Andes. Journ. Res. Lepidopt., 1985, Supplement No.1: 33-49.

- —, 1986. Pronophiline butterflies (Satyridae) of the three Andean Cordilleras of Colombia. Zool. Jour. Linnean Soc., **87**: 235-320.
- Adams, M. J., Bernard, G. I., 1977. Pronophiline butterflies (Satyridae) of the Sierra Nevada de Santa Marta, Colombia. Syst. Entomol., 2: 263-281.
- —, 1981. Pronophiline butterflies (Satyridae) of the Cordillera de Mérida, Venezuela. Zool. Journ. Linnean Soc., 71: 343-372.
- Brown, F. M., 1943. Notes on Ecuadorian butterflies. III. The genus *Lymanopoda* Westwood (Satyridae: Rhopalocera). Ann. Entomol. Soc. Amer., **36**: 87-102.
- D'ABRERA, B., 1988. Butterflies of the Neotropical Region, part V, Nymphalidae (Concl.) & Satyridae. pp. 680-887, colour plates throughout, Hill House. Victoria, Australia.
- FORSTER, W., 1964. Beiträge zur Kenntnis der Insektenfauna Boliviens, XIX. Lepidoptera III. Satyridae. Veröffentl. Zool. Staatssamm. München, 8: 51-188, pls. 27-35.
- HEWITSON, W. C., 1861. Description of new diurnal Lepidoptera. Journ. Entomo., 1: 155-158.
- —, 1870. Description of twenty-two new species of Equatorial Lepidoptera. Trans. Entomol. Soc. London, 1870: 153-163.
- —, 1877. Satyridae. In: Equatorial Lepidoptera collected by Mr. Buckley, V. London: Gurney & Jackson, pp. 81-96.
- Krüger, E., 1925. Beitrage zur Kenntnis der columbianischen Satyriden. Entomol. Rundsch., 42: 10-12, 14, 17-18, 23-24, 25-26.
- Miller, L. D., 1968. The higher classification, phylogeny and zoogeography of the Satyridae (Lepidoptera). Mem. Amer. Entomol. Soc., 24: 1-174.
- Pyrcz, T. W., 1999. The E. Krüger collection of pronophiline butterflies, Part I: Genera: *Altopedaliodes* to *Lymanopoda* (Lepidoptera: Nymphalidae: Satyrinae), Lambillionea, **99**(2): 221- 240.
- —, 2003. Notas taxonómicas y zoogeográficas sobre *Lymanopoda huilana* con la descripcion de una nueva subespecies del sur-este de Ecuador (Satyrinae, Pronophilini). Bol. Cient. Mus. Hist. Nat. Caldas, 7: 235-243.
- —, 2004. Pronophiline butterflies of the highlands of Chachapoyas in northern Peru: faunal survey, diversity and distribution patterns (Lepidoptera, Nymphalidae, Satyrinae). Genus, Wrocław, 15(4): 455-622.
- —, 2005. A new species and the new generic distribution limit of *Lymanopoda* along the western slopes of the Andes in Peru, Lambillionea, **105**(2): 251-256.
- Pyrcz, T. W., Boyer, P., 2010. *Lymanopoda obsoleta* clade of the genus *Lymanopoda* Westwood (Lepidoptera, Nymphalidae: Satyrinae). Ann. Acad. Sci. Hung., 71: 161-195.
- Pyrcz, T. W., Rodriguez, G., 2006. Description of a new remarkable species of *Lymanopoda* Westwood and identification of a centre of endemism of cloud forest butterflies in Belmira, northern Central Cordillera, Antioquia, Colombia (Lepidoptera: Nymphalidae: Satyrinae). Genus, Wrocław, 17(2): 291-297.
- —, 2007. Mariposas de la tribu Pronophilini en la Cordillera Occidental de Colombia. SHILAP, 35(140): 455-489.
- Pyrcz, T. W., VILORIA, A. L., 2007. Erebiine and pronophiline butterflies of the Serranía del Tamá, Venezuela-Colombia border (Lepidoptera: Nymphalidae: Satyrinae). Tropical Lepidoptera, 15(1-2): 18-52.
- PYRCZ, T. W., WOJTUSIAK, J., 2002. The vertical distribution of pronophiline butterflies (Nymphalidae, Satyrinae) along a elevational transect in Monte Zerpa (Cordillera de Mérida, Venezuela) with remarks on their diversity and parapatric distribution, Global Ecol.d Biogeogr., 11: 211-221.
- PYRCZ, T. W., WILLMOTT, K. R., HALL, J. P. W., 1999. Contribution to the knowledge of Ecuadorian Pronophilini. Part III. Three new species and five new subspecies of *Lymanopoda* (Lepidoptera: Nymphalidae: Satyrinae). Genus, Wrocław, 10(3): 497-522.
- Pyrcz, T. W., Wojtusiak, J., Garlacz, R., 2009. Diversity and altitudinal distribution pattern of Pronophilina butterflies in north-western Ecuador (Nymphalidae: Satyrinae). Neotrop. entomol., 38(6): 716-726.
- RÖBER, J. K., 1889. X. Satyriden. In: O. STAUDINGER, & E. SCHATZ (eds.): Exotische schmetterlinge. II. Die Familien und Gattungen der Tagfalter systematisch und analytisch baarbeitet. Fürth: G. Löwensohn, **2**(5): 181-225, pls. 35-42.
- SCHULTZE, A., 1929. Die erste Stande von drei kolumbischen hochandinen Satyriden. Deutsche entomol. Zeitschr. Iris, 43: 157-165.
- Schwanwitsch, B. N., 1925. On a remarkable dislocation of the components of the wing pattern in a Satyride genus *Pierella*. Entomologist, **58**: 226-269.

- STAUDINGER, O., 1897. Neue südamerikanische Tagfalter. Deutsche Entomol. Zeitschr. "Iris", 10(1): 123-151, pls. 5-8.
- VILORIA, A. L., 2007. The Pronophilina: synopsis of their biology and systematics. Tropical Lepidoptera, 15:1-17.
- Westwoop, J. O., [1851]. In: E. Doubleday: The genera of diurnal Lepidoptera, 2. London: Longman, pp. 375-386, pl. 67.
- Weymer, G., 1890. Rhopalocera. In: G. Weymer & P. Maassen, Lepidopteren, In: Reiss, W. & Stübel, A. Reisen in Süd-Amerika: 105-128. Berlin. A. Asher & Co.
- —, 1912. Satyridae [publ. 1910-1912]. In A. Seitz. Die Gross-Schmetterlinge der Erde, 2; Exotische Fauna, 5: 173-283.