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Contribution to the knowledge of Ecuadorian *Pronophilini*. Part III. Three new species and five new subspecies of *Lymanopoda* (*Lepidoptera: Nymphalidae: Satyrinae*)

TOMASZ W. PYRCZ<sup>1</sup>, KEITH R. WILLMOTT<sup>2</sup> & JASON P. W. HALL<sup>2</sup>

1. Zoological Museum, Institute of Zoology, Jagiellonian University, Ingardena 6, 30-060 Kraków, Poland, E-mail: pyrcz@zuk.iz.uj.edu.pl
2. Department of Entomology and Nematology, University of Florida, Gainesville, Florida 32611, U.S.A., E-mail: krwi@gnv.ifas.ufl.edu

ABSTRACT. Three new species and five subspecies of *Lymanopoda* are described from Ecuador and their affinities within the genus are discussed. Misidentifications in BROWN'S (1943) survey of the genus *Lymanopoda* in Ecuador are corrected. *Lymanopoda hannemanni* L. MILLER, 1991, is synonymised with *Lymanopoda confusa* F. M. BROWN, 1943 (**n. syn.**), and the female of this species is described and figured for the first time.

Key words: entomology, taxonomy, *Lepidoptera*, *Nymphalidae*, *Lymanopoda*, new taxa, Colombia, Ecuador, Peru, Podocarpus National Park.

INTRODUCTION

The genus *Lymanopoda* WESTWOOD, 1851 is a member of the tribe *Pronophilini* sensu MILLER (1968), which was downranked to subtribe *Pronophilini* by HARVEY (1991), an entirely Neotropical section of the nymphalid subfamily *Satyrinae*. It comprises approximately sixty species almost exclusively confined to the Andes, with only two representatives in the Central American mountains (PYRCZ, in prep.).

Typologically, the adults of *Lymanopoda* can be characterised by their small to medium size (forewing length 20-25 mm) compared to other members of the tribe, triangular forewings which usually have an acute apex and often a convex

outer margin, oblong hindwings, often with scalloped outer margins and a short tail-like emargination at vein  $Cu_1$ , rather short antennae, approximately 2/5 length of the costa, and eyes which are covered with short, sparse setae. The venation pattern is typical of the tribe *Pronophilini*, with the base of the cubitus of the forewing moderately swollen and the anal weakly so, and the disco-cellular vein of the hindwing between veins  $M_1$  and  $M_2$  sharply angled basally near  $M_1$  (BROWN 1943; MILLER 1968).

Despite the coloration of the wings varying greatly between species, ranging from white, dull brown to russet, metallic silver, green and blue, at least two synapomorphies of the genus *Lymanopoda* can be identified in the wing pattern: the ocelli in forewing cells  $Cu_1$  and  $Cu_2$  are always displaced basally in relation to the remainder (we refer throughout the text to wing cell spaces by the vein which lies beneath, or posterior to, that cell) and the hindwing ventral surface median band is broken and displaced in the discal cell, connected to the postbasal band („pierellization”-type distortion of the ground plan (sensu SCHWANWITSCH 1925)). Other generic synapomorphies are evident in the male genitalia, including: the presence of a superuncus (sensu RAZOWSKI 1996), a bulbous projection of the tegumen at the dorsal junction with the uncus; the complete absence of subunci (although a weakly sclerotised projection occurs in all species which is probably not homologous with the subunci, appearing to be a modification of the basal part of the uncus); a (usually) strongly sclerotised sub-scapium; and two prominent sculptured processes on the valvae (in a few cases the dorsal process is atrophied). In the female genitalia, synapomorphies include: a sclerotised lamella on the distal part of the posterior apophysis of the papillae anales and an accessory gland (of unknown function, most probably producing an egg gluing secretion) posterior to the ostium bursae.

As far as is known, the larvae of *Lymanopoda* feed on *Chusquea* bamboo in cloud forest (SCHULTZE 1929; ADAMS 1985), or *Swallenchloa* bamboo (*Poaceae*) in the páramo (PYRCZ unpubl.), and only exceptionally on other graminids (*L. caeruleata* GODMAN & SALVIN, 1880, a species endemic to the Sierra Nevada de Santa Marta, Colombia, was observed by the senior author while laying eggs on *Bambusa*). The larvae of only one species, *L. samius* WESTWOOD, have been described (SCHULTZE 1929), and therefore no comparative taxonomic characters are available as yet from the immature stages.

The species of *Lymanopoda* show intricate patterns of horizontal and vertical distribution. Whereas one species, *L. obsoleta* (WESTWOOD, [1851]), is nearly Panandean, most have a much more restricted distribution, several being single range endemics, including *L. confusa* F. M. BROWN 1943, discussed in this paper. They are found in premontane forests from around 800 m (*L. panacea* (HEWITSON 1869)), in cloud forests and up to boggy páramo over 4000 m (*L. huilana* WEYMER 1890), within well defined, sometimes very narrow bands of elevation (ADAMS 1985; PYRCZ & WOJTUSIAK in press). While *L. obsoleta* occurs from approximately 1800 to 2900 m (ADAMS 1986; PYRCZ & WOJTUSIAK in press), *L. marianna* STAUDINGER, 1897 is known from Venezuela from a narrow band between 3000 m

and 3200 m (ADAMS & BERNARD 1981). The patterns of altitudinal distribution appear to be related to ecological specialisation and interspecific interactions (PYRCZ & WOJTUSIAK in press). The species with particularly narrow vertical ranges are in most cases exclusive inhabitants of the cloud forest - páramo ecotone, such as *L. marianna* and three of the species described herein. The adults of cloud forest *Lymanopoda* are strongly attracted to decomposing organic material, including carrion (WILLMOTT & HALL unpubl.), dung, urine, fruits, and mineral matter found in mud (ADAMS 1985, 1986), but páramo species have not yet been reported to be attracted to baits. Páramo species are energetic butterflies, flying low above the ground, zigzagging among *Espeletia* composites and active only during longer periods of sunshine, whereas the cloud forest species are less motile, usually not moving far away from stands of their *Chusquea* hosts; individuals can be observed for several consecutive days in the same spot.

BROWN (1943) surveyed the genus *Lymanopoda* in Ecuador, describing two new species and listing a total of 11 species for the country. That paper contains a number of identification errors resulting from the fact that Brown had no access to English and German type material, and is now largely outdated due to more extensive sampling for montane butterflies during the past decade in some of the more remote areas of the country by several lepidopterists. Nevertheless, it provides a point of reference from which to begin faunistic, revisional and taxonomic research. The first author is currently working on a revision of the entire genus *Lymanopoda*, while Keith WILLMOTT and Jason HALL have been working since 1993 on the taxonomy, ecology and biogeography of the entire true butterfly fauna (*Papilionoidea*) of Ecuador. Therefore in this paper we describe the new taxa within the genus *Lymanopoda* that have come to light during our studies of Ecuadorian pronophilines. The following acronyms are used throughout the text:

**AMNH:** American Museum of Natural History, New York, U.S.A.;

**BMNH:** The Natural History Museum, London, United Kingdom;

**MALUZ:** Museo de Artrópodos de la Universidad del Zulia, Maracaibo, Venezuela;

**MNCN:** Museo Nacional de Ciencias Naturales, Quito, Ecuador;

**MUSM:** Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Lima, Peru;

**MZUJ:** Muzeum Zoologiczne Uniwersytetu Jagiellońskiego, Kraków, Poland;

**PUCE:** Pontificia Universidad Católica, Quito, Ecuador;

**ZMHU:** Zoologisches Museum, Humboldt Universität, Berlin, Germany;

**AJ:** Collection of Artur JASIŃSKI, Warsaw, Poland;

**KWJH:** Collection of Keith WILLMOTT and Jason HALL, Gainesville, Florida, U.S.A.;

**MB:** Collection of Maurizio BOLLINO, Milan, Italy;

**PB:** Collection of Pierre BOYER, Le Puy Sainte Réparate, France

**TWP:** Collection of Tomasz PYRCZ, Warsaw, Poland

***Lymanopoda ichu* PYRCZ, WILLMOTT & HALL n. sp.**

(Figs 1 &amp; 20)

## DIAGNOSIS

This species is distinguished from the superficially similar *Lymanopoda excisa browni* n. ssp. (described below) by the less acute forewing apex, the straighter outer margin below the apex, by the hindwing ventral surface postmedian black dots which form a row parallel to the outer margin in *L. ichu*, instead of being incurved as in *L. excisa browni*, and by the basal area of the ventral forewing being black except for a small brown marking in the discal cell. *L. caracara* n. sp. (described below) is also similar but is larger, has a more acute forewing apex, paler dorsal ground colour, and has the base of the forewing costa dark brown, not orange-brown. The genitalia (Fig. 20) are devoid of a dorsal process on the valve and in this respect are similar to *L. caracara* (Fig. 18), *L. huilana huilana* WEYMER, 1890, (Fig. 27) and *L. melia* WEYMER, 1911, (Fig. 28). Both *L. ichu* and *L. caracara* share a hooked uncus, the dorsal surface of which is V-shaped when viewed posteriorly, which is noticeably more deeply cleft in *L. caracara*. The valvae are also slightly more elongate in *L. caracara*. *L. huilana* and *L. melia* differ from both *L. ichu* and *L. caracara* in that the valvae are ended distally by a series of spines. *L. melia* is exceptionally variable in the shape, proportions and sclerotization of some main structures, especially the valvae. The individual illustrated (Fig. 28) corresponds to a population found on the western slopes of the Central Cordillera in Huila (Colombia).

## DESCRIPTION

Male (Fig. 1): **Head**: frons with tuft of dark brown hair; eyes brown, covered with sparse setae; labial palpi dorsally dark brown with few pale brown hairs, ventrally pale brown with few dark brown hairs; antennae 1/2 length of costa, brown and very sparsely scaled with white only at base of each segment, dorsal surface of club dark brown. **Thorax**: dorsal surface dark brown, ventral surface pale brown; legs pale brown. **Abdomen**: dorsal surface dark brown, ventral surface pale cream. **Wings**: forewing (length: 18-20 mm, mean: 19.2 mm, n=3) elongate, distal margin smoothly rounded; hindwing elongate and rounded. Forewing dorsal surface dark brown; basal third of costa orange-brown; a post-medial series of white dots, those in spaces  $Cu_1$  and  $Cu_2$  displaced basally in relation to others. Hindwing dorsal surface dark brown with tiny, faint postmedian white dots in spaces  $Cu_2$ - $M_3$ . Forewing ventral surface ground colour black, dusted with ochreous along costa, on apex distally as white subapical dots and along outer margin; five white dots reflected from dorsal surface, those in  $Cu_1$ - $M_3$  ringed with black. Hindwing ventral surface ochreous, suffused with chestnut scales forming a poorly defined darker band stretching from base towards outer margin, except in lower half of discal cell; a series of black postmedian dots, parallel to outer margin, in spaces  $1A+2A$ - $M_1$ . **Male genitalia** (Fig. 20): valvae

lacking upper process; superuncus well developed; uncus hooked with shallow dorsal groove; aedeagus smooth.

Female: unknown.

#### TYPES

**Holotype male:** Ecuador: *Loja*: km. 20 Jimbura-San Andrés rd., 3300 m, 24.IX.1997, K. R. WILLMOTT *leg.*, to be deposited in BMNH. **Paratypes: 2 males:** same data as holotype, in KWJH.

#### ETYMOLOGY

This species is named after the Quechua word “*ichu*”, which is used to designate the bunch-grass typical of puna and páramo grassland in southern Ecuador and Peru - the habitats of this species.

#### REMARKS

*L. ichu* n. sp. is currently known only from the type locality in Ecuador. It is closely allied in facies to an undescribed species (PYRCZ, in prep.) occurring in the area of Chachapoyas in northern Peru, with which it shares similar wing shape and ventral surface colour pattern but differs considerably in the male genitalia. As for other Ecuadorian species, there are strong affinities with *L. caracara* n. sp., found further north, as indicated by genitalic morphology, the elongate wing shape, the shape of the row of postmedian black dots of the hindwing ventral surface and the similar habitat type and altitude. *L. ichu* is also related to *L. melia* on the same morphological and ecological grounds, even though *L. melia* is distinctly marked, being predominantly white. *L. ichu*, *L. caracara* and *L. melia* belong to a group including also *L. huilana* and *L. tolima* WEYMER, 1911, whose diagnostic feature is that the postmedian black dots on the hindwing ventral surface form a row parallel to the outer margin.

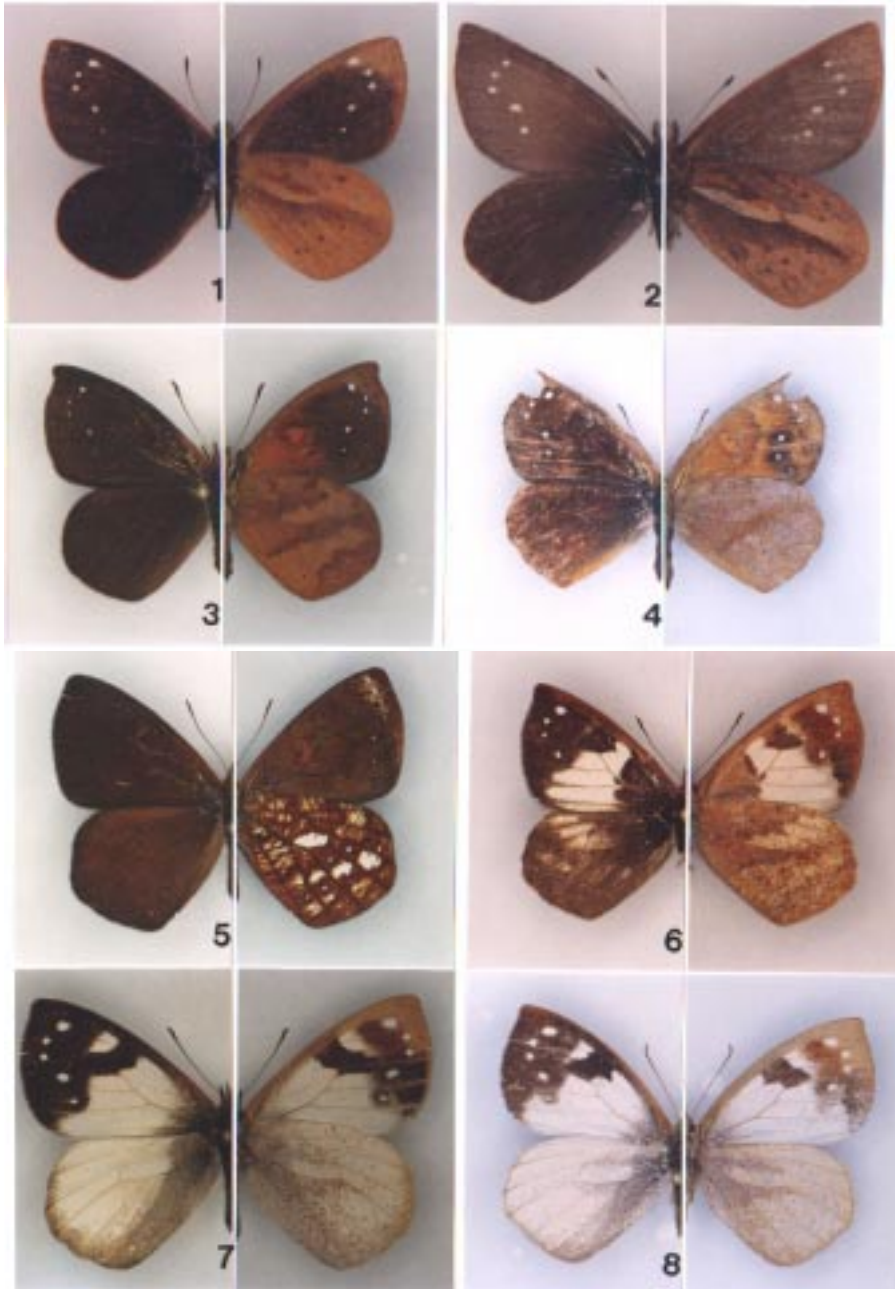
*L. ichu* was found only at a single site along the Jimbura-San Andrés road, at a steep, small landslide through a pocket of elfin cloud forest surrounded by páramo. This landslide had extensive bamboo secondary growth, and individuals were found flying just above the surface of the bamboo during a long period of bright sun.

#### *Lymanopoda caracara* PYRCZ, WILLMOTT & HALL n. sp.

(Figs 2 & 18)

#### DIAGNOSIS

This species has the same elongated fore and hindwings and overall hindwing ventral surface colour pattern as *L. huilana* and *L. tolima*, but is immediately distinguished from these species by being entirely chestnut on the dorsal surface. It is also similar to *L. ichu* n. sp., described above (see Diagnosis under that



1. *Lymanopoda ichu* n. sp. male, dorsum/venter; 2. *L. caracara* n. sp. male, dorsum/venter; 3. *L. excisa browni* n. ssp. male, dorsum/venter; 4. *Lymanopoda excisa browni* n. ssp. female, dorsum/venter; 5. *L. nadia* n. sp. male, dorsum/venter; 6. *L. labineta piniasi* n. ssp. male, dorsum/venter; 7. *L. nivea bingo* n. ssp. male, dorsum/dorsum; 8. *L. nivea bingo* n. ssp. female, dorsum/dorsum



9. *Lymanopoda hazelana summa* n. ssp. male, dorsum/venter; 10. *L. hazelana summa* n. ssp. female, dorsum/venter; 11. *L. hazelana hazelana* male, dorsum/venter; 12. *L. hazelana hazelana* female, dorsum/venter; 13. *L. nivea nivea* male, dorsum/venter; 14. *L. melia* male, dorsum/venter; 15. *L. nivea bonita* n. ssp. male, dorsum/venter; 16. *L. confusa* female, dorsum/venter;

species). It differs genitally from *L. ichu* by having a more deeply cleft uncus and a more elongate valva, and from *L. huilana* and *L. melia* as specified in the diagnosis of *L. ichu*.

#### DESCRIPTION

Male (Fig. 2): **Head**: frons with tuft of dark brown hair; eyes brown, covered with sparse setae; labial palpi dorsally dark brown with a few pale brown hairs, ventrally pale brown with few dark brown hairs; antennae 1/2 length of costa, brown and very sparsely scaled with white only at base of each segment, dorsal surface of club dark brown. **Thorax**: dorsal surface dark brown, ventral surface pale brown; legs pale brown. **Abdomen**: dorsal surface dark brown, ventral surface pale cream. **Wings**: (length: 22-23.5 mm, mean: 22.75 mm, n=2) very elongate, distal margin slightly rounded, apex pointed; hindwing very elongate and rounded. Forewing dorsal surface medium brown, slightly lighter in distal half; a postmedial series of white dots in spaces  $Cu_2-M_1$ , those in spaces  $Cu_2$  and  $Cu_1$  displaced basally in relation to others. Hindwing dorsal surface uniform medium brown. Forewing ventral surface dull brown, slightly dusted with ochreous scales along costa, apex distal of white subapical dots and narrowly along outer margin; five white dots reflected from dorsal surface; ochreous marking at distal end of discal cell. Hindwing ventral surface ground colour ochreous, suffused with darker brown in basal half and along vein  $M_3$ , except in discal cell which is pale yellow in lower half and orange-brown in upper half; a row of black postmedian dots parallel to outer margin. **Male genitalia** (Fig. 18): valvae lacking upper process; superuncus well developed; uncus strongly hooked and with deep dorsal groove; aedeagus smooth.

Female: unknown.

#### TYPES

**Holotype male**: Ecuador: *Morona-Santiago*, Gualaceo-Chiguinda rd., east of pass, 3300 m, 20.XI.97, K. R. WILLMOTT *leg.*, to be deposited in BMNH. **Paratypes** (6 males): **1 male**: same locality data as holotype, I. Aldas Villafuerte *leg.*, in KWJH; **3 males**: same locality and collector, in TWP; **2 males**: *Azuay*: Gualaquiza-Cuenca rd., Sigsig, 1998, 3000-3600 m, P. BOYER *leg.*, in PB.

#### ETYMOLOGY

This species is named with reference to its distinctive, strongly hooked uncus, reminiscent of the beak of the Carunculated Caracara, a predatory bird inhabiting the windswept Andean highlands where this species flies.

#### REMARKS

*L. caracara* n. sp. is most closely related to *L. ichu*, *L. huilana*, occurring in northern Ecuador and south-central Colombia, and *L. tolima* (considered a subspecies of *L. huilana* by ADAMS (1986)), endemic to the Tolima massif in the north-central part of the Central Cordillera in Colombia. *L. caracara* was found



at a single point where the Gualaceo-Chiguinda road traversed a very steep hill covered with low highland vegetation just below páramo, with a noticeable absence of bamboo, where males were encountered flying rapidly up the slope in bright sun.

***Lymanopoda nadia* PYRCZ, n. sp.**

(Figs 5 & 17)

DIAGNOSIS

*L. nadia* n. sp. differs from the most closely related species, *L. labda* HEWITSON, 1861, in having four subapical white dots on the forewing ventral surface, instead of three as in *L. labda* (and also *L. lebbaea* C. & R. FELDER, 1867). It is also darker on the dorsal surface and ventral surface, making the ventral silvery pattern more contrasting. The two species differ genitally, the valvae in *L. labda* being more elongate and the dorsal projection smaller in relation to the ventral projection. Genitalic differences are consistent throughout the ranges of both species. *L. rana* WEYMER, 1911 (Peru) is also similar to *L. nadia*, but has a wide rufous area on the forewing ventral surface and very distinct genitalia.

DESCRIPTION

Male (Fig. 5): **Head**: frons dark brown; eyes chocolate brown covered with short, sparse setae; labial palpi twice length of head, covered with grey hair ventrally and black hair dorsally, black on third segment; antennae 2/5 length of costa, chestnut dorsally and ventrally, with sparse white scales at base of each segment, club flattened costally, blackish brown except last segments chestnut. **Thorax**: dorsally blackish brown, ventrally pale grey, covered with short, sparse hair; tibia grey, femur chestnut. **Abdomen**: dorsally blackish brown, ventrally pale grey. **Wings**: forewing (length 19-22 mm, mean=20.16 mm, n=29) triangular, outer margin slightly incurved below apex; hindwing angular. Forewing and hindwing dorsal surface uniform dark brown. Forewing ventral surface dark brown, red-brown scales in discal cell and along distal margin at apex; four white subapical dots in spaces  $R_5-M_3$  and two submarginal white dots in spaces  $Cu_2$  and  $Cu_1$  displaced basally in relation to subapical dots. Hindwing ventral surface ground colour red-brown with paler silvery brown streaks in basal half of space  $1A+2A$ , basal area of space  $Cu_2$ , submarginal area of spaces  $1A+2A-Cu_1$ , in subapical area, base of discal cell and most of area between costa and discal cell; irregular silver markings filling distal quarter of discal cell and forming a broken postmedial band from space  $1A+2A-M_3$ ; six postmedial black spots with white pupils in spaces  $1A+2A-M_2$ , double in  $1A+2A$  and single in remaining cell spaces, distal to postmedial band of silver markings in spaces  $1A+2A$  and  $Cu_2$ , basal to this band in remainder of wing. **Male genitalia** (Fig. 17): valvae broad, with two short, broad processes of approximately equal size, each with several long "teeth"; aedeagus smooth.

Female (not illustrated): Forewing length 22 mm, n=1. Dorsal surface lighter than male, and ventral dots reflected on dorsal surface. Otherwise differences between male and female are similar to those in the related *L. labda* and *L. lebbaea*.

#### TYPES

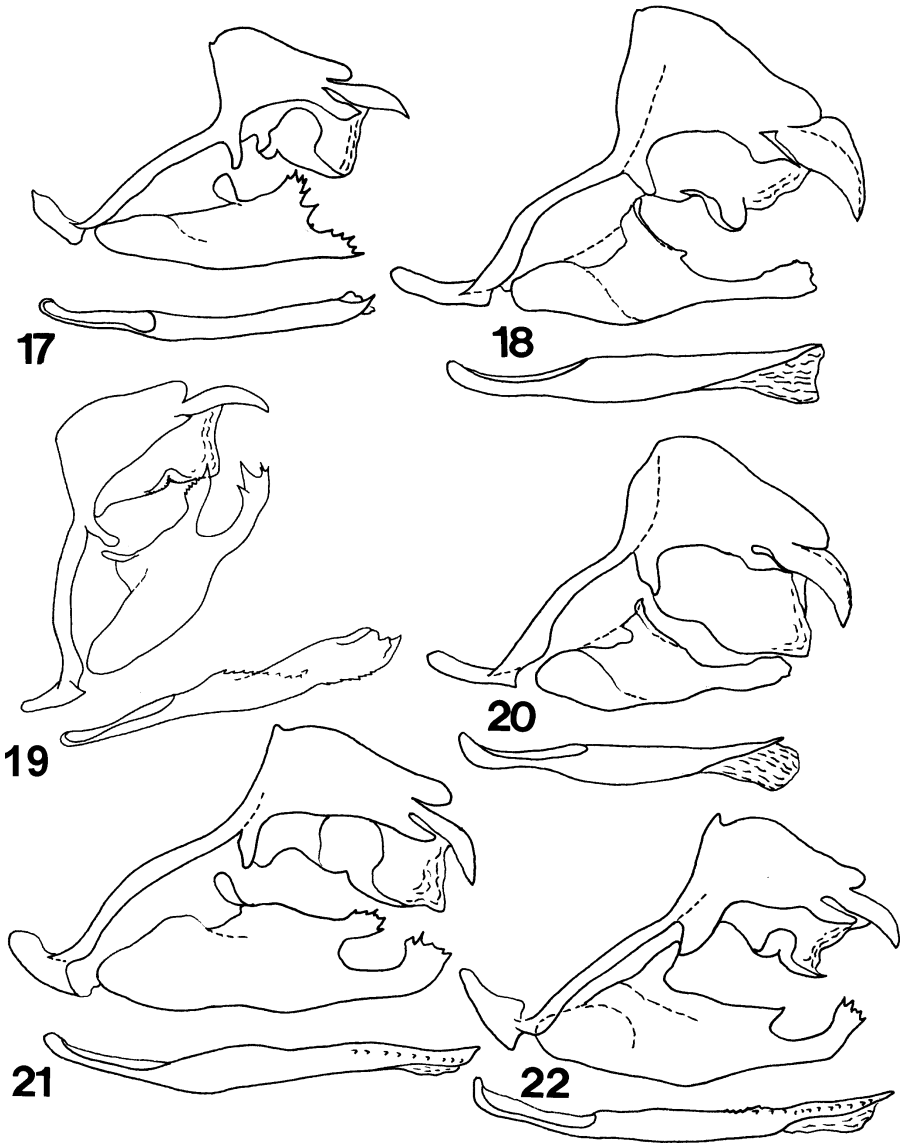
**Holotype male:** Ecuador: *Zamora-Chinchipe*: Valladolid, Río Chinchipe, Ecuador, 22.V.1996, 2200 m, S. ATTAL & I. ALDAS *leg.*, in MZUJ. **Allotype female:** Ecuador: *Tungurahua*: Baños, Pastaza, east Ecuador, 5-7000 feet, M.G. PALMER *leg.*, in BMNH. **Paratypes** (66 males): Ecuador: *Loja*: **1 male:** Route Catamayo-Porto Velo, Ecuador, 16.II.1993, B. MÉRY & S. ATTAL *leg.*, in TWP; *Zamora-Chinchipe*: **1 male:** north of Valladolid, 2600 m, 18-19.V.94, J. P. W. HALL *leg.*, in KWJH; *Morona-Santiago*: **1 male:** km. 22 Limón-Gualaceo rd., 2050 m, 3.XI.96, K. R. WILLMOTT *leg.*, in KWJH; *Zamora-Chinchipe*: **2 males:** San Andrés, Cordillera de Lagunillas, 2000 m, 13.VIII.1998, T. PYRCZ *leg.* in TWP; **2 males:** same locality, V.1998, A. JASIŃSKI *leg.*, in AJ; **2 males:** North of Valladolid, National Park Podocarpus, 2700 m, 14.VIII.1998, T. PYRCZ *leg.*, in TWP; *Tungurahua*: **1 male:** Ulbilla, Rio Ulba, nr. Baños, 2200 m, 16.XI.96, K. R. WILLMOTT *leg.*, in KWJH; **2 males:** Viscaya, road to Urba [sic], Baños, Ecuador, 15.V.1996, 2500 m, S. ATTAL & I. ALDAS *leg.*, in TWP; **2 males:** Biscaya [sic], Ecuador, 06.IV.1995, local dealer *leg.*, in TWP; **3 males:** Biscaya [sic], 2100-2300 m, 06-07.V.1996, A. JASIŃSKI *leg.*, in TWP; **1 male:** Viscaya, 2000 m, 06.IV.1995, P. BOYER *leg.*, in PB; **1 male:** same locality and collector, V.1996, in PB; **8 males:** Río Verde Chico, 24.IX.1995, 2100 m, A. NEILD & A. JASIŃSKI *leg.*, in MNCN (1 male), in PUCE (1 male), in MALUZ (1 male), in TWP (5 males); **13 males:** Baños, Río Pastaza, 5-7000 feet, M.G. PALMER *leg.*, in BMNH; **1 male:** San Antonio, 2100 m, IV.1971, LEFEBRE *leg.*, in BMNH; **1 male:** Río Machay, 1550 m, 4-5.VII.93, J. P. W. HALL *leg.*, in KWJH; *Pastaza*: **1 male:** Alpayacu, Río Pastaza, Ecuador, 3600 feet, M.G. PALMER *leg.*, in BMNH; *Vague data*: **1 male:** „Aloag”, A. JASIŃSKI *leg.*, in TWP; **2 males:** Ecuador, coll. HEWITSON, in BMNH; **2 males:** Ecuador, coll. GROSE-SMITH, in BMNH; **1 male:** Ecuador, 1920, coll. BRABANT, in BMNH; **6 males:** Ecuador, no precise data, in TWP. Peru: *Cajamarca*: **2 males:** Tabaconas, Peru, VIII.1996, I. ALDAS *leg.*, TWP (1 male), MUSM (1 male); **4 males:** Manchara, North Peru, 7000 feet, IX.1912, A. & E. PRATT, in BMNH; **5 males:** River Tabaconas, North Peru, 6000 feet, 1912, A. & E. PRATT, in BMNH.

#### ETYMOLOGY

This species is dedicated to Nadia Valentina SÁNCHEZ, a sister-in-law of the author.

#### REMARKS

BROWN (1943) illustrated the male genitalia of *L. nadia* as *L. labda*, pointing out anatomical and colour pattern differences between Ecuadorian (*L. nadia*) and



17-22. Male genitalia: 17 - *Lymanopoda nadia* n. sp.; 18 - *L. caracara* n. sp.; 19 - *L. nivea bonita* n. ssp.; 20 - *L. ichu* n. sp.; 21 - *Lymanopoda labineta piniasi* n. ssp.; 22 - *Lymanopoda excisa browni* n. ssp.

Colombian (*bona fide*) specimens of *L. labda*, but did not propose any name for the former. D'ABRERA (1988: 818) also illustrated a male of *L. nadia* as the female of *L. labda*. In fact, *L. nadia* differs more consistently in male genitalia from *L. labda* than *L. labda* does from *L. lebbaea* found in the Colombian Eastern Cordillera (east slopes). *L. nadia* occurs on the eastern slopes of the Andes in Ecuador, in the upper valley of the Río Pastaza southwards to northernmost Peru, the Río Tabaconas valley, in middle elevation cloud forest from 1550 to 2600 m (the single historical record from Alpayacu, a site at 1000 m, is almost certainly mislabelled). It is replaced allopatrically northwards, in the Cosanga and Baeza areas of the upper valley of the Río Quijos, by *L. labda*. Males are common in disturbed primary habitat and are most frequently encountered along streams and paths puddling at water seepages.

*Lymanopoda excisa browni* PYRCZ, n. ssp.

(Figs 3, 4 & 22)

*Lymanopoda excisa* WEYMER, 1911, pl. 52, row f. (illustration), 1912: 247 (text), Syntypes in ZMHU? [not examined]

DIAGNOSIS

This subspecies is smaller (mean forewing length 18.9 mm) than typical *L. excisa* (mean forewing length 22 mm), has the reddish-brown colour on the ventral forewing restricted to the basal half, and the basal third of the dorsal forewing costa orange-brown, rather than dark brown. East Ecuadorian specimens of a taxon which appears to be *L. excisa*, although possibly subspecifically distinct from the nominate, also have the base of the dorsal forewing costa orange-brown, but dusted with sandy yellow, and have no postmedian black on the ventral forewing. As far as the genital structure is concerned, *L. excisa browni* (Fig. 22) has a shorter dorsal process on the valvae than in nominate *excisa* or a related species *L. labineta* (Fig. 23). These genitalic characters are consistent within specimens from both the areas where this subspecies is so far known, namely the Loja area and the Cordillera de Lagunillas on the Ecuador/Peru border.

DESCRIPTION

Male (Fig. 3): **Head**: frons dark brown; eyes chestnut, covered with short, sparse setae; labial palpi twice length of head, dorsally brown, covered with light beige hairs; antennae 1/2 length of costa, dorsal surface dark brown, ventral surface paler, sparse white scales at base of each segment, clubs slightly flattened and concave, darker brown. **Thorax**: dorsally blackish brown, densely hairy, ventrally pale grey; legs with femur pale grey, tibia and tarsus pale brown. **Abdomen**: dorsally blackish brown, ventrally paler brown. **Wings**: forewing

(length: 18-20 mm, mean: 18.9 mm, n=23) triangular, apex slightly falcate, outer margin incurved below apex; hindwing rounded. Dorsal surface of both wings uniform dark brown, except for basal third of forewing costa which is red-brown and five forewing subapical and submarginal white dots in spaces  $M_1$ - $Cu_2$ , the latter two displaced basally. Forewing ventral surface ground colour blackish brown; brick red in discal cell and basal area of spaces  $1A+2A-Cu_1$ , discal cell traversed by an indistinct darker line at cell end and a second similar line opposite base of vein  $Cu_1$ ; six white subapical and submarginal dots in spaces  $1A+2A-M_1$ , those in spaces  $Cu_2-Cu_1$  displaced basally relative to remainder; beige along costa, in apex distal of subapical white dots and thinly along outer margin. Hindwing ventral surface ground colour beige, three roughly parallel, indistinct darker brown bands, one running from middle of discal cell to near apex, one just distal of discocellulars, third a sinuate submarginal line; six faint black postmedial dots arranged in a shallow, basally pointing „V”, spot in space  $Cu_1$  most basal. **Male genitalia** (Fig. 22): valvae with prominent lower process terminating with several spines, upper process a short point; uncus shallowly curving; aedeagus with numerous tiny “teeth” on dorsal surface of posterior half.

Female (Fig. 4): Forewing length 20 mm. Compared to male: dorsal surface lighter brown with black, white-pupilled ocelli clearly showing through from ventral surface; hindwing ventral surface basal suffusion lighter, rusty orange, spreading over to subapical and postmedian ocelli; hindwing ventral surface dull beige, almost uniform except for a darker brown median band extending from anal margin to postdiscal area.

#### TYPES

**Holotype male**: Ecuador: *Loja*: Podocarpus National Park, Cajanuma, 2800 m, 17.V.1996, A. JASIŃSKI *leg.*, in MZUJ. **Allotype female**: ECUADOR: *Loja*: Lagunillas, Jimbura-San Andrés rd., 3000-3200 m, 15.V.1998, A. JASIŃSKI *leg.* in TWP. **Paratypes** (50 males and 1 female): Ecuador: *Loja*: **6 males**: Cajanuma, 2700-2800 m, 10.XI.1996, A. NEILD *leg.*, in MZUJ (1 male), in MALUZ (1 male), in TWP (4 males); **4 males**: same data as preceding except K. R. WILLMOTT *leg.* in KWJH (3 males), to be deposited in MNCN (1 male); **1 male**: *Loja*, 22.XI.1996, P. BOYER *leg.* in TWP; **2 males & 1 female**: *Loja-Zamora rd.*, 2600 m, 22.XI.1996, P. BOYER *leg.*, in PB; **9 males**: Lagunillas, 2600-3000 m, 03.V.1997, A. JASIŃSKI *leg.* in TWP (7 males), MNCN (1 male), PUCE (1 male); **16 males**: *Loja*: Lagunillas, Jimbura-San Andrés rd., 3000-3200 m, 15.V.1998, A. JASIŃSKI *leg.* TWP (12 males), MUSM (1 male), AJ (3 males); *Zamora-Chinchi*: **1 male**: km. 29 Jimbura-San Andrés rd., 3100 m, 22.IX.97, K. R. WILLMOTT *leg.*, in KWJH; **1 male**: North of Valladolid, National Park Podocarpus, 2700 m, 14.VIII.1998, T. PYRCZ *leg.*, in TWP; *Vague data*: **9 males**: Ecuador, coll. HEWITSON, coll. GROSE-SMITH, coll. Chris Ward, coll. DRUCE, coll. SAUNDERS, all in BMNH; **1 male**: Ecuador, Macas, coll. BUCKLEY, in BMNH; **1 female**, *Loja*: *Loja-Zamora*, 2600 m, 22.XI.1996, P. BOYER *leg.*, in PB.

## ETYMOLOGY

This subspecies is dedicated to Martin BROWN for his contributions to the knowledge of Ecuadorian *Pronophilini*, including the monographs on *Lymanopoda* (1943), *Penrosada* (1944), *Steroma* and *Steremnia* (1941).

## REMARKS

*L. excisa* appears to belong to a group of closely related species including *L. ionius*, *L. labineta* HEWITSON and *L. pieridina* RÖBER. All of these share a similar ventral hindwing pattern, wing shape and pattern of postmedial dots on the forewing and hindwing. In addition, they fly at similar altitudes, from 2600 to 3100 m, and are alloparapatric. To date two populations of *L. excisa*, apart from *browni*, are known in Ecuador. One of them occurs on the western slopes near Quito, while the second one is in the north-east near Tulcán. They probably represent further undescribed subspecies as typical *L. excisa* seems restricted to the Colombian Western and Central Cordilleras (ADAMS 1986). *L. labineta* appears to be an east Ecuadorian member of this group, and is also known from southern Colombia (ADAMS 1986). *L. excisa browni* is common in elfin cloud forest with abundant bamboo, and flies along the edges of paths and roadsides. Males are readily attracted to rotting fish and faeces and puddle at the edges of small streams.

***Lymanopoda labineta piniasi* PYRCZ n. ssp.**

(Figs 6 &amp; 21)

*Lymanopoda labineta* HEWITSON, 1870: 159. Syntype male: Ecuador, HEWITSON collection, in BMNH [examined].

## DIAGNOSIS

This subspecies differs from nominate *L. labineta* in that the ground colour is much darker, blackish brown, instead of brown or chestnut brown, the white median area on the forewing extends much more basally, and the white markings on the hindwing, although variable in both subspecies, are much more pronounced in *L. l. piniasi*.

## DESCRIPTION

Male (Fig. 6): **Head**: frons dark brown; eyes chestnut, covered with short, sparse setae; labial palpi twice length of head, dorsally brown, covered with light beige hair; antennae 1/2 costa, chestnut, club slightly flattened and concave, darker brown. **Thorax**: dorsal surface blackish brown, densely hairy; legs brown, greyish on ventral surface with long grey hairs. **Abdomen**: dorsally blackish brown, ventrally beige. **Wings**: forewing (length 22–23 mm, mean 22.5 mm, n=2) apex slightly acute, outer margin truncate. Forewing dorsal surface ground colour dark brown/black, proximal half of costa chestnut; basal area black; median area white, remainder of wing black from distal two thirds of discal cell,

and from basal 1/3 of vein  $M_3$  to tornus, except for a narrow, irregular white patch enclosed in postdiscal area, and for a series of four submarginal white dots, that in space  $M_3$  displaced basally in relation to others. Hindwing suffused with a variable amount of blackish brown, less so in discal cell and along costa. Forewing ventral surface pattern reflected from dorsal surface, except basal area grey, with costa, apex and outer margin beige. Hindwing beige with white spreading from lower half of discal cell towards apex; two darker brown bands across discal cell and from anal margin to base of vein  $M_3$ . **Male genitalia** (Fig. 21): valvae with long lower process, approximately twice length of upper process, each terminating with several sharp “teeth”; aedeagus with sparse, fine “teeth” on dorsal surface of posterior half. Compare with male genitalia of *L. labineta labineta* (Fig. 23).

Female: Similar to the male but lighter on both the dorsal and ventral surface of the wings; hindwing upperside light beige colour with white areas suffused with milky-white scales.

#### TYPES

**Holotype male**: ECUADOR: *Azuay*: Gualaceo-Plan de Milagro Km 16, III.1998, 2900-3500 m, P. BOYER *leg.*, in MZUJ; **Allotype female**: same data as the holotype, in PB; **Paratypes** (14 males): **2 males**: ECUADOR: *Azuay*: Gualaceo-Plan de Milagro rd., 3050-3200 m, 11.XII.1997, P. BOYER *leg.*, in PB (1 male) and TWP (1 male); **4 males**, Gualaceo-Plan de Milagro Km 16, III.1998, 2900-3500 m, P. BOYER *leg.*, in PB; **7 males**, same data, in TWP (5 males), MNCN (1 male) and PUCE (1 male); **1 male**: *Morona-Santiago*: Río Culebrillas, VII.1994, F. PIÑAS *leg.*, in PUCE.

#### ETYMOLOGY

This subspecies is named after its first collector, Father Francisco PIÑAS, of the Pontificia Universidad Católica, Quito, Ecuador.

#### REMARKS

*L. labineta piniasi* n. ssp. occurs only in south-eastern Ecuador on the western slopes of the Eastern Cordillera in the vicinity of Cuenca, being replaced on the outer slopes of the Eastern Cordillera by *L. labineta labineta*. It is known so far from 3050 to 3200 m.

### *Lymanopoda nivea bingo* PYRCZ n. ssp.

(Figs 7, 8 & 24)

*Lymanopoda nivea* STAUDINGER, 1888: 232, pl. 83. Syntype male: Quito, Ecuador, in ZMHU, [examined].

## DIAGNOSIS

This subspecies differs from nominate *L. nivea* (Fig. 13) and *L. nivea sororcula* THIEME, 1904, in having the forewing white postdiscal patch entirely enclosed within a black area, and from *L. pieridina* RÖBER, 1927, in having an entirely white forewing discal cell and the hindwing dorsal surface distal margin not edged with black. The male genitalia closely resemble those of *L. nivea nivea* (Fig. 25) and *L. nivea bonita*, while the dorsal process on the valvae is more prominent than in *L. nivea sororcula* (Fig. 26).

## DESCRIPTION

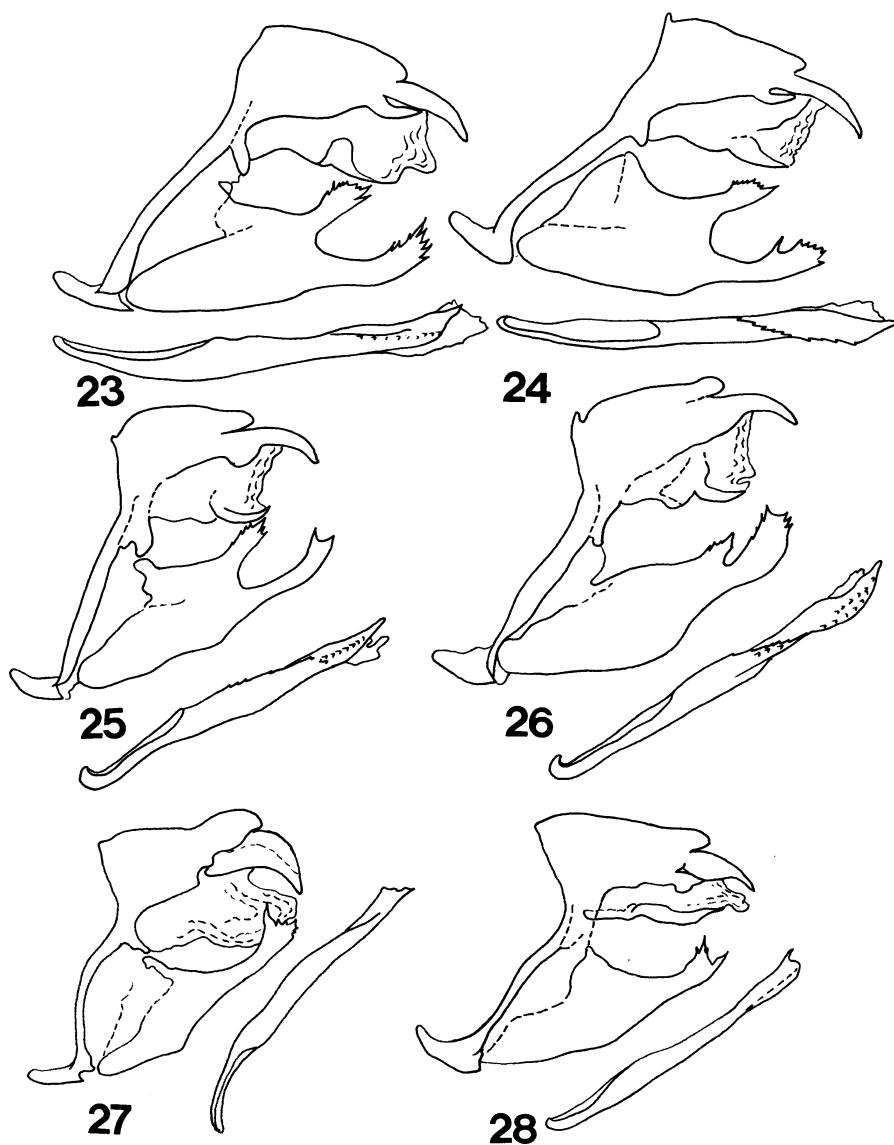
Male (Fig. 7): **Head**: frons with a tuft of short chestnut hair; eyes brown, covered with very short and sparse setae; labial palpi dorsally brown, labial hair white, grey on terminal segment; antennae 1/2 length of costa, dorsally chestnut, club brown, ventrally totally beige. **Thorax**: dorsally and ventrally black, dorsally covered with dense, short hair, ventrally naked; base of femur covered with white hair. **Abdomen**: dorsally and laterally dark grey, ventrally whitish grey. **Wings**: forewing (length 21-23 mm, mean: 22.4 mm, n=17) apex slightly acute, outer margin truncate; hindwing outer margin rounded, tornus slightly angular. Forewing dorsal surface basal area, and towards postbasal area along costa and inner margin, suffused with grey; remainder of wing divided into two areas, basally white from discocellular veins and from basal 2/5 of space Cu<sub>1</sub>, 3/5 of space Cu<sub>2</sub>, and 5/6 of space 1A+2A, distally black, except for a white rhomboid postdiscal patch and concave row of four white spots in spaces M<sub>1</sub>-Cu<sub>1</sub>, and an additional faint, white spot within black area in space Cu<sub>2</sub>. Hindwing white, except for basal area, filling basal half of discal cell, from vein Cu<sub>2</sub> to anal margin, and on distal margin where suffused with grey; veins M<sub>1</sub> to Cu<sub>2</sub> marked with black at distal margin. Forewing ventral surface pattern mirrors that of dorsal surface, except that ground colour of distal half is not totally black but beige in apical area from middle of space M<sub>3</sub> to costa, between outer margin and white subapical spots, and along costa, red-brown basally from submarginal white spots to white postdiscal rhomboid patch in 1A+2A. Hindwing white, liberally dusted with sparse grey and beige scales, more densely in basal area, anterior half of discal cell, along posterior edge of discal cell, and on outer margin from mid space M<sub>1</sub> to tornus; three minute black dots in spaces Cu<sub>1</sub>-1A+2A. **Male genitalia** (Fig. 24): valvae with two prominent processes on ampulla bearing several teeth; saccus short; uncus thin and long; superuncus fully developed; sub-scapium well sclerotised.

Female (Fig. 8): Forewing length 23 mm (n=1). Similar to male, except that the black markings on the forewing are slightly paler.

## TYPES

**Holotype male**: Ecuador: *Cotopaxi*: Pilaló, IX.1996, 2500-3000 m, I. ALDAS leg. in MZUJ; **Allotype female**: Ecuador: *Bolívar*: Guaranda, VIII.1997, I. ALDAS





23-28. Male genitalia: 23 - *Lymanopoda labineta labineta* (Nariño, Colombia); 24 - *Lymanopoda nivea bingo* n. ssp.; 25 - *Lymanopoda nivea nivea*; 26 - *Lymanopoda nivea sororcula*; 27 - *Lymanopoda huilana huilana* (Huila, Colombia); 28 - *Lymanopoda melia* (Huila, Colombia)

*leg.* in TWP. **Paratypes:** (19 males): **4 males:** Ecuador: *Bolívar:* Balzapamba, Río Alcacer, 04.XI.1996, I. ALDAS *leg.*, in TWP; **1 male:** *Pichincha:* Reserva Geobotánica Pulahua, 19.II.1997, 3000 m, A. NEILD *leg.*, in TWP; **11 males:** *Cotopaxi:* Pilaló, IX.1996, 2500-3000 m, I. ALDAS *leg.*, in PUCE (1 male), MALUZ (1 male), in ZMHU (1 male), in MZUJ (1 male), in TWP (7 males); **2 males:** same data as allotype, in TWP; **1 male:** *Bolívar:* Talahua, 03.III.1899, P. O. SIMONS, purchased from ROSENBERG, in BMNH.

#### ETYMOLOGY

The name is derived from the word “bingo”, a popular gambling game and an exclamation of happiness.

#### REMARKS

See under *L. nivea bonita*.

### *Lymanopoda nivea bonita* PYRCZ, n. ssp.

(Figs 15 & 19)

#### DIAGNOSIS

This subspecies differs from nominate *L. nivea* (Fig. 13) and *L. nivea sororcula* THIEME, 1904, in having the forewing white postdiscal patch entirely enclosed within a black area, from *L. pieridina* RÖBER, 1927, in having an entirely white forewing discal cell and the hindwing dorsal surface distal margin not edged with black, and from *L. nivea bingo* in the sandy yellow hindwing underside, similar to *L. labineta*. The male genitalia closely resemble those of *L. nivea bingo* (Fig. 25), while the dorsal process on the valvae is more prominent than in *L. nivea sororcula* (Fig. 26).

#### DESCRIPTION

Male (Fig. 15) **Head, thorax and abdomen** as in *L. nivea bonita*. **Wings:** forewing (length 21-22.5 mm, mean: 22.2 mm, n=10) apex slightly acute, outer margin truncate; hindwing outer margin rounded, tornus slightly angular. Forewing dorsal surface basal area, and towards postbasal area along costa and inner margin, suffused with blue-grey; remainder of wing divided into two areas, basally white from discocellular veins and from basal 2/5 of space  $Cu_1$ , 3/5 of space  $Cu_2$ , and 5/6 of space  $1A+2A$ , distally black, except for a white rhomboid postdiscal patch of variable size, in some specimens faint and barely noticeable, and concave row of three white spots in spaces  $M_1-M_3$ , and an additional white spot within black area in space  $Cu_1$ . Hindwing white, except for blue-grey basal area, filling basal half of discal cell, from vein  $Cu_2$  to anal margin, and on distal margin; distal margin black; in some individuals a suffusion of black extending basally from outer margin, reaching submarginal area. Forewing ventral surface

pattern mirrors that of dorsal surface, except that ground colour of distal half is not black but brown in postdiscal area and sandy yellow distally from it, in apical area and along outer margin to tornus. Hindwing sandy yellow, dusted with brown scales, more densely in basal area, anterior half of discal cell, along posterior edge of discal cell, and on outer margin from mid space  $M_1$  to tornus; in some specimens a row of five minute black submarginal dots in spaces  $M_1$  to  $Cu_2$ , with the dot in  $M_3$  displaced basally in relation to the others. **Male genitalia** (Fig. 19): similar to *L. nivea bingo*.

Female: unknown.

#### TYPES

**Holotype male:** Ecuador: *Carchi*: east of Huaca, 2900-3200 m, III.1999, I. ALDAS *leg.*, in MZUJ; **Paratypes** (9 males): **7 males:** same data as the holotype, in MB; **2 males:** same locality as the holotype, X.1998, K. WILLMOTT *leg.*, in KWJH.

#### ETYMOLOGY

This subspecies is named after the locality of La Bonita in the province of Sucumbíos.

#### REMARKS

*Lymanopoda nivea* and *L. labineta* belong to a group of closely related species including also *L. pieridina*, which are all characterised by a series of common morphological and ecological features. They have a similar wing shape, particularly the truncate forewing outer margin below the apex, black and white wing pattern and configuration of subapical and postmedian dots on the ventral surface, and male genitalia characterised by a prominent, stout dorsal process on the valvae. They are all inhabitants of the uppermost cloud forest, usually flying in humid forest gullies near the forest-páramo ecotone, or in the lower páramo. They are replaced parapatrically at slightly lower elevations by the „brown” species, *L. excisa*, with which they share most of their morphological features, and with which they most probably belong in a monophyletic group. The „white” species of the „*L. nivea* group” are allopatric, available data indicating that *L. nivea bingo* n. ssp. occurs only on the Pacific slopes of the western Ecuadorian Andes, from 2500-3000 m, being replaced eastwards by *L. nivea nivea*, which occurs along the main ridge of the Western Cordillera, *L. nivea sororcula*, which occurs on both the eastern and western slopes of the Eastern Cordillera in central Ecuador and *L. nivea bonita* found in the Eastern Cordillera in northern Ecuador.

BROWN (1943) produced an interesting survey of Ecuadorian *Lymanopoda* (although he referred also to non-Ecuadorian species), but unfortunately, having no access to the type material, he misidentified many of the taxa. He actually collected *L. nivea bingo* (3 males at Hacienda Talahua) but thought that it represented *L. melia* (Fig. 14), which he considered to be a subspecies of *L. nivea* (Fig. 13). He also erroneously considered *L. sororcula* to be an individual „rusty”

form of *L. nivea*. Moreover, Brown collected *bona fide* *L. melia* at Hacienda Talahua, which he again misidentified as *L. eubagioides* BUTLER, 1873, a south Peruvian species (BROWN 1943: 91). *L. nivea bingo* and *L. melia* are sympatric and synchronic in the Talahua and Pilaló areas. *L. melia* belongs to the second group of *Lymanopoda* flying in the uppermost forests and páramo grassland, which includes *L. huilana* and *L. caracara* n. sp. (described above). They are characterised by having a single process on the valvae of the male genitalia. ADAMS (1986) also referred to BROWN's work and pointed out correctly that Brown had misidentified *L. nivea* and *L. melia*, but was wrong in assuming that *L. melia* is restricted to the Colombian Central Cordillera. Also it is worth noting here that D'ABRERA (1988: 817) illustrated *L. caeruleata* GODMAN & SALVIN, 1880, as *L. pieridina*.

***Lymanopoda hazelana summa* PYRCZ, n. ssp.**

(Figs 9 & 10)

*Lymanopoda hazelana* BROWN, 1943: 89, pl. 1, fig. 1623 (male genitalia). Holotype male in AMNH [not examined].

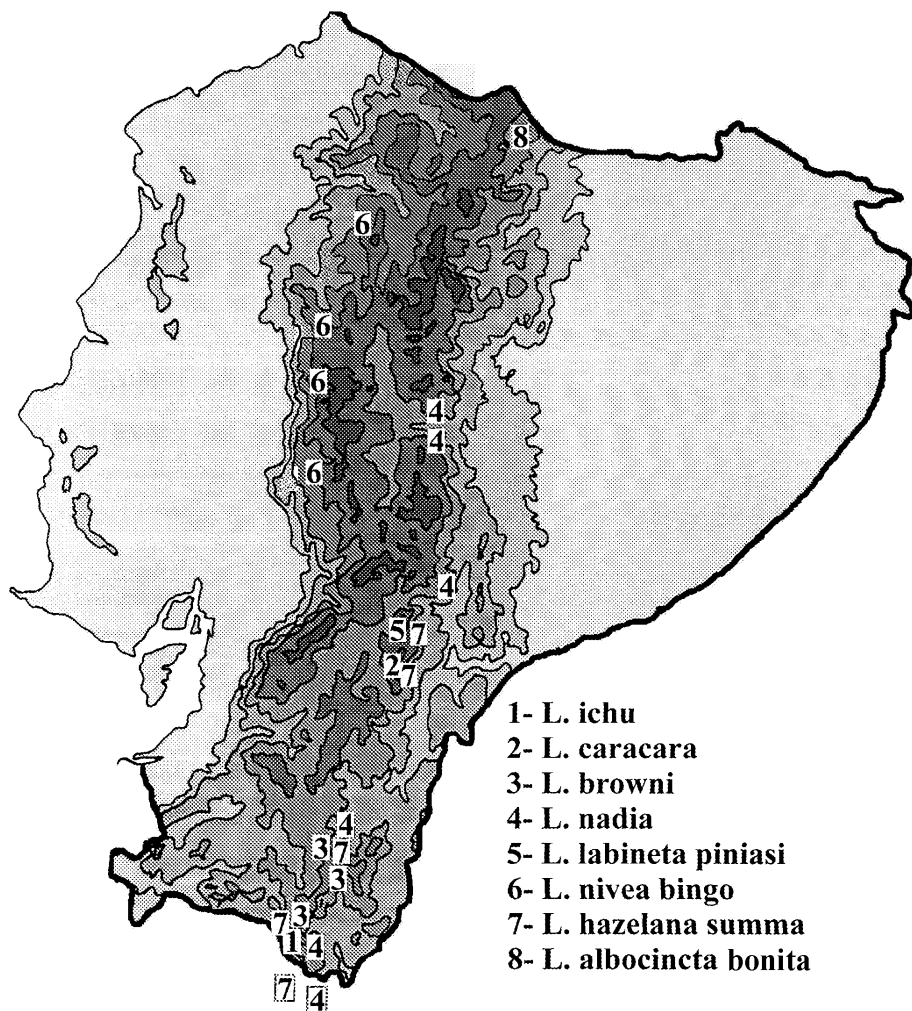
DIAGNOSIS

*L. hazelana summa* n. ssp. differs from the nominate subspecies (Figs. 11 (male) & 12 (female)) in the colour of the dorsal surface, which is a more bluish green, and is more extensive in the submarginal areas of both wings, particularly in spaces 1A+2A-Cu<sub>1</sub>; the result is that the hindwing submarginal (limbal) black dots usually appear detached from the marginal band and may be almost entirely surrounded by green. In addition, the dorsal forewing postdiscal green markings are all larger, the costal marking extending into space M<sub>3</sub>.

DESCRIPTION

Male (Fig. 9): **Head:** frons dark brown; eyes brown with sparse setae; labial palpi twice length of head, covered with pale brown hair ventrally and dark brown hair dorsally; antennae 1/2 length of costa, brown dorsally and paler brown ventrally, club flattened costally, blackish brown dorsally, very few white scales at base of each segment in basal half. **Thorax:** dorsally blackish brown, ventrally pale brown, covered with short, sparse hair; legs pale brown. **Abdomen:** dorsally blackish brown, ventrally pale grey. **Wings:** forewing (length: 18.5-22 mm, mean=20.46 mm, n=37) triangular, hindwing angular. Forewing dorsal surface ground colour dark brown, basal third of costa orange-brown; basal half bright bluish green, filling discal cell and basal third of space Cu<sub>1</sub>, basal half of space Cu<sub>2</sub>, and basal 2/3 of space 1A+2A and anal margin; bright bluish green postdiscal marking at costa extending from space M<sub>1</sub> into space M<sub>3</sub>, two green subapical spots, three green submarginal spots in spaces 1A+2A-Cu<sub>1</sub>; four post-medial dots in spaces Cu<sub>1</sub>-M<sub>1</sub>, that in Cu<sub>1</sub> displaced basally with respect to others.

Hindwing dorsal surface ground colour dark brown, basal two-thirds bright bluish green, diffuse submarginal green spots in spaces 1A+2A-M<sub>2</sub>, those in 1A+2A-Cu<sub>1</sub> almost joined to basal green area and encircling black spots. Forewing ventral surface ground colour pale yellow-brown, with some darker brown scaling in discal cell and subapical and submarginal areas; three large black postmedial spots with central white pupils in spaces 1A+2A-Cu<sub>1</sub>, two more distally displaced white postmedial dots in spaces M<sub>3</sub> and M<sub>2</sub>. Hindwing ventral surface ground colour pale yellow-brown, mottled entirely with darker brown scaling. **Male genitalia** (not illustrated): as in nominate subspecies (see BROWN, 1943).



29. The distribution of new *Lymanopoda* taxa in Ecuador

Female (Fig. 10): Forewing length: 19-20.5 mm, mean=19.75 mm, n=2. Lighter on dorsal surface than male, otherwise differs from nominate subspecies in same respects as male.

#### TYPES

**Holotype male:** Ecuador: *Zamora-Chinchipe*: Ancienne Route Loja-Zamora, 10-18.II.1993, 2500 m, B. MÉRY & S. ATTAL *leg.*, in MZUJ. **Allotype female:** same data as holotype, in TWP. **Paratypes** (83 males, 9 females): Ecuador: *Zamora-Chinchipe*: **15 males:** same data as holotype, in TWP; **1 female:** same locality data as holotype, 24.II.1993, in TWP; **1 female:** same locality data as holotype, XI.1997, I. ALDAS *leg.*, in TWP; **1 male:** Ancienne route Loja-Zamora, 20.II.1993, 2700 m, B. MÉRY & S. ATTAL *leg.*, in TWP; **1 male:** same locality data as preceding, 24.II.1993, in TWP; **3 males:** same locality data as preceding, 09.XI.1996, S. ATTAL *leg.*, in TWP; **1 male:** km. 34 Jimbura-San Andrés rd., 2900 m, 23.IX.97, K. R. WILLMOTT *leg.*, in KWJH; **Loja: 4 males, 2 females:** Loja-Zamora, 2600 m, 22.XI.1996, P. BOYER *leg.*, in PB; **1 male:** environs de Loja, Ecuador, 1887, Dognin, in BMNH; **6 males:** Cajanuma, 10.XI.1996, 2700-2800 m, A. NEILD *leg.*, in TWP; **2 males:** same locality data as preceding, K. R. WILLMOTT *leg.*, in KWJH (1 male), to be deposited in MNCN (1 male); **2 males:** Lagunillas, South from Amaluza, 03.V.1997, 2600-3000 m, A. JASIŃSKI *leg.*, in TWP; **6 males and 1 female:** same locality and collector, 15.V.1998, in TWP (4 males), MUSM (1 male), AJ (1 male and 1 female); **2 males:** same locality and date, P. KRÓL *leg.*, in TWP; **1 male:** Route Loja-Catamayo, km. 19, 2250 m, 23.II.1993, in TWP; **1 male:** km. 14 Jimbura-San Andrés rd., 3000 m, 22.IX.97, K.R. WILLMOTT *leg.*, in KWJH; **2 males & 1 female:** Cerro Palma, km. 27 Loja-Cuenca rd., 3000 m, 7.IV.95, J. P. W. HALL & K. R. WILLMOTT *leg.*, in KWJH; **Morona-Santiago: 1 male:** Limón-Gualaceo, 03-04.XI.1996, 3000m, A. NEILD *leg.*, in TWP; **15 males & 1 female:** Granadillas-Chiguinda rd., 3000-3200 m, XI.1997, I. ALDAS *leg.*, in TWP; **1 male:** Gualaceo-Chiguinda rd., east of pass, 2800-3000 m, 20.XI.97, K.R. WILLMOTT *leg.*, in KWJH. **Vague data: 1 male,** Sarayacu, eastern side of the Andes, Ecuador, Buckley, 1879, in BMNH; **2 males:** Ecuador, HEWITSON coll., in BMNH; **1 male:** Ecuador, ex coll. GROSE-SMITH, in BMNH. PERU: *Cajamarca: 1 male:* Manchara, N. Peru, 7000 ft., Sep. 1912, A. & E. PRATT, in BMNH; **6 males:** Tabaconas, Peru, I. ALDAS *leg.*, in TWP; **Vague data: 1 male:** Peru, DRUCE coll., in BMNH; **5 males:** west slopes of Andes, N. Peru, 10000 ft., June 1912, PRATT, in BMNH. Erroneous or no locality: **1 male:** „Brazil” (erroneous locality), ex coll. GROSE-SMITH, 1844-5, in BMNH; **1 female:** HEWITSON coll., in BMNH; **1 female:** ex coll. GROSE-SMITH, in BMNH.

#### ETYMOLOGY

The name is derived from the Latin word “*summa*”, meaning „in the first place”, for its dominant position in the distribution pattern of *L. hazelana*, compared to the much more geographically restricted nominate subspecies.

## REMARKS

Rather unexpectedly, BROWN (1943) described *L. hazelana* based on a single specimen representing a local population endemic to the inter-Andean valley of Cuenca, or, more precisely, the upper headwaters of the Río Paute, whereas *L. hazelana summa* n. ssp. is widespread and common elsewhere in southern Ecuador, on both the eastern (Morona-Santiago, Zamora-Chinchipec) and western (Loja) slopes of the Andes and in northernmost Peru (Tabaconas). It was fairly well known to early European lepidopterists, as there are specimens of it in the collections of HEWITSON, BUCKLEY, PRATT, DOGNIN and DRUCE in the BMNH. However, they all misidentified it as the confusingly similar Colombian species *L. samius* WESTWOOD, [1851], (see DOGNIN, 1891). *L. hazelana summa* resembles *L. samius* even more closely than the nominate subspecies, which was compared by BROWN in his original description (*op. cit.*) to *L. caeruleata*. *L. hazelana summa* is readily distinguished from *L. samius* by comparing the row of hindwing submarginal black spots, which are parallel to the outer margin in *L. hazelana* but incurved in *L. samius*. Despite a striking resemblance in colour patterns and wing shape, *L. hazelana* and *L. samius* are not even closely related and, as indicated by their genitalic structures, belong in different lineages of the genus *Lymanopoda*, the former being related to *L. ichu* and *L. melia* and the latter possibly to *L. ionius*. There is some individual variation in the ground colour of *L. hazelana summa*, and some individuals have a noticeable greenish sheen, but not even approaching that of the nominate subspecies, and in some individuals the hindwing outer margin is as wide as in the nominate subspecies, but without affecting the size of the forewing postdiscal blue-green spot, which is always well developed and invariably extends into three cell spaces. Two specimens from Balzapamba (Bolívar) are greener than extremes of *L. hazelana summa* and given their origin may well represent a slightly differentiated population of the western slopes in central Ecuador. They are tentatively associated with *L. h. summa* but are not included in the series of paratypes.

*L. hazelana* inhabits the uppermost cloud forests and lower edge of the páramo. Locality data indicate that it occurs from 2250 to 3200 m, though it is most common above 2600 m, and it is usually seen in bright sun flying just above the surface of large stands of bamboo. Males appear to follow fairly fixed flight paths above and around clumps of bamboo, and are strongly attracted to rotting fish bait. TORRES et al. (1996) suggested a possible mimetic relationship between blue-green “elfin” lycaenids (genera such as *Rhamma* JOHNSON, 1992, and *Podonotum* TORRES & JOHNSON, 1996) and *L. hazelana*, but we also suggest that this unique blue-green colour might also simply have evolved convergently as a disruptive colour pattern in flight.

*Lymanopoda confusa* F. M. BROWN, 1943

*Lymanopoda confusa* BROWN, 1943:99, pl. 2, fig. 1676 (male genitalia), Holotype in the AMNH [examined].

*Lymanopoda hannemanni* MILLER, 1991:103, pl. 1, figs. a, b and 1, Holotype in the ZMHU [examined], **syn. n.**

The male of *Lymanopoda confusa* Brown is externally very similar to *L. obsoleta* (WESTWOD, [1851]), from which it differs most noticeably in having a strongly falcate forewing apex which terminates in a sharp point. The male genitalia, however, place *L. confusa* in a monophyletic group with *L. altis* WEYMER, 1890, *L. maletera* ADAMS & BERNARD, 1979, *L. dietzi* ADAMS & BERNARD, 1981, and two other so far undescribed species from the Cordillera de Mérida (PYRCZ & VILORIA, in prep.), characterised by the dorsal process on the valvae being nearly as long as the distal process (it is barely half as long in *L. obsoleta*) and by having a very long superuncus. The allopatric species of the “*L. altis* group” replace *L. obsoleta* at higher elevations. So far, *L. confusa* is known exclusively from 1900–2900 m in the Loja-Zamora area south to a single site in the Cordillera Las Lagunillas, almost on the Peruvian border, indicating that it almost certainly occurs in northern Peru. To date, however, extensive collecting in northern Peru has yet to confirm its presence.

*Lymanopoda hannemanni* L. MILLER, 1991, is a junior synonym of *L. confusa* **syn. n.** Good photographs of the holotype, male genitalia drawings and data (*L. hannemanni* was described from the same series of specimens collected by Abbé Gaujon as *L. confusa*) in the original descriptive paper leave no doubts as to its synonymy, and as *L. confusa* is not mentioned by MILLER (1991) in his description of *L. hannemanni* it must be assumed that he was simply unaware of BROWN’S (1943) work on the genus.

## DESCRIPTION OF FEMALE

The female of *L. confusa* (Fig. 16), undescribed hitherto, is now known to us from two specimens, the one figured, collected by Stéphane ATTAL on the road from Loja to Zamora (Zamora-Chinchipe), at 2700 m, on 20.V.1996, and a further specimen collected by the second author at km. 34 on the Jimbura-San Andrés road (Zamora-Chinchipe) at 2900 m, on 23.IX.1997. The specimen figured is most striking in appearance and exhibits a strong sexual dimorphism that is unusual not only for its lineage but also for the entire genus. Whereas in *L. obsoleta*, *L. dietzi* and *L. maletera* the females differ somewhat from the males in their larger size, lighter ground colour and in having two fenestrellae in the subapical area of the forewing, the figured female of *L. confusa*, apart from these distinctive sex-linked characters typical of its group, possesses a 4–5 mm wide bright orange band across the dorsal surface of the forewing from the costa to the tornus. Even more interesting is the fact that the second known specimen differs in entirely lacking the orange band, but is otherwise essentially identical. The two



specimens originate from different sites, whose pronophiline faunas show some dissimilarities at the altitude at which this species flies, and it remains to be confirmed whether the differences in the colour pattern of the two known females represent stable subspecific characters or result from polymorphism, though quite what could maintain such a polymorphism is unknown.

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