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203-223 An update 13/6/77 18:37 Página 203

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An update checklist of the Saturniidae of Ecuador. Part I: Hemileucinae (Lepidoptera: Saturniidae)

L. Racheli & T. Racheli

Abstract

In this paper, an update checklist of 199 taxa belonging to the subfamily Hemileucinae (Saturniidae) recorded for Ecuador is compiled. It includes all the available distributional data reviewed in the literature and additional records from material examined in private and public collections. All the provincial records are listed for each taxon. For some uncommon or little-known species, further details on their distributions are given. The current taxonomic arrangements of some species-groups are discussed. Furthermore, the female of *Meroleuca* (*Meroleucoides*) *albomaculata* (Dognin, 1916) is described for the first time and *Molippa placida* (Schaus, 1921) is reported for the first time for Peru.
KEY WORDS: Lepidoptera, Saturniidae, Hemileucinae, checklist, Ecuador.

Una lista actualizada de los Saturniidae del Ecuador. Parte I. Hemileucinae (Lepidoptera: Saturniidae)

Resumen

En este trabajo, se citan un total de 199 taxa pertenecientes a la subfamilia Hemileucinae (Saturniidae) para Ecuador. Se incluyen todos las citas disponibles en la bibliografía examinada y nuevas citas adicionales del material revisado en colecciones privadas y públicas. Para cada taxón, se da una lista de todos los datos provinciales. Para algunas especies poco comunes o poco conocidas, se dan detalles adicionales sobre su distribución y se aportan datos más detallados por algunas especies. Se discuten las propuestas taxonómicas en curso para algunos grupos de especies. Además, se describe por primera vez la hembra de *Meroleuca* (*Meroleucoides*) *albomaculata* (Dognin, 1916) y se cita por primera vez para Perú a *Molippa placida* (Schaus, 1921).
PALABRAS CLAVE: Lepidoptera, Saturniidae, Hemileucinae, lista, Ecuador.

Introduction

This paper deals with the species belonging to the subfamily Hemileucinae recorded for Ecuador. Later on the publication of the catalogue on the Ecuadorian Saturniidae by LEMAIRE & VENEDICTOFF (1989), some papers have been published with descriptions of new taxa from Ecuador or where further distributional data were given. Among them, the recent exhaustive contribution to the knowledge of Hemileucinae by LEMAIRE (2002) includes many information regarding also the distribution of Ecuadorian species. Probably only a single criticism can be addressed to this contribution namely the lack of several published distributional records not only for the Ecuadorian Hemileucinae. In contrast, the recently booklet published by PIÑAS & MANZANO (2003) includes a long series of misidentifications hence his usefulness is questionable (RACHELI, 2004).

The aim of this checklist is to present a synthesis of all the available distributional data based on reviews of the recent literature and on material examined in private and public collections. A total of 199 Hemileucinae taxa recorded for this country are listed mainly according to the arrangement proposed by LE-

203-223 An update 13/6/77 18:37 Página 204

MAIRE (2002). Few modifications are introduced but all the species are listed according to the Biological Species Concept even if the application of this species concept is unsatisfactory for different reasons (for alternative views on the species concepts and criticisms to the Biological Species Concept see WHEELER & MEIER, 2000). In general, the present paper is not suitable to introduce radical modifications of the Lemaire's arrangements but the significative example for the genus *Automerina* Michener, 1949 confirms that some of them must be reviewed (see below). Further, comments are also provided for some species-groups such as *Automeris banus argentifera* Lemaire, 1966 and *A. banus proxima* Conte, 1906, and *Automeris innoxia* (Schaus, 1906) and *A. pomifera* Schaus, 1906 according to their respective current arrangements.

For the most common species only the record for the province is given. In several cases, the provincial record is here reported for the first time. Additional information is given only for some of the most uncommon, little-known or rare species. Furthermore, the presumed female of *Meroleuca* (*Meroleucoides*) *albomaculata* (Dognin, 1916) is described for the first time. In discussing some doubtful or unconfirmed records of Ecuadorian Hemileucinae, *Molippa placida* (Schaus, 1921) is reported for the first time for Peru.

Abbreviations and format for species account

The following abbreviations are used for the Ecuadorian provinces (Fig. 1): Carchi (CA); Imbabura (IM); Esmeraldas (ES); Sucumbíos (SU); Orellana (OR); Pichincha (PI); Napo (NA); Cotopaxi (CO); Manabí (MA); Los Ríos (LR); Bolívar (BO); Chimborazo (CH); Tungurahua (TU); Pastaza (PA); Guayas (GU); Cañar (CN); Morona-Santiago (MS); Azuay (AZ); El Oro (EO); Loja (LO); Zamora Chinchipe (ZC).

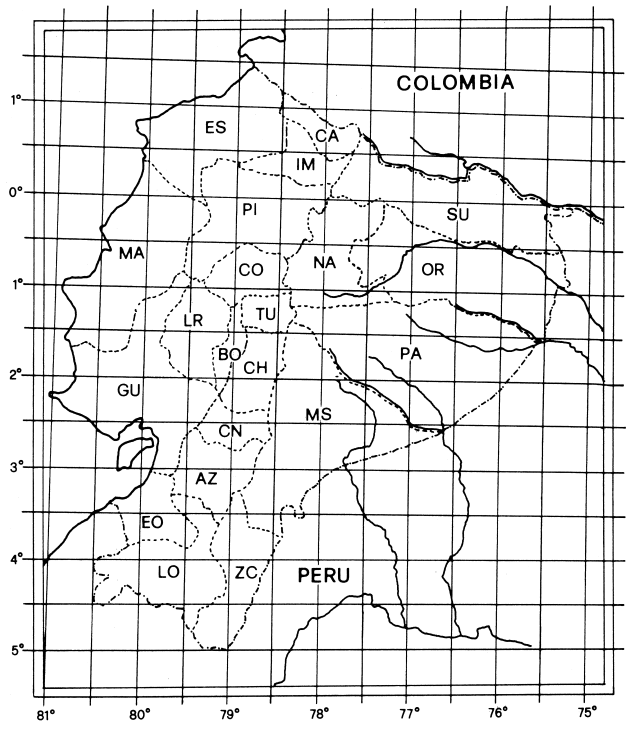

Fig. 1.– The map of Ecuador and his provinces.

203-223 An update 13/6/77 18:37 Página 205

Each record under "Distribution" refers to the provincial record for each listed taxon. The symbol "?" refers to doubtful records based on old and/or unverified records.

All the additional notes reported for some species, including the description of the presumed female of *Meroleuca* (*Meroleucoides*) *albomaculata* (Dognin, 1916), are based on material stored in the collection of the senior author, otherwise stated.

The Hemileucinae of Ecuador

Genus *Lonomia* Walker, 1855

Lonomia columbiana (Lemaire, 1972)
Distribution: Carchi, Pichincha, Cañar.

Lonomia descimoni (Lemaire, 1972)
Distribution: Napo, Orellana, Pastaza, Morona-Santiago, Zamora Chinchipe.

Lonomia achelous achelous (Cramer, 1777)
Distribution: Napo, Pastaza, Morona-Santiago.

Genus *Periga* Walker, 1855

Periga elsa (Lemaire, 1973)
Distribution: Pichincha, Bolívar.

Periga herbini Lemaire, 2002
Distribution: Morona-Santiago, ?Napo.
Remarks: this species has been described by LEMAIRE (2002) on two males from Morona-Santiago, rd. Limon to Méndez km 22.5, 800 m while a further specimen from Napo, rd. Loreto to Coca, km 5, 1300 m has been only tentatively assigned to this species.

Periga extensiva Lemaire, 2002
Distribution: Napo, ?Orellana.
Remarks: this species has been described by LEMAIRE (2002) on two males from Napo, rd. Parayacu to Loreto, km 5, 1350 m. The specimen figured by PIÑAS & MANZANO (2003: fig. 176) could be related to this species.

Periga occidentalis (Lemaire, 1972)
Distribution: Pichincha, Bolívar, Napo, Morona-Santiago.

Periga parvibulbacea (Lemaire, 1972)
Distribution: Napo, Tungurahua, Morona-Santiago.

Periga bispinosa (Lemaire, 1972)
Distribution: Morona-Santiago.
Remarks: LEMAIRE (2002: pl. 5, fig. 7) figured the morph with black bands on both wings collected in Morona-Santiago province. The same morph has been recorded also from Puno and Loreto departments, Peru (see RACHELI & CALLEGARI, 1996, LEMAIRE, 2002).

Periga galbimaculata (Lemaire, 1972)
Distribution: Napo, Tungurahua, Morona-Santiago.

203-223 An update 13/6/77 18:37 Página 206

Periga lobulata Lemaire, 2002
Distribution: Napo, Morona-Santiago.
Remarks: this species has been described by LEMAIRE (2002) from Napo, rd. Baeza to Lumbaquí, Puente Azuela, 1530 m.

Periga inexpectata (Lemaire, 1972)
Distribution: Napo.
Remarks: As LEMAIRE (2002) pointed out, this species is known only on few specimens from Colombia and Ecuador (Napo [*recte* Sucumbíos], Rio Aguarico, Dureno).

Periga angulosa (Lemaire, 1972)
Distribution: Orellana, Morona-Santiago.

Genus *Hirpida* Draudt, 1929

Hirpida gaujoni (Dognin, 1894)
Distribution: Sucumbíos, Napo, Morona-Santiago, Loja.

Hirpida nigrolinea (Druce, 1904)
Distribution: Napo.
Remarks: Recently recorded by LEMAIRE (2002) from Napo (Cordillera de Huacamayos) on specimen(s) collected in 1980. Probably, this species was mixed up with specimens of *gaujoni* and for this reason it was not listed in the catalogue by LEMAIRE & VENEDICTOFF (1989).

Genus *Catacantha* Bouvier, 1930

Catacantha stramentalis (Draudt, 1929)
Distribution: Orellana, Napo, Pastaza, Morona-Santiago, Zamora Chinchipe, Loja.

Genus *Hylesia* Hübner, [1820]

Hylesia nanus (Walker, 1855)
Distribution: Napo, Tungurahua, Morona-Santiago.

Hylesia rex Dyar, 1913
Distribution: Napo, Morona-Santiago.

Hylesia andensis Lemaire, 1988
Distribution: Napo, Morona-Santiago.

Hylesia canitia (Cramer, 1780)
Distribution: Napo, Morona-Santiago.

Hylesia leilex Dyar, 1913
Distribution: Napo, Morona-Santiago.

Hylesia metabus (Cramer, 1775)
Distribution: Napo, Morona-Santiago.

Hylesia cedomnibus Dyar, 1913
Distribution: Sucumbíos.

203-223 An update 13/6/77 18:37 Página 207

Remarks: This species is known only from Sucumbíos province, 68 km E. of Coca, Garzacocha (LEMAIRE, 2002).

Hylesia athlia Dyar, 1913
Distribution: Napo, Morona-Santiago.

Hylesia melanops Lemaire, 2002
Distribution: Napo, Morona-Santiago.
Remarks: This species was described from El Ahuano (NA). The paratypes are from Misahualli (NA) and Rd. Limon to Méndez, km 17 (MS).

Hylesia continua colombiana Dognin, 1922
Distribution: Esmeraldas, Pichincha, Los Ríos, Bolívar, Cañar, Guayas, Azuay, El Oro.

Hylesia rubrifrons rubrifrons Schaus, 1911
Distribution: Pichincha, Cañar.

Hylesia bouvereti Dognin, 1899
Distribution: Imbabura, Pichincha, Sucumbíos, Napo, Morona-Santiago, Zamora Chinchipe, Loja.

Hylesia olivenca Schaus, 1927
Distribution: Napo, Morona-Santiago, Zamora Chinchipe.

Hylesia pauper Dyar, 1913
Distribution: Napo, Morona-Santiago.

Hylesia angulex Draudt, 1929
Distribution: Napo, Morona-Santiago.

Hylesia colombex Dognin, 1923
Distribution: Pichincha. ?Manabí.

Hylesia dalina Schaus, 1911
Distribution: Pichincha, Cañar.

Hylesia roseata Dognin, 1914
Distribution: Napo, Morona-Santiago.

Hylesia umbrata Schaus, 1911
Distribution: Pichincha, Cañar, Bolívar, Los Ríos, Napo, Morona-Santiago.

Hylesia "umbratula" Dyar, 1915
Remarks: LEMAIRE (2002) tentatively assigned some specimens from western Ecuador to this species but this identification needs confirmation because *umbratula* is known to occur only in Mexico.

Hylesia terrosex Dognin, 1916
Distribution: Napo, Tungurahua, Loja.

Hylesia rosacea thaumex Draudt, 1929
Distribution: Pichincha, Cañar, Napo, Pastaza.

203-223 An update 13/6/77 18:37 Página 208

Hylesia teratex Draudt, 1929
Distribution: Napo.

Hylesia mymex Dyar, 1913
Distribution: Pichincha, Cañar, Napo, Tungurahua, Morona-Santiago.

Hylesia subfasciata Dognin, 1916
Distribution: Napo.

Hylesia pallidex Dognin, 1923
Distribution: Morona-Santiago.

Hylesia hamata Schaus, 1911
Distribution: Pichincha.

Hylesia tapareba Dyar, 1913
Distribution: Napo, Morona-Santiago.

Hylesia indurata Dyar, 1910
Distribution: Sucumbíos, Orellana.

Hylesia gigantex gigantex Draudt, 1929
Distribution: Pichincha.

Hylesia gigantex orbana Schaus, 1932
Distribution: Sucumbíos**,** Orellana**,** Napo, Morona-Santiago.

Hylesia annulata Schaus, 1911
Distribution: Pichincha, Los Ríos, Napo, Morona-Santiago.

Hylesia praeda praeda Dognin, 1901
Distribution: Pichincha, Napo, Morona-Santiago, Zamora Chinchipe.

Hylesia index Dyar, 1913
Distribution: Napo, Morona-Santiago.

Hylesia melanostigma (Herrich-Schäffer, [1855])
Distribution: Sucumbíos**,** Orellana, Napo, Morona-Santiago.

Hylesia gyrex Dyar, 1913
Distribution: Napo, Pastaza, Morona-Santiago.

Hylesia aeneides (Druce, 1897)
Distribution: Esmeraldas, Pichincha, Cañar, Napo, Morona-Santiago.

Hylesia moronensis Lemaire, 1976
Distribution: Napo, Morona-Santiago.

Hylesia cottica Schaus, 1932
Distribution: Sucumbíos, Napo.

203-223 An update 13/6/77 18:37 Página 209

Hylesia subcottica Lemaire, 2002
Distribution: Sucumbíos, Napo, Morona-Santiago.

Genus *Hylesiopsis* Bouvier, 1929

Hylesiopsis festiva (Bouvier, 1929)
Distribution: Orellana, Napo.

Genus *Gamelia* Hübner, [1819]

Gamelia abasia (Stoll, 1781)
Distribution: Esmeraldas, Pichincha, Bolívar, Los Ríos, Cañar, Sucumbíos, Orellana, Napo, Pastaza, Morona-Santiago.

Gamelia neidhoeferi Lemaire, 1967
Distribution: Sucumbíos, Napo, Tungurahua, Azuay, Morona-Santiago, Zamora Chinchipe.

Gamelia pyrrhomelas (Walker, 1856)
Distribution: Imbabura, Pichincha.

Gamelia rindgei Lemaire, 1967
Distribution: Sucumbíos, Orellana, Napo, Tungurahua, Morona-Santiago.

Gamelia viettei Lemaire, 1967
Distribution: Napo, Morona-Santiago.

Gamelia rubriluna (Walker, 1862)
Distribution: Napo, Morona-Santiago.

Gamelia denhezi Lemaire, 1967
Distribution: Cañar.

Genus *Hyperchiria* Hübner, [1819]

Hyperchiria nausica (Cramer, 1779)
Distribution: Pichincha, Cañar, Napo, Pastaza, Tungurahua, Morona-Santiago.

Hyperchiria acuta (Conte, 1906)
Distribution: Cañar, Napo, Morona-Santiago.

Genus *Automerina* Michener, 1949

Since his original description (but see RACHELI & CALLEGARI, 1996), *Automerula* Michener, 1949 has been considered a subgenus of *Automerina* (see MICHENER, 1952, LEMAIRE, 1996). More recently, LEMAIRE (2002) considered *Automerula* as a junior synonym of *Automerina* but this arrangement seems unsatisfactory. The same author followed to recognize two subgroups within *Automerina* namely the species belonging to the *Automerina* s. l. and those belonging to the *Automerula***.** Objectively, the description of a new species strictly related to *auletes* by LEMAIRE (2002) himself indirectly confirms that a series of shared characters can be identified in *Automerula* but not in *Automerina*. Further, the characters originally selected by Michener to separate *Automerula* from *Automerina* remain informative at least in part. LEMAIRE (2002) stated that the absence

203-223 An update 13/6/77 18:37 Página 210

of differences in genitalia supports the arrangement of these five species only in two different subgroups within the same genus. However, the examination of male genitalia of these five species reveals only that not so evident shared features are recognizable among them. Furthermore, information about immature characters are presently still incomplete. Except for the taxon *auletes* (see FURTADO, 2002), no other descriptions of the preimaginal instars for the remaining species are available.

Even if LEMAIRE (2002) stated that the characters originally selected to separate these two lineages (*Automerina* and *Automerula*) are secondary, our opinion is that his arguments are more subjective than objective. In the light of the incomplete knowledge (e.g., preimaginal instars, the female of the taxon *vala* is unknown) about the five taxa of these two lineages, the arrangement of LEMAIRE (2002) is followed only in agreement with the arguments pointed out by RACHELI & RACHELI (submitted). In brief, we avoid new taxonomic arrangements not based on sound hypothesis.

Automerina cypria (Gmelin, 1790)
Distribution: Sucumbíos, Napo, Pastaza, Morona-Santiago.

Automerina vala (Kirby, 1871)
Distribution: Orellana, Napo.
Remarks: LEMAIRE (2002) confirmed the validity of this species on the basis of a male from Peru stored in the Natural History Museum, London (see LEMAIRE, 2002: pl. 125, fig. 12) which fits the type specimen, probably lost. LEMAIRE (2002) did not list this species for Ecuador but his presence in this country have been previously reported by RACHELI & RACHELI (1997) and PIÑAS & RACHELI (1998).

Automerina caudatula (Felder & Rogenhofer, 1874)
Distribution: Napo, Morona-Santiago.

Automerina auletes (Herrich-Schäffer, [1854])
Distribution: Pichincha, Sucumbíos, Napo, Morona-Santiago.

Genus *Hypermerina* Lemaire, 1969

Hypermerina kasyi Lemaire, 1969
Distribution: Orellana, Napo.

Genus *Gamelioides* Lemaire, 1988

Gamelioides elainae (Lemaire, 1967)
Distribution: Imbabura, Sucumbíos, Napo.

Genus *Automeris* Hübner, [1819]

Automeris janus (Cramer, 1775)
Distribution: Sucumbíos, Orellana, Napo, Tungurahua, Morona-Santiago, Zamora Chinchipe.

Automeris exigua Lemaire, 1977
Distribution: Pichincha, Cañar.

Automeris metzli (Sallé, 1853)
Distribution: Pichincha.

203-223 An update 13/6/77 18:37 Página 211

Automeris egeus (Cramer, 1775)
Distribution: Orellana, Napo, Morona-Santiago.

Automeris larra (Walker, 1855)
Distribution: Orellana, Napo.

Automeris niepelti Draudt, 1929
Distribution: Esmerladas, Pichincha.

Remarks: This species has been recently recorded for Ecuador by PIÑAS & MANZANO (2003) on the basis of a male from Esmeraldas province. In reviewing their booklet, RACHELI (2004) pointed out that its identification should have to be confirmed. According to some features of the external morphology, it was possible that the specimen figured by PIÑAS & MANZANO (2003) should refer to *niepelti* but its identification would have been possible only through the examination of the genitalia. In any case, the presence of this species in Ecuador is here confirmed on the basis of a single male from Los Bancos (PI) identified through genitalia examination. This male has been collected in sympatry with *Automeris postalbida*. In this context, it must be clarified that some male specimens of *postalbida* are very similar to those of *niepelti* mainly those in worn conditions. It is stressed that genitalia dissection is fundamental in identifying this species. Furthermore, the shape of the harpe of the genitalia of the single male here identified as *niepelti* is very different from that figured by LEMAIRE (2002). At present, we are not able to discuss the variability of the shape of the harpe in the species assigned to the *egeus* species-group. For instance, the dissection of the male genitalia of *Automeris larra* has revealed a high variability in the shape of the harpe within this species. Because the variability of the shape of the harpe was not mentioned by LEMAIRE (2002), further studies for some species of the *egeus* species-group are needed to clarify if it is only a variability or if further unidentified species are involved in this group. Finally, the systematic position of *A. niepelti* is here arranged in relationship to *larra* and not to *postalbida* as proposed by LEMAIRE (2002) according to their shared features in both external and internal morphology.

Automeris boops (Felder & Rogenhofer, 1874)
Distribution: Napo, Tungurahua.

Automeris postalbida Schaus, 1900
Distribution: Pichincha, Cotopaxi, Bolívar, Cañar.

Automeris moresca Schaus, 1906
Distribution: Napo, ?Sucumbíos.

Remarks: This species has been reported by LEMAIRE & VENEDICTOFF (1989) for Lumbaquí (SU) but subsequently this record was not confirmed by LEMAIRE (2002). In contrast, records reported by RACHELI (1995a) are herein confirmed.

Automeris phrynon Druce, 1897
Distribution: Pichincha, Cañar.

Automeris andicola Bouvier, 1930
Distribution: Manabí, Guayas, Loja.

Automeris hamata Schaus, 1906
Distribution: Esmeraldas, Pichincha, Los Ríos, Cañar, Napo, Morona-Santiago.

Automeris duchartrei Bouvier, 1936
Distribution: Cañar, Sucumbíos, Napo, Pastaza, Morona-Santiago, Zamora Chinchipe.

203-223 An update 13/6/77 18:37 Página 212

Automeris jucunda (Cramer, 1779)
Distribution: Pichincha, Napo.

Automeris cinctistriga (Felder & Rogenhofer, 1874)
Distribution: Sucumbíos, Napo, Morona-Santiago.

Automeris fieldi Lemaire, 1969
Distribution: Pichincha, Guayas.

Automeris midea (Maassen, 1885)
Distribution: Orellana, Napo, Pastaza, Morona-Santiago.

Automeris gabriellae Lemaire, 1966
Distribution: Orellana, Napo.

Automeris liberia (Cramer, 1780)
Distribution: Orellana, Napo, Pastaza, Tungurahua, Morona-Santiago, Zamora Chinchipe.

Automeris banus argentifera Lemaire, 1966
Distribution: Esmeraldas, Pichincha, Los Ríos.
Remarks: LEMAIRE (2002) stated that the validity of this taxon is supported by populations (e.g., in Esmeraldas province) which share the silver colouration in both light and dark morphs. However, it must be noted that typical specimens of *proxima* (with few or without silver scales) have been collected at Los Bancos, Alluriquin and Tandapi (PI). According to LEMAIRE (2002), these three sites are located in the range of *argentifera*. In many cases, there are no differences in the external patterns of both light and dark morphs from La Troncal (CN) and Alluriquin (PI). Finally, the sympatric presence of both *argentifera* and *proxima* in Pichincha province suggests that the validity of the former is doubtful or alternatively that they should be considered two different species.

Automeris banus proxima Conte, 1906
Distribution: Pichincha, Bolívar, Cañar.

Automeris amanda subobscura Weymer, 1909
Distribution: Napo, Tungurahua, Morona-Santiago.

Automeris abdominalis (Felder & Rogenhofer, 1874)
Distribution: Imbabura, Pichincha, Chimborazo, Loja, Napo, Morona-Santiago, Tungurahuha.

Automeris curvilinea Schaus, 1906
Distribution: Orellana, Napo.

Automeris denticulata Conte, 1906
Distribution: Orellana, Napo, Morona-Santiago.

Automeris belti zaruma Schaus, 1921
Distribution: Pichincha, Cotopaxi, Cañar, Guayas, El Oro.

Automeris zugana Druce, 1886
Distribution: Esmeraldas, Pichincha, Cañar, Guayas.

203-223 An update 13/6/77 18:37 Página 213

Automeris vomona pichichensis Lemaire, 1976
Distribution: Imbabura, Pichincha, Cotopaxi, Napo, Morona-Santiago.

Automeris annulata Schaus, 1906
Distribution: Napo, Pastaza.
Remarks: see remarks under *A. atrolimbata*.

Automeris atrolimbata Lemaire, 1973
Distribution: Sucumbíos, Orellana, Napo, Pastaza, Morona-Santiago.
Remarks: Although it was originally described as a subspecies of *annulata,* LEMAIRE (2002) raised *atrolimbata* at species rank according to some differences recognized in the preimaginal instars. The external patterns of these two taxa are very similar but *annulata* shows a darker ground colour. No other differences have been outlined. The range of *atrolimbata* extends in Ecuador and Peru while that of *annulata* in French Guyana, Guyana, Venezuela and Brasil (Pará). On the basis of the Ecuadorian material examined from Napo and Pastaza provinces, these two species are sympatric at Rio Llandia (PA). Specimens which refer to *annulata* have been collected at Loreto road (NA) while the typical *atrolimbata* has been recorded at Tena (NA).

Automeris jivaros Dognin, 1890
Distribution: Loja.

Automeris harrisorum Lemaire, 1967
Distribution: Napo, Morona-Santiago, Zamora Chinchipe.

Automeris styx Lemaire, 1982
Distribution: Napo, ?Morona-Santiago.
Remarks: Reported by LEMAIRE & VENEDICTOFF (1989) also for Limón km 22.5 (MS) but this record was not confirmed by LEMAIRE (2002).

Automeris innoxia (Schaus, 1906)
Distribution: Napo, Orellana.
Remarks: Originally (see RACHELI, 1995a), this species has been reported for Ecuador on the basis of a single male collected at Tena (NA). LEMAIRE (2002) followed to assign lowland and montane specimens of this species-group to *Automeris pomifera* Schaus, 1906. This latter species is a typical Andean (montane) species which is very distinct from specimens recorded from lowland sites in western Amazonia (Peru and Ecuador). In all the specimens examined, *A. pomifera* shows the shape of the hindwing more elongated, the ground colour of the hindwing is usually less marked than in specimens from lowlands. On the upperside of the hindwing, the two lines (one is brown-red whereas the other is black) are usually larger and marked with respect to those of lowland specimens. These two lines form a semicircle and the distance between the ocellus and the black line is always the same without variability. In contrast, the lowland specimens show always the ocellus more near to the black line. Furthermore, *A. pomifera* shows on the underside a marked white point in the discal cell which is diagnostic for this species. This feature is absent or not so evident in lowland specimens.

A series of male specimens from Ecuador and Peru are under investigation and this material reveals that some more taxonomic units are involved within this species-group. In the light of our knowledge, *A. pomifera* is a typical montane species whereas lowland specimens from Ecuador and Peru are tentatively assigned to *A. innoxia* or to another undetermined species but, however, they are not conspecific with *A. pomifera*. A study of this species-group is planned and it will include also the available female specimens to have a most complete view about relationships within this subgroup of the genus *Automeris*.

203-223 An update 13/6/77 18:37 Página 214

Automeris pomifera Schaus, 1906
Distribution: Napo, Morona-Santiago.

Automeris schwartzi Lemaire, 1967
Distribution: Orellana, Napo.

Automeris grammodes Jordan, 1912
Distribution: Pichincha, Bolívar, Cañar, Napo, Tungurahua.

Automeris heppneri Lemaire, 1982
Distribution: Napo.

Automeris orestes (Boisduval, 1875)
Distribution: Napo, Tungurahua.

Automeris alticola Lemaire, 1975
Distribution: Carchi, Sucumbíos, Napo, Morona-Santiago.

Automeris caucensis Lemaire, 1976
Distribution: Pichincha.

Automeris napoensis Lemaire, 2002
Distribution: Napo.

Genus *Leucanella* Lemaire, 1969

Leucanella lynx (Bouvier, 1930)
Distribution: Pichincha, Napo, Tungurahua, Morona-Santiago.

Leucanella contempta contempta (Lemaire, 1967)
Distribution: Bolívar, Loja, Sucumbíos, Napo, Pastaza, Morona-Santiago.

Leucanella contei (Lemaire, 1967)
Distribution: Sucumbíos, Napo, Tungurahua, Pastaza, Morona-Santiago.

Leucanella newmani (Lemaire, 1967)
Distribution: Orellana, ?Sucumbíos, Tungurahua.

Leucanella memusoides Lemaire, 1973
Distribution: Loja, ?Guayas.
Remarks: LEMAIRE (2002) pointed out that his knowledge about this species was based on two females only, including the holotype. This species was described from Loja and subsequently reported for San Eduardo (Guayas) by CAMPOS (1931 but see comments by LEMAIRE 2002). A female specimen of this species has been figured also by D' ABRERA (1995) but we are not able to confirm if this is the second known specimen cited by LEMAIRE (2002). More recently, this species has been listed by GRADOS (1999) for Tumbes (northwestern Peru). The male of this species has been recently described by MIELKE et al. (2004) and two further male specimens from northwestern Peru (Piura dept., Abra de Porculla, 1900 m.) are here assigned to this species. The collecting site of these two males is the same of the holotype of *L. piura* Lampe, 2004 which is a synonym of *L. memusoides* as stated by MIELKE et al. (2004).

203-223 An update 13/6/77 18:37 Página 215

Leucanella flammans (Schaus, 1900)
Distribution: Esmeraldas, Pichincha, Cañar.

Leucanella apollinairei (Dognin, 1923)
Distribution: Napo, Morona-Santiago.

Leucanella maasseni (Moschler, 1872)
Distribution: Sucumbíos, Napo, Morona-Santiago.

Genus *Pseudautomeris* Lemaire, 1967

Pseudautomeris antioquia (Schaus, 1921)
Distribution: Pichincha, Cañar.

Pseudautomeris sp.
Distribution: Zamora-Chinchipe.
Remarks: This undetermined species from Zamora Chinchipe is related to both *Pseudautomeris antioquia* and *Pseudautomeris yourii* but also to a new species from central Peru which will be described soon (B. Wenczel and S. Naumann, pers. comm.). At present, the series of male specimens examined in the Staatliches Museum für Naturkunde, Stuttgart, Germany, remain undetermined because preliminary comparisons with the new species from central Peru did not clarify their identification.

Pseudautomeris yourii Lemaire, 1985
Distribution: Napo, Morona-Santiago, ?Zamora Chinchipe**.**
Remarks: Two male specimens from Zamora Chinchipe province stored in the Staatliches Museum für Naturkunde, Stuttgart, Germany, are tentatively assigned to this species. They are sympatric with specimens of the previous undetermined species.

Pseudautomeris pohli Lemaire, 1967
Distribution: Napo, Morona-Santiago.

Pseudautomeris irene irene (Cramer, 1779)
Distribution: Imbabura, Esmeraldas, Pichincha.

Pseudautomeris irene armirene (Strand, 1920)
Distribution: Sucumbíos, Orellana, Napo, Tungurahua, Pastaza, Morona-Santiago.
Remarks: As LEMAIRE (2002) pointed out, the current arrangement of this taxon needs confirmation. In the Napo province (Loreto rd.), two different morphs of this species are sympatric. It seems possible that they refer to two different species.

Pseudautomeris lata (Conte, 1906)
Distribution: Sucumbíos, Orellana, Napo, Morona-Santiago.

Genus *Molippa* Walker, 1855

Molippa nibasa Maassen, 1855
Distribution: Pichincha, Loja.
Remarks: LEMAIRE (2002) tentatively assigned the populations of the western side of the Andes to *nibasa*. This arrangement is herein followed but specimens from Pichincha province (Alluriquin and Tandapi) do not show differences from those from Napo and Morona-Santiago provinces which are ascribed to *simillima*. Also according to the recent revision by LEMAIRE (2002), it is

203-223 An update 13/6/77 18:38 Página 216

very difficult to assign specimens to *nibasa* or to *simillima*. As LEMAIRE (2002) pointed out, his arrangement needs confirmation and it seems possible that new taxa are involved within both *nibasa* and *simillima*.

Molippa simillima Jones, 1907
Distribution: Sucumbíos, Napo, Tungurahua, Morona-Santiago.

Molippa wittmeri Lemaire, 1976
Distribution: Loja.

Molippa azuelensis Lemaire, 1976
Distribution: Napo.

Molippa latemedia (Druce, 1890)
Distribution: Orellana, Napo, Pastaza.

Molippa tusina (Schaus, 1921)
Distribution: Pichincha, Bolívar, Guayas, Cañar.

Genus *Erythromeris* Lemaire, 1969

Erythromeris flexilineata (Dognin, 1911)
Distribution: Morona-Santiago, Loja.

Erythromeris obscurior Lemaire, 1975
Distribution: Imbabura, Cotopaxi.

Genus *Rhodirphia* Michener, 1949

Rhodirphia carminata (Schaus, 1902)
Distribution: Esmeraldas, Pichincha, Cañar.

Genus *Paradirphia* Michener, 1949

Paradirphia andicola Lemaire, 2002
Distribution: Pichincha, Napo, Morona-Santiago.

Paradirphia geneforti (Bouvier, 1923)
Distribution: Imbabura, Pichincha.

Paradirphia oblita oblita (Lemaire, 1976)
Distribution: Sucumbíos, Napo, Pastaza, Morona-Santiago, Zamora Chinchipe.

Genus *Meroleuca* Packard, 1904

Subgenus *Meroleucoides* Michener, 1949

Meroleuca (Meroleucoides) erythropus (Maassen, 1890)
Distribution: Pichincha.

Meroleuca (Meroleucoides) penai Lemaire, 1982 Distribution: Sucumbíos, Napo.

203-223 An update 13/6/77 18:38 Página 217

Meroleuca (Meroleucoides) rectilineata Lemaire & Venedictoff, 1989
Distribution: Sucumbíos, Napo.

Meroleuca (Meroleucoides) nadiana Lemaire, 2002
Distribution: Pichincha.

Meroleuca (Meroleucoides) bipunctata Lemaire, 1982
Distribution: Morona-Santiago.

Remarks: LEMAIRE (2002: 735) recorded *Meroleuca* (*Meroleucoides*) *bipunctata* also from Peru (Huanuco, Carpish Pass, S side, 2700 m, 7-8-VI-1995) based on a female collected by ourselves. The Lemaire's identification of this female has been based on a photo sent some years ago. Following the publication of the monograph of Hemileucinae by LEMAIRE (2002), we noticed that his identification was possibly wrong. Indeed, it is our opinion that this female differs from the females of both *Meroleuca* (*Meroleucoides*) *bipunctata* and *Meroleuca* (*Meroleucoides*) *rectilineata* although it is related to this species-group (to compare the females of these species see LEMAIRE, 2002: pl. 82). It is also possible that this specimen is the unknown female of *Meroleuca* (*Meroleucoides*) *ramicosa* (Lemaire, 1975) which is known to occur in central Peru where also the female reported above has been collected. No further material is available and this specimen is only tentatively assigned to this species-group.

Meroleuca (Meroleucoides) famula (Maassen, 1890)
Distribution: Napo.

Meroleuca (Meroleucoides) laverna (Druce, 1890)
Distribution: Imbabura, Morona-Santiago.

Meroleuca (Meroleucoides) albomaculata (Dognin, 1916)
Distribution: Zamora Chinchipe, Loja.

Remarks: Only few male specimens of this species are apparently known (LEMAIRE, 2002: 740). A new record based on a male from Ecuador, Loja Prov., rd. Loja to Zamora, 2570 m., 23-II-1985 is herein given.

Furthermore, a female which is only tentatively assigned to this species (but it could be also the unknown female of *Meroleucoides laverna)* is described. This specimen is labelled Ecuador, Loja Prov. Loja, October 1999. Forewing length: 31 mm. Antennae, head and thorax black. Abdomen black with yellow rings. Legs pink-reddish. Labial palpi and anal tuft are pink. In the upperside, the ground colour is black with the presence of white spots in the discal cells of both wings, the veins are black. In the margin, the areas between each veins is yellow. Hindwing like the forewing but with more evident yellow in the margin between each veins. Also the costa and the apex are yellow. The white spot in the discal cell is larger in respect to that of the forewing. On the underside, the forewing is entirely black, including the veins, with the presence of the white spot in the cell. The hindwing is like the upperside with the yellow costa from the basal area to the apex. The white spot is present in the cell.

Meroleuca (Meroleucoides) nata (Maassen, 1890)
Distribution: Cotopaxi, Napo, Azuay.

Meroleuca (Meroleucoides) riveti Lemaire, 2002
Distribution: Ecuador, "Canas".
Remarks: LEMAIRE (2002: 741-742) was unable to locate the type locality "Canas".

Meroleuca (Meroleucoides) microstyx Lemaire, 2002
Distribution: Azuay, Morona-Santiago.

203-223 An update 13/6/77 18:38 Página 218

Remarks: This species was known only on the basis of the holotype. A further male specimen from Chiguinda (MS), 3100 m., XI-1999, is here assigned to this species. Comparing this specimen with the holotype figured by LEMAIRE (2002) only minor differences have been noticed in the external morphology and in the genitalia.

Meroleuca (Meroleucoides) bipectinata Lemaire, 2002
Distribution: Zamora Chinchipe.

Genus *Cerodirphia* Michener, 1949

Cerodirphia speciosa (Cramer, 1777)
Distribution: Sucumbíos, Napo, Pastaza, Morona-Santiago, Zamora Chinchipe.

Cerodirphia wellingi roseissima Lemaire, 2002
Distribution: Napo.

Cerodirphia candida Lemaire, 1969
Distribution: Pichincha.

Cerodirphia brunnea brunnea (Draudt, 1930)
Distribution: Orellana, Napo, Zamora Chinchipe.

Cerodirphia mota mota (Druce, 1909)
Distribution: Carchi, Pichincha.

Cerodirphia mota napoensis Lemaire, 1982
Distribution: Napo.

Cerodirphia nadiana Lemaire, 1975
Distribution: Sucumbíos, Napo, Morona-Santiago.

Cerodirphia gualaceensis Lemaire, 2002
Distribution: Morona-Santiago.

Cerodirphia flavoscripta (Dognin, 1901)
Distribution: Azuay, Morona-Santiago, Loja.

Cerodirphia lojensis Lemaire, 1988
Distribution: Loja.

Cerodirphia cutteri (Schaus, 1927)
Distribution: Tungurahua, Azuay, Loja, Morona-Santiago.

Genus *Dirphia* Hübner, [1819]

Dirphia aculea Vuillot, 1892
Distribution: Sucumbíos, Orellana, Napo.

Dirphia brevifurca Strand, 1911
Distribution: Sucumbíos, Orellana, Morona-Santiago.

203-223 An update 13/6/77 18:38 Página 219

Dirphia horca Dognin, 1894
Distribution: Napo, Azuay-Morona Santiago, Zamora Chinchipe.

Dirphia napoensis Racheli & Racheli, 2005
Distribution: Napo.
Remarks: This species is strictly related to the *D. crassifurca* species-groups (see RACHELI & RACHELI, 2005). The records of *Dirphia crassifurca* reported by Lemaire & Venedictoff (1989) for various sites located in the Napo, Pastaza and Morona-Santiago provinces are not listed because based on specimens not examined by ourselves. However, it seems possible that most of them should be assigned to *Dirphia horca* according to the arrangement proposed by RACHELI & RACHELI (2005).

Dirphia abhorca Lemaire, 1969
Distribution: Pichincha, Cotopaxi.

Dirphia subhorca Dognin, 1901
Distribution: Imbabura, Carchi, Pichincha, Cañar.

Dirphia proserpina Lemaire, 1982
Distribution: Pichincha.

Dirphia radiata Dognin, 1916
Distribution: Orellana, Napo.
Remarks: Although LEMAIRE (2002) did not report some Peruvian and Ecuadorian records (see RACHELI & CALLEGARI, 1996; PIÑAS & RACHELI, 1998), the presence of this species in Ecuador is confirmed furthermore with a male specimen from Tena (NA), 500 m., June 2001.

Dirphia avia (Stoll, 1780)
Distribution: Imbabura, Pichincha, Cañar, Sucumbíos, Orellana, Napo, Tungurahua, Pastaza, Morona Santiago, Loja.

Dirphia panamensis fassli (Dognin, 1923)
Distribution: Napo, Morona-Santiago.

Dirphia somniculosa somniculosa (Cramer, 1777)
Distribution: Esmeraldas, Pichincha.

Dirphia somniculosa confluens Bouvier, 1930
Distribution: Sucumbíos, Napo.

Dirphia fraterna fraterna (Felder & Rogenhofer, 1874)
Distribution: Sucumbíos, Orellana, Napo, Morona Santiago.

Dirphia thliptophana thliptophana (Felder & Rogenhofer, 1874)
Distribution: Sucumbíos.
Remarks: The records for this species at Misahualli (NA) reported by RACHELI (1995b) and RACHELI & RACHELI (1998) were misidentifications of the previous species. It was due to the presence of different morphs of *fraterna* in the same site. The variability in both sexes had suggested the presence of both *thliptophana* and *fraterna*. The morph of *fraterna* named *callosa* Draudt, 1930 (see LEMAIRE, 2002) was very common but also further intermediate morphs have been recorded at Misahualli. More recently, true specimens of *thliptophana* from Peru have been examined which confirmed the mi-

203-223 An update 13/6/77 18:38 Página 220

sidentifications of Ecuadorian specimens by RACHELI (1995b). Concluding, the only record for this species is that given by LEMAIRE & VENEDICTOFF (1989).

Genus *Periphoba* Hübner, [1820]

Periphoba hircia (Cramer, 1775)
Distribution: Sucumbíos, Orellana, Napo, Morona-Santiago, Zamora Chinchipe.

Periphoba porioni Lemaire, 1982
Distribution: Napo, Morona Santiago.

Periphoba nigra (Dognin, 1901)
Distribution: Esmeraldas, Imbabura, ?Los Ríos.

Periphoba attali Lemaire & Terral, 1994
Distribution: Loja.

Genus *Dirphiopsis* Bouvier, 1928

Dirphiopsis flora (Schaus, 1911)
Distribution: Pichincha, Sucumbíos, Napo, Pastaza, Morona-Santiago.

Dirphiopsis unicolor Lemaire, 1982
Distribution: Morona-Santiago, Zamora Chinchipe.

Genus *Pseudodirphia* Bouvier, 1928

Pseudodirphia agis agis (Cramer, 1775)
Distribution: Sucumbíos, Napo, Morona-Santiago.

Pseudodirphia regia (Draudt, 1930)
Distribution: Esmeraldas, Imbabura, Pichincha.

Pseudodirphia ducalis Lemaire, 2002
Distribution: Pichincha, Cañar.

Pseudodirphia obliqua (Bouvier, 1924)
Distribution: Sucumbíos, Napo, Morona-Santiago, Zamora Chinchipe.

Pseudodirphia uniformis (Lemaire, 1975)
Distribution: Sucumbíos, Orellana, Pastaza, Morona-Santiago.

Pseudodirphia eumedidoides (Vuillot, 1892)
Distribution: Sucumbíos, Napo, Pastaza, Morona-Santiago, Zamora Chinchipe.

Pseudodirphia thiaucourti Lemaire, 1982
Distribution: Napo, Morona-Santiago, Zamora Chinchipe.

Pseudodirphia andicola Bouvier, 1930
Distribution: Sucumbíos, Napo, Pastaza, Tungurahua, Morona-Santiago, Zamora Chinchipe.

203-223 An update 13/6/77 18:38 Página 221

Pseudodirphia peruviana (Bouvier, 1924)
Distribution: Napo, Morona-Santiago.

Pseudodirphia infuscata (Bouvier, 1924)
Distribution: Sucumbíos, Napo, Morona-Santiago.

Pseudodirphia herbuloti (Lemaire, 1975)
Distribution: Pichincha, Cotopaxi.

Pseudodirphia alticola Lemaire, 2002
Distribution: Loja.

Pseudodirphia biremis (Draudt, 1930)
Distribution: Morona-Santiago, Zamora Chinchipe, Loja.

Pseudodirphia alba (Druce, 1911)
Distribution: Pastaza.

Pseudodirphia menander (Druce, 1886)
Distribution: Imbabura, Pichincha, Cotopaxi, Guayas, Cañar.

On some doubtful or unconfirmed records

In brief, notes on some doubtful or unconfirmed species are given. For example, PIÑAS & MANZANO (2003) listed *Leucanella nyctimene* (Latreille, 1832) for Ecuador but their identification needs confirmation (see also RACHELI, 2004).

Genus *Lonomia*. A single undetermined male specimen from Cocodrilo (NA) which shows a reddish ground colour possibly refers to a new species.

Genus *Hylesia*. Comparing the records by LEMAIRE & VENEDICTOFF (1989) and those by LEMAIRE (2002) for Ecuador, several changes can be noticed. The same is for some records reported by ourselves in the past and those included in the present paper. In many cases, the identifications of *Hylesia* species are very difficult and misidentifications are possible also using the recent revision by LEMAIRE (2002). To reduce the amount of misidentifications reported in the past, only a little part of the available material is listed in the present paper. Further studies are needed to have a most complete picture of the species present in this country.

Genus *Automeris*. Two males specimens of *Automeris* sp. near *latenigra* Lemaire, 1967 from Zamora Chinchipe province have been examined. They show external morphology very similar to that of *latenigra* but the male genitalia are similar to those of both *latenigra* and *jivaros*. For this reason, the identification of these specimens remain doubtful and need further investigations.

Molippa placida (Schaus, 1921) has been reported by LEMAIRE & VENEDICTOFF (1989) for Lumbaquí (SU) but this record was not confirmed by LEMAIRE (2002). No further Ecuadorian specimens have been examined although the presence of this species in the eastern provinces at low elevations is possible. Indeed, this species has been reported by LEMAIRE (2002) only for French Guyana and Brazil (Pará and Amazonas provinces) but it is here recorded for the first time for Peru on the basis of a single male from Madre de Diós department, Manu Natl Park, Salvación, 500 m, V-VI-1996.

Pseudodirphia eumedide (Stoll, 1782) was reported by LEMAIRE & VENEDICTOFF (1989) but it was not confirmed by LEMAIRE (2002). No Ecuadorian specimens have been examined although the presence of this species in Ecuador is possible given his presence in southern Colombia. Indeed, the specimen figured by PIÑAS & MANZANO (2003: fig. 413) as *P. eumedide* from Yasuní (OR) seems to be correctly identified.

203-223 An update 13/6/77 18:38 Página 222

Conclusion

In the present checklist, a total of 199 Hemileucinae taxa are listed for Ecuador and it is not unlike that only a few additional species can be added for this country. These results were obtained following the efforts by NADIA VENEDICTOFF and the field expeditions by LEMAIRE and other collectors (see LEMAIRE & VENEDICTOFF, 1989). More recently, other specialists and amateurs interested in Saturniids, including ourselves, spent their times in regular visits to Ecuador. Although only few of them have published their reports, the present checklist reveals an increased number of taxa if compared with the total of 180 given by LEMAIRE & VENEDICTOFF (1989). Even if the present checklist can result still incomplete, there are no doubts that the Hemileucinae of Ecuador remain the most complete known fauna if compared with those of other South American countries.

Finally, a second checklist is in preparation and it will cover all the taxa of the subfamilies Arsenurinae, Ceratocampinae and Saturniinae recorded for Ecuador.

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Through the years 1993-2004, specimens stored in the collections of the following institutions have been examined: Pontificia Universidad Católica, Quito, Ecuador; Museo de Historia Natural "Javier Prado", Lima, Peru; Naturhistorisches Museum, Wien, Austria; Deutsches Entomologisches Institut, Eberswalde, Germany; Zoologisches Museum, Humboldt Universität, Berlin, Germany; Staatliches Museum für Naturkunde, Stuttgart, Germany; Zoologische Sammlungen des Bayerischen Staates, Munich, Germany. The curators and the staffs of these institutions are deeply acknowledged.

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203-223 An update 13/6/77 18:38 Página 223

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