

**AN UPDATED LIST OF THE BUTTERFLIES OF CHILE (LEPIDOPTERA, PAPILIONOIDEA) INCLUDING DISTRIBUTION, FLIGHT PERIODS AND CONSERVATION STATUS. PART II, SUBFAMILY SATYRINAE (NYMPHALIDAE), WITH THE DESCRIPTIONS OF NEW TAXA**

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**ABSTRACT**

Part II of the updated catalogue of Chilean butterflies lists 38 species of the subfamily Satyrinae (Nymphalidae). Part I\* presented data for 86 species of the families Papilionidae, Pieridae, Nymphalidae in part (Danainae, Heliconiinae, Nymphalinae, Libytheinae) and Hesperidae, whereas Part III will include the family Lycaenidae. It includes the description of one new species and three new subspecies, two new records for Chile, and several nomenclatorial changes. Data on regional distribution (D) and, for the first time, flight periods (FP) and conservation status (C) are included. Many butterfly species occurring in Chile are of special concern for conservation. Several have already apparently disappeared from their biotopes. The fast pace of economic development inducing anthropogenic habitat changes and the loss of natural habitats are endangering the populations of these insects.

\* Plate III of Part I, with figures of new species of the families Nymphalidae and Pieridae from Chile, was omitted from Part I due to a mistake in diagramation. It is included in this contribution.

**Key words:** Chile, flight period, conservation status, Lepidoptera, *Nelia ureta* n. sp., *Argyrophorus monticolens pintatus* n. ssp., *Neomaenas ambiorix obscurator* n. ssp., *Neomaenas humilis ambiatzi* n. ssp., regional distributions, Satyrinae, updated list.

**RESUMEN**

**Lista actualizada de las mariposas de Chile (Lepidoptera, Papilionoidea) incluyendo distribución, periodo de vuelo y estatus de conservación. Parte II, subfamilia Satyrinae (Nymphalidae) con la descripción de un nuevo taxón.** En esta Parte II del catálogo actualizado de mariposas chilenas, se especifican 38 especies de Satyrinae (Nymphalidae). En la Parte I\* se presentaron datos para 86 especies de Papilionidae, Pieridae, and Nymphalidae in part (Danainae, Heliconiinae, Nymphalinae, Libytheinae) y Hesperidae, mientras que la Parte III incluirá la familia Lycaenidae. Se incluyen las descripciones de una nueva especie y de tres nuevas subespecies, nuevos reportes para Chile de dos especies y varios cambios nomenclaturales. Se presentan datos sobre la distribución regional (D), por primera vez sobre el periodo de vuelo (FP) y el estado de conservación (C). Varias especies de mariposas que habitan Chile son de alto interés para la conservación. Algunas de ellas ya aparentemente desaparecieron de sus biotopos. El rápido desarrollo económico induce a cambios antropogénicos de hábitat, con pérdida de ambientes naturales poniendo en peligro las poblaciones de estos insectos.

\*La lámina III de la Parte I, con figuras de nuevas especies para Chile de la familias Nymphalidae y Pieridae fue omitida de la parte I debido a problemas de diagramación, por lo que se incluye ahora.

**Palabras clave:** Chile, distribución regional, listado actualizado de especies, periodo de vuelo, estado de conservación, lepidópteros, *Nelia ureta* n. sp., *Argyrophorus monticolens pintatus* n. ssp., *Neomaenas ambiorix obscurator* n. ssp., *Neomaenas humilis ambiatzi* n. ssp., Satyrinae.

## INTRODUCTION

continued from Part I\*

### **Nymphalidae - Satyrinae**

The Satyrinae of Chile have been studied from the mid-19th century, more intensively from some fifty and forty years ago. The 1950s, 1960s, and early 1970s was a period of intensive taxonomical research by several entomologists, in particular by Kenneth John Hayward, who was, however, dealing mostly with the Argentinian fauna (1953, 1954, 1958a, 1958b, 1958c, 1958d, 1963, 1964 and 1967), Wilhelm Heimlich (1959, 1962, 1963, 1969 and 1972) and José Valentín Herrera and co-workers (1965, 1966 and 1974), with some additions by Peña (1968) and minor contributions of other authors. During this period, the three authors combined, Herrera, Heimlich and Hayward, described overall 13 new genera of Satyrinae from temperate Chile and the neighbouring areas of Argentina, Bolivia and Peru. Several of these genera were monobasic (*Chillanella*, *Stuardosatyrus*, *Neomaniola*, *Pamperis*, *Haywardella*, *Neosatyrus* and *Spinantenna*) and their description was based strongly on their venation pattern. Pycrz and Wojtusiak (2010) explained that owing to an unclear evolutionary factor, the pattern of venation within this group of Satyrinae is extremely variable and even closely related species present important differences, expressed in the anastomosis, disappearing and different relative position of median, radial and cubital veins. It has therefore rather low taxonomic importance, especially at the generic level. Some genera were also described based on rather weak characters of wing colour patterns and shapes. Subsequent papers tried to deal in a number of ways with the proposed entities, therefore the generic status of many species suffered continuous and radical changes. The shifting of species from one genus to another and the synonymizing of genera was a common practice, and kept on tormenting lepidopterists until now. Clarification is to be found in the recent paper by Pycrz (2012) in which the genera *Neomaniola* and *Chillanella*, both monobasic, were sunk as junior synonyms of *Faunula*, or the paper of Zacca *et al.* (in prep.) dealing with the validity of *Pampasatyrus*.

The Neotropical butterflies catalogue (Lamas and Vilorio 2004), which is the primary source of information on the systematics for lepidopterists working on the South American fauna, was, at least in the part dedicated to the temperate Satyrinae, a presentation of the most recent publications with the author's opinion on the validity of some species-level taxa but without any revisional research relative to the generic validity of the taxa. Pycrz (2010) reviewed the taxonomy, evolution and biogeography of the tribe Pronophilini [elsewhere considered as subtribe Pronophilina (Peña *et al.* 2006)] and included a catalogue of species in which several status revisions and new combinations were proposed. Some data on the biology of Chilean Satyrinae were published as well by Herrera and Perez (1989) and Henry (1992). Recently, several papers concerned with selected groups of Chilean Satyrinae were published (Modellel *et al.* 2009; Sanzana *et al.* 2013), including the description of one new species, *Faunula dubii* (Pycrz, 2012). Also, some updated information on the species systematics was included in general papers. Interesting data on Chilean Satyrinae systematics are found in phylogenetical works dealing with the Satyrinae (Peña *et al.* 2006). Research on the phylogenetical relationships of temperate Satyrinae based on more comprehensive gene sequencing is underway by Brower *et al.* (in prep.). However, the first reference to the Chilean Satyrinae is found in the book of Peña and Ugarte (1997) on Chilean butterflies.

In this article, which is the follow-up to the updated catalogue of Chilean butterflies, Part I of which presented a list of 86 butterfly species of the families Papilionidae, Pieridae, Nymphalidae (part) and Hesperidae (Benyamini *et al.* 2014), we list and discuss the systematics, distribution, phenology and conservation status of all the 38 species of the subfamily Satyrinae of Nymphalidae currently known to occur in Chile, including 11 non-nominotypical subspecies. We provide the descriptions of one new species of the genus *Nelia* and three new subspecies of the genera *Neomaenas* and *Argyrophorus*, in addition to 13 proposed nomenclatorial changes. We also report two species for the first time from Chile. Part III of the

\* Plate III missing in publication referred to Part I of this series, is included now.

catalogue will include the species of the family Lycaenidae (Benyamini *et al.* in prep.).

## MATERIAL AND METHODS

### Material

The bulk of the material examined during this study comes mainly from the collections of the authors, in particular the important collection of Dubi Benyamini (DBC, Tel-Aviv, Israel) gathered in Chile and Argentina during the last 24 years; the Chilean specimens from the private collection of Alfredo Ugarte, transferred to the senior author for further examination; material of Pierre Boyer (PBF Le Puy Sainte Réparate, France) collected over 20 years in Chile and Argentina; material of Tomasz Pyrcz collected in 2009 in Chile, and material of Arthur Shapiro collected in Argentina, partly donated to MZUJ (Muzeum Zoologiczne Uniwersytetu Jagiellońskiego, Kraków, Poland). Types of Satyrinae were examined in NHMUK (Natural History Museum, London, UK), MNHNP (Museum National d'Histoire Naturelle, Paris, France) and ZMHB (Zoological Museum of the Humboldt University, Berlin, Germany). Additional material was examined in several private and public collections in Chile, Argentina, Peru and Brazil, including the Museo Nacional de Historia Natural in Santiago de Chile MNHNC, The University of Concepción (Chile); Museo Miguel Lillo in Tucuman (Argentina), Museo de La Plata (Argentina), Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos in Lima (Peru), collections of E. Núñez Busto in Buenos Aires (Argentina), Alfred Moser in Porto Alegre (Brazil) and Ofir Tomer (OTC – Na'ale, Israel).

### Taxonomical methods

Male and female genitalia were removed from abdomens and soaked in 10% KOH solution for five-ten minutes. Subsequently, abdomens were initially cleaned out of soft tissue in water in order to expose genital parts. Female abdomens were stained in chlorazole black in order to identify soft genital parts. Dissected genitalia were dehydrated using ethanol 90% and 95% solutions. A Nikon digital camera DS-Fi1 and Olympus SZX9 stereomicroscope were used for photographing the dissections, which were then processed in Combine ZP and Corel PHOTO-PAINT X3 programs to enhance focus and improve quality. Genital dissections were kept in glycerol vials pinned under corresponding specimens. Genital terminology follows mostly Razowski (1996).

### Conservation Status

The present conservation status *as we perceive it*, is given for all species; many are under constant existing stress. To our knowledge, no butterfly species in Chile has yet been accorded 'listed', 'threatened', or 'endangered' status by either the Chilean national or provincial/regional governments or by any conservation body such as the IUCN. Therefore, we present our own perceptions based on our cumulative experience, which we hope may serve as guidelines for future action. In addition to habitat loss and conversion, there are other recent threats to the Chilean fauna. The introduction of alien predators has resulted in further threats to the existence of the wild species. Examples of such predators include the German and European wasps (*Vespula germanica* and *V. vulgaris*; Hymenoptera: Vespidae), which destroys vast numbers of lepidopterous larvae and occasionally even adults, and microhymenopterous parasitoids (such as the braconid *Cotesia glomerata*, introduced as a biological control agent against the naturalized pest *Pieris brassicae*, but now attacking and suppressing populations of endemic Chilean Pieridae as well). It is our hope that this work will serve Chilean authorities (Ministry of Interior, Ministry of the Environment, Ministry of Agriculture, CONAF, Universities, Municipalities, Regional Management, 'Green' organizations and mining companies) to introduce measures to protect endangered species, thereby helping them to survive. The Chilean butterfly biodiversity, with its very high level of endemism, is a national resource that must be preserved and protected; otherwise it will be destroyed and lost forever.

#### Definition of Conservation status

(note: some of the terms are not mutually exclusive, so that several may apply in a given case):

1. Not endangered
2. Possibly not endangered
3. Migrant
4. Rare. Rabinowitz (1981) argued that species rarity could occur in three different ways, which applies also to Chile: a) restricted geographic distribution, b) narrow habitat distribution, c) low local population abundance
5. Under increasing stress/threat, not yet endangered
6. Endangered
7. Highly endangered
8. Close to extinction
9. Locally extinct (it may or may not exist elsewhere)
10. Data deficient
11. Geographically restricted (endemic)

#### Biology

Butterfly biological data including larval hostplants, myrmecophily, natural enemies, ethology and annual number of broods (which is still far from being complete), will be published in future years. This publication will update and nearly complete Peña and Ugarte's project (Benyamini *et al.* in prep.).

#### Distribution and flight period

For every species, we present all the information known to us in the following order: Distribution, Flight Period and Conservation status. The presented data combines most of the accessible existing historical records and personal knowledge. However, recent records may suggest several changes since some historical data are already outdated, and ongoing climate change is strongly reflected by butterflies, which are among best bioindicators. Typical results are earlier seasonal appearance and altitudinal and latitudinal shifts to upper elevations and higher latitudes respectively. Distributional changes involve species moving to any new favorable biotopes, having been driven from newly hostile/drier zones. The existing data may serve to present and future researchers as a baseline to follow climate change effects on Chilean butterflies.

Flight periods (FP) are denoted by numbers, representing months from 1 (January) to 12 (December). 'FP: 1-12' means flight period the whole year around, but usually in warm preferred localities.

Region numbers are presented in Roman numerals I (first), II (second) etc. New regions numbers XIV and XV and many recently published maps, which are inconsistent with one another, cause great misunderstandings. To eliminate this, we provided a relevant map with a list of Regions - Plate II in Part I (Benyamini *et al.* 2014).

#### List of Regions from North to South:

- Región de Arica y Parinacota (XV)
- Región de Tarapacá (I)
- Región de Antofagasta (II)
- Región de Atacama (III)
- Región de Coquimbo (IV)
- Región de Valparaíso (V)
- Región Metropolitana (13)
- Región del Libertador Bernardo O'Higgins (VI) (= Región de O'Higgins)
- Región del Maule (VII)

Región del Bío Bío (VIII)  
 Región de la Araucanía (IX)  
 Región de los Lagos (XIV)  
 Región de los Ríos (X)  
 Región de Aisén del General Carlos Ibáñez del Campo (XI) (=Región de Aisén).  
 Región de Magallanes y Antártica Chile (XII) (=Región de Magallanes)

#### Endemism

Chile is well-known for solid natural isolating barriers: the high mountain chain of the Andes reaching almost 7000 meters – known as ‘the continental divide’, and the Atacama absolute desert in the north. Both have contributed to the remarkably high endemism of the Chilean flora and fauna, including butterflies, making Chile an “island” in a biogeographical sense. The overall level of endemism for butterflies is about 25%. Endemic species to Chile are marked “11”.

### LIST OF SPECIES

#### Nymphalidae

#### Satyrinae

#### 87. *Argyrophorus antarcticus* (Mabille, 1885), (Pl. IV, H)

*Chionobas antarcticus* Mabille, 1885: 56.

*Cosmosatyrus antarcticus* (Mabille); Gaede, 1931: 474.

*Palmaris antarcticus* (Mabille); Lamas & Vilorio, 2004: 217.

*Argyrophorus antarcticus* (Mabille); Pyrcz, 2010: 216.

D: XI-XII (penetrating from Santa Cruz, Argentina); FP: 11-12; C: 1.

**Comments:** This taxon is treated here as a separate species. It is, however, morphologically closely related to *A. monticolens* (Butler), from which it differs mostly by the considerably smaller size, in a somewhat similar way as other southern subspecies such as *A. chiliensis magallanicus* Herrera and *Cosmosatyrus leptoneuroides plumbeola* Butler from their nominate subspecies occurring further north. The development of particularly small individuals may be, at least in part, related to particularly harsh climatic conditions in southern Patagonia.

#### 88. *Argyrophorus argenteus* Blanchard, 1852

*Argyrophorus argenteus* Blanchard, 1852: 30.

D: IV–XI; FP: 12-3; C: 1.

- *Argyrophorus argenteus* form *elinoides* Ureta, 1956, syn.

D: VIII-IX, Angol and Nahuelbuta NP, recorded at 120-1000 m; FP: 1; C: 7.

- *Argyrophorus argenteus* form *barrosi* Peña, 1968, syn.; FP: 1, 3; C: 8.

D: Confined to the coastal strip of Tongoy, Elqui province, Coquimbo, IV Region.

**Comments:** D. Benyamini collected a specimen that fits the description of *barrosi* in Baños Morales RM at 2000 m (7.III.1993), which supports our decision to treat this taxon as an individual form of *A. argenteus*. Another possibility that cannot be ruled out is that this morphotype represents a late summer/fall, second partial brood at Tongoy. This coastal extinct population was possibly the northern limit of the species in Cordillera de la Costa, *i.e.* Cerro Roble (Quillota, Valparaíso) Parque Nacional La Campaña.

#### 89a. *Argyrophorus chiliensis chiliensis* (Guérin-Méneville, [1830]), (Pl. IV, A)

*Satyrus chiliensis* Guérin-Méneville, [1830]: pl. 17, figs. 4-5.

*Erebia chilensis* [sic] Guérin-Méneville; Doubleday. 1844: 127.

*Hipparchia chilensis* [sic] Guérin-Méneville; Butler, 1868: 58.

*Cosmosatyrus chiliensis* Guérin-Méneville; Elwes, 1903: 280.

*Etcheverrius chiliensis* Guérin-Méneville; Herrera, 1965: 63.

- *Argyrophorus chiliensis wygnankii* (Junge, 1987), **n. syn.**

D: II–IX; FP: 11-3; C: 1.

89b. *Argyrophorus chiliensis elwesi* (Bryk, 1944), (Pl. IV, B)

*Cosmosatyrus chiliensis elwesi* Bryk, 1944: 11.

*Etcheverrius chiliensis elwesi* (Bryk); Lamas & Vilorio, 2004: 216.

*Argyrophorus chiliensis elwesi* (Bryk); Pyrcz, 2010: 216.

D: XI–XII; FP: 12-2, 3?; C: 2.

89c. *Argyrophorus chiliensis magallanicus* Herrera, 1965 (Pl. IV, C)

*Etcheverrius chiliensis magallanicus* Herrera, 1965: 65.

*Argyrophorus chiliensis magallanicus* (Herrera); Pyrcz, 2010: 216.

D: XI–XII & TDF; FP: 12(L)-2, 3?; C: 1.

**Comments:** In Lamas and Vilorio (2004) four subspecies of *A. chiliensis* are identified. Also, Pyrcz (2010), recognized *A. chiliensis wygnankii* Junge as a valid subspecies. However, after having examined a long series of individuals of *A. chiliensis* from central Chile we came to the conclusion that *wygnankii* is merely a weakly defined individual variation of the nominate subspecies occurring within its geographic range. Three other subspecies can, however, be recognized based on geographic distribution and morphological traits. The nominate occurring in central Chile defined by the large size and large FWV reddish or orange-red patch extending from wing base into median area. *A. chiliensis magallanicus* is, on the other hand, identified by the smaller size, elongated wings with acute forewing apex, and an orange patch on the forewing venter, generally restricted to basal and postbasal areas. The third subspecies, *A. chiliensis elwesi*, is intermediate in size, and is the most variable in expression of the FWV pattern, whose patches can be restricted to the wing base or extending into median area, red or bright orange with intermediate colours. It can be also recognized by the darker, blackish hindwing venter ground colour. We do not agree with the opinion of Herrera (1965) who suggested the synonymy of *elwesi* with the nominate subspecies. *A. chiliensis elwesi* occurs in Argentina (Neuquén, Chubút) and penetrates locally into Chile. It occurs in an area where the Andean Cordillera is at its lowest and does not constitute a solid geographical barrier. Individuals from both sides of the Andes are free to disperse and probably do not allow the local population to fix a phenotype. Therefore, this subspecies presents considerable individual variation expressed in its colour patterns. Nevertheless, it is possible to identify it, especially when longer series of individuals are compared. Possibly, a fourth subspecies could be identified in Argentina (Mendoza) but its status requires confirmation (*Argyrophorus chiliensis* n. ssp. Pyrcz, MS, in: Pyrcz, 2010: 216).

90. *Argyrophorus gustavi* (Staudinger, 1898), (Pl. V, G&H)

*Satyrus gustavi* Staudinger, 1898: 353.

*Argyrophorus monticolens gustavi* (Staudinger); Heimlich, 1963: 75.

*Palmaris gustavi* (Staudinger); Lamas & Vilorio, 2004: 217

*Argyrophorus gustavi* (Staudinger); Pyrcz, 2010: 216.

D: XV(Parinacota) - I(Tarapaca); FP: 10(L)-12; C: 1.

- *Argyrophorus gustavi* form *penai* (Hayward, 1967), syn.

D: XV(Tarapaca)-II; FP: 10, 11, 4; C: 1.

- *Argyrophorus gustavi* form *sajama* Weymer, 1911, syn.

D: XV - I(Tarapaca, Parinacota, penetrating from Bolivia at Vn Sajama); FP: 10(L)-12; C: 1.

**Comments:** Upperside colour patterns of this species are highly variable, along the northern Andes in Chile and range from all dark brown specimens (*g. gustavi*) to entirely silver one (form *penai*) with intergrades. This issue has been discussed in some details by Modolell *et al.* (2009), Pyrcz (2012) and Cerdeña *et al.* (2014). It appears that the silver forms dominate at the highest elevations which are most probably related to thermoregulatory advantages of such colours. The figure of “*Palmaris penai*” in Peña and Ugarte (1996) is incorrect and in fact represents a silver form of *Faunula euripides*. Heimlich (1963) considers this taxon

as a subspecies of *A. monticolens*, which is not unfounded, since morphologically the two are similar, except for the considerably smaller size of *A. gustavi*, and geographically present an allopatric distribution. For an unclear reason, Herrera (1965) considers *sajama* as a valid species, despite the fact that Heimlich (1963) clearly states that the types of *sajama* are unrecognizable from *A. gustavi*.

91a. *Argyrophorus monticolens monticolens* (Butler, 1881), (Pl. IV, E)

*Hipparchia monticolens* Butler, 1881: 484.

*Cosmosatyrus monticolens* (Butler); Elwes, 1903: 281.

*Argyrophorus monticolens* (Butler); Heimlich, 1963: 53.

*Palmaris monticolens* (Butler); Herrera, 1965: 69

*Argyrophorus monticolens* (Butler); Pycrz, 2010: 216.

D: VIII-IX; FP: 1–3(E); C: 7.

91b. *Argyrophorus monticolens pintatus* Pycrz & Boyer, **n. ssp.** (Pl. IV, F)

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D: XI (possibly penetrating from Neuquen, Argentina); FP: 12-1; C: 1.

**Diagnosis:** This subspecies is recognized from the nominate by the smaller wingspan, lighter, chestnut instead of coffee brown upperside ground colour and the presence of sandy yellow or golden intravenul stripes on both the FW and HW.

**Description:** MALE: Head: eyes golden brown, lustrous, naked; antennae reaching 3/5 the length of costa, slender, club strongly spatulate composed of 12 flagellomeres, dark brown, densely covered with snow white scales, slightly sparser dorsally and laterally on club; labial palpi 1/2 the length of head, black, covered with thick snow white scales and sparse black hairy scales; collar composed of elongated, snow white and some black scales. Thorax: dorsally black and mostly naked, except lateral grey brown hair, also covering the tegulae, ventrally densely covered with snow white and black hairy scales, legs black, covered with dense greyish scales. Abdomen: blackish brown, dorsally covered with greyish and brown scales, becoming lighter and thicker laterally, ventrally predominantly white. Wings: FW costa slightly arched, apex subacute, outer margin straight, tornal angle shallow. HW elongated, outer margin regular. FW and HW fringes alternately greyish brown and sandy yellow, long. FWD chestnut with a series of 5 – 7 pale orange intravenul stripes extending from postdiscal to submarginal area, enclosing the subapical area a blackish ocellus without any white pupil. HWD orange from wing base to postdiscal and subapical area, gradually turning yellowish, from vein Cu2 to anal margin and along distal margin chestnut, along costa brown, then black and snow white, also along outer margin to vein Cu1, a large black subapical ocellus in M1-M2. HWV pattern a complex mosaic of grey, various shades of brown and snow white scales, forming faint, disrupted median, postdiscal and submarginal lines, a series of five submarginal minute black dots circled with sandy yellow. Male genitalia: Not illustrated. Not differing from the nominate subspecies.

FEMALE: Sexual dimorphism expressed in the lighter and pale colours of both the wing upper and underside, and the more conspicuous yellow orange markings on the upperside. Female genitalia: not illustrated.

**Type material:** Holotype (♂): Argentina, Neuquén, Cerro Wayle base, bunchgrass steppe, 26.I.2008, 2200-2250 m, A. Shapiro leg., MZUJ; Paratypes (25 ♂ and 10 ♀) : 1♂: Argentina, Neuquén, 110 km S Zapala, 14.XI.2006, 1100 m, D. Benyamini leg., MZUJ; 1♂: Argentina, Neuquén, 110 km S Zapala, 14.XI.2006, 1100 m, D. Benyamini leg., DBC; 6♂ and 2♀: Argentina, Neuquén, Cerro Wayle base, bunchgrass steppe, 26.I.2008, 2200-2250 m, A. Shapiro leg., MZUJ; 2♂ and 2♀ : Argentina, Chubút, km 63-68 west Comodoro Rivadavia, 17.XII.2012, D. Benyamini leg., MZUJ; 2♀: Argentina, Chubút, km 63-68 west Comodoro Rivadavia, 17.XII.2012, D. Benyamini leg., DBC; 2♂ : Argentina, Chubút, RN 26 km 66 west Comodoro Rivadavia, 17.XII.2012, 560m, D. Benyamini leg., DBC; 1♀: Argentina, Chubút, Comodoro Rivadavia, 18.XII.2012, 92m, D. Benyamini leg., DBC; 1♂ and 1♀: Argentina, Chubút, Tecka, 10.I.2014, D. Benyamini leg., MZUJ; 1♂: Argentina, Mendoza, Las Leñas, 13.XII.2010, 2050m, D. Benyamini leg.,

MZUJ; 2♂: Argentina, Mendoza, Las Leñas, 13.XII.2010, 2050m, D. Benyamini leg., DBC; 1♂: Argentina, Mendoza, Las Leñas, 5.I.2003, 2060m, D. Benyamini leg., DBC; 1♂ : Argentina, Mendoza, Uspallata – Villavicencio km25, S32°28'927 W69°07'891, 28.XI.2010, 2750 m, P. Boyer leg., PBF; 5♂ and 2♀: Argentina, Mendoza, Uspallata-Mendoza via Villavicencio km33, 10.I.2000, 2800 m, P. Boyer leg., PBF; 1♂: Argentina, Mendoza, Uspallata-Mendoza via Villavicencio, 10.I.2000, 2800 m, P. Boyer leg., MZUJ; 1♂: Argentina, Santa Cruz, Calatafe, 03.XII.2011, D. Benyamini leg., DBC.

**Comments:** *A. monticolens* is a widely distributed species found on both Chilean and Argentinian slopes of the Andes. The individuals occurring on the eastern and western slopes can be fairly easily identified based on their colour patterns, and are considered here as representing two separate subspecies. The nominate, Chilean subspecies has an all dark brown upperside, whereas the Argentinian subspecies, described herein, has noticeable yellowish intravenal stripes. The expression of yellow pattern differs to some extent along the geographical gradient, and the northernmost populations have the largest and brightest yellow markings, however they are invariably present in all eastern individuals. *A. monticolens pintatus* occurs in Chubut, Río Negro, Neuquén and Mendoza, and most probably locally penetrates into Chile from Neuquén where it was observed near the border. The isolated population found in farther north in the province of San Juan of Argentina, although also presents the yellowish dorsal markings, has some distinguishable features, including a different wing shape and yellow patches configuration, and possibly represents yet another separate species, which we however abstain from naming here. Also, the San Juan population occurs in a different life zone, in a sub-desert high elevation puna at 4000 m.

92. *Argyrophorus poaoeneis* (Heimlich, 1959), (Pl. IV, D)

*Pamperis poaoeneis* Heimlich, 1959: 177.

*Argyrophorus poaoeneis* (Heimlich); Pyrcz, 2010: 216.

D: VIII–X; FP: 11-2; C: 4, 10.

**Comments:** This is one of the least known and most enigmatic species of austral Satyrinae. Heimlich's description was partly not correct, particularly the wing venation drawing was erroneous which confused Miller (1968) who even doubted, based on this, if this taxon belongs in the tribe Pronophilini. The monobasic genus *Pamperis* erected by Heimlich is not valid because it bases strongly on the venation pattern. Heimlich described this species from Osorno but since then it has not been collected in Chile. It was rediscovered recently by P. Boyer in Argentina, considerably farther southwards. The illustration of *A. poaoeneis* in Peña and Ugarte (1997) is very unrealistic and does not depict correctly the natural appearance.

93. *Argyrophorus williamsianus* Butler, 1868. (Pl. IV, G)

*Argyrophorus williamsianus* Butler, 1868: 159.

*Cosmosatyrus williamsianus* (Butler); Elwes, 1903: 281.

*Argyrophorus williamsianus* (Butler); Ureta, 1935: 315.

*Stuardosatyrus williamsianus* (Butler); Herrera & Etcheverry, 1965: 76.

*Argyrophorus williamsianus* Butler; Pyrcz, 2010: 216.

D: XII & TDF; FP: 11-2; C: 1.

**Comments:** A number of papers were dedicated to this intriguing taxon. Its generic status has been changing over the years, and it was even used to raise a monobasic genus *Stuardosatyrus* (Herrera and Etcheverry 1965), whereas in the Catalogue of Neotropical Butterflies (Lamas, 2004) it was even placed in a separate section of Satyrinae, within the tropical subtribe Pronophilina, and not in the "Hypocystina" (an incorrect arrangement according to Peña *et al.* 2006) alongside all the other austral Neotropical temperate Satyrinae. Morphological studies demonstrate however that this species is closely related to other members of *Argyrophorus*. Some authors have confused *A. antarcticus* with *A. williamsianus* and considered them as synonymous (see: Herrera and Etcheverry 1965).



94. *Auca barrosi* (Silva, 1917), **comb. reinst.** (Pl. VII, G&H; Pl. X, D; Pl. XI, A, C, E)

*Epinephele barrosi* Silva, 1917: 85, fig. 6.

*Auca barrosi* (Silva); Peña & Ugarte, 1997: 302.

*Neomaenas barrosi* (Silva); Pyrcz, 2010: 230.

- *Auca barrosi delessei* Herrera, 1974: 24, fig. 1 (adult), 2 (male genitalia), 6 (female genitalia), syn.

D: IV-VI; FP: 9(L), 11-2; C: 1, 11.

**Comments:** This species is sympatric in central Chile with *A. coctei* and the two can be easily misidentified, which happened in a number of papers dedicated to the Chilean fauna and indeed in many museums. There are, however, at least three straightforward characters in the colour patterns which enable differentiation of the two species. In particular, the hindwing underside postdiscal line has a different shape. In *A. coctei*, although it is admittedly quite variable, it is usually sharply indented, and even in the individuals where the line is particularly smooth, there is always a sharp notch along the veins M2 or M3. In *A. barrosi* this line is never indented, but instead between the veins CuA1 and CuA2 it is displaced basally. In *A. coctei*, the orange or rufous suffusion on the forewing underside is wider and although also rather variable, in the areas where the two species are sympatric it is invariably wider, and it extends to the subapical ocellus and can surround the entire ocellus. In *A. barrosi* it never extends to the subapical ocellus. Also, in *A. coctei* in central and north-central Chile the species almost invariably possesses one or two minute hindwing underside submarginal pale yellow dots. These are not apparent in *A. barrosi*. There are consistent differences in male genitalia evidenced in the presented figure. Most notably, the valvae of *A. barrosi* are longer, slender, with a ventral protrusion. However, the uncus is shorter and stouter.

The label of the type of *A. barrosi* [examined] bears no specific locality and the specimen is seriously worn, with faded scales. Nevertheless, it can be associated with a geographical area because some diagnostic features are noticeable, in particular the shape and colour of the forewing underside orange patch. It comes from the region of O'Higgins, just south of the Metropolitan area. The southernmost known population of *A. barrosi* occurring in the area of Termas del Flaco, O'Higgins, presents a series of characteristic features of colour patterns. In particular, the forewing underside patch is brick red instead of orange, and restricted basally in size, as well as having a deeper steely-grey hindwing underside ground colour. Despite these differences, considering the fact that this population is not geographically separated from the nominate subspecies, especially given that the type is from a nearby locality, we refrain from naming a subspecies for this population. It occurs at higher elevations than typical *A. barrosi* and may be in fact an ecotype of the latter.

In the original descriptive paper, *Auca delessei* Herrera (1974) is distinguished from *A. coctei* by a series of characters, including chromosome number, wing colour pattern and both sexes genitalia. Its description is extremely elaborate. Unfortunately, Herrera overlooked the fact that this particular species was already described by Silva (1917) under the name *Epinephele barrosi*. The synonymy of the two taxa is beyond any doubt considered the details provided by Herrera, and that the type locality, San Gabriel, Cajón del Maipo near Santiago, falls within the distribution area of *A. barrosi*. *A. delessei* was treated by Lamas and Vilorio (2004) as a synonym of *Auca barrosi*. One male specimen of *A. barrosi* (in DBC) collected by Herrera in San Ignacio in Bío Bío is labelled as "paratype" however its collection date, 1975, before the publication of the descriptive paper shows it is clearly a "pseudotype" of *A. delessei*. Interestingly, Herrera (*op. cit.*) lists *A. delessei* from Coquimbo, Santiago, Valparaíso and O'Higgins, but not from Bío Bío. This individual differs slightly from other examined specimens individuals of *A. barrosi* and represents the southernmost known locality of this species. More specimens are needed to appreciate its possible separate subspecific status.

95a. *Auca coctei coctei* (Guérin - Méneville, [1838]), **comb. reinst.** (Pl. VII, E&F; Pl. X, B; Pl. XI, D&F)

*Satyrus coctei* ([Guérin-Méneville, 1838: 281])

*Auca coctei* (Guérin-Méneville); Hayward, 1953: 30-32.

*Neomaenas coctei* (Guérin-Méneville); Pyrcz, 2010: 230.

- *Satyrus pales* Philippi, 1859: 140-141, **n. syn.**
- *Epinephele pales* (Philippi); Butler, 1881: 454, syn.
- *Auca pales* (Philippi); Hayward, 1953: 32, syn.
- *Satyrus tragiscus* Reed, 1877, pl. III, fig. 3, as syn. of *Auca coctei* Lamas & Vilorio, 2004.

D: IV–XI; FP: 10-3(E); C: 1.

**Comments:** The original description of *Satyrus coctei* is brief and not accompanied by any figure. The designation of the type specimen is a matter of controversy. Lamas (pers. comm.) argues that the specimen in MNHN in Paris is a pseudotype. If the identification of the type of *A. coctei* he proposed ([www.butterfliesofamerica.com](http://www.butterfliesofamerica.com)) is correct, it corresponds well with what is considered in the consulted published sources to be this species. In particular, the shape of the hindwing underside postdiscal line is diagnostic of *A. coctei*. Wings of the designated type are rather rounded, the rufous forewing underside patch and the little-patterned hindwing underside indicate its origin as south-central Chile, most probably the region of Los Lagos where such males are frequently found. This is certainly not an individual from the central or northern part of the range of this species where males have more markedly triangular forewings, rather better marked (meaning contrasting) hindwing underside, and usually orangey rather than rufous forewing underside patches. Sanzana *et al.* (2013) discussed some aspects of morphometry of *Auca coctei*; however, they did not present the characters that allowed an unequivocal identification of the subspecies pattern of this species.

The figure of *Satyrus tragiscus* in Reed (1877) shows a female which most probably represents *Auca coctei coctei*. It was considered as such by Lamas and Vilorio (2004). This figure is not accompanied by any descriptive text.

*Auca pales* (Philippi) has been considered by most consulted authors as a valid species (Hayward, 1953, 1958, 1964; Peña and Ugarte, 1997). Hayward (1953) designated it as the type-species of the genus *Auca*. The type specimens are not available and presumably lost, which makes its straightforward identification more difficult. The original description by Philippi (1859), in Latin and Spanish, is short. It describes the uniform dark brown upperside with two conspicuous rufous hindwing submarginal patches of similar size, forewing underside with a light orange rufous discal patch and a subapical black ocellus with white pupils, all greyish-brown hindwing underside, darker in the discal part. In the Spanish description, Philippi states that this species is similar in most respects to *A. coctei*; however, it differs by the rufous hindwing upperside patches, and mentions additionally a distinguishing character, the lack of a black pupil ringed with lighter colour which is observed, supposedly, in *A. coctei*. There is no mention about any size difference between *A. coctei* and *A. pales*. Both “diagnostic” characters of *A. pales* are subject to an important infrasubspecific, individual variation in the males of *A. coctei*. In fact, in most examined populations there are specimens with an all brown hindwing and with more or less marked submarginal orange (in the northern area of distribution) or rufous (in the central and southern part) patches. They are particularly frequent in specimens coming from the Bío Bío province. On the other hand, they never show in *Auca barrosi*. As for the uniform, grey-brown hindwing underside and the lack of any submarginal white, or in fact, yellowish dot, it is also a matter of individual variation. Although in most individuals there is one minute pale yellow dot in CuA1-CuA2, often accompanied by a second one in CuA2-1A/1B, there are quite often specimens without any trace of it, also in most of the cases in the central and southern part of the range of *A. coctei*. Philippi states that *S. pales* type is from “the interior of Valdivia”, which is the area where the individuals of *A. coctei* corresponding with the description of *S. pales* are frequently found. It is worth mentioning that apparently Philippi considered as typical *A. coctei* the specimens found in central Chile, as he quotes “very common around Santiago”. Whereas in central Chile, the individuals of *A. coctei* have generally more conspicuous hindwing underside submarginal yellowish dots but on the other hand rarely any trace of red on the hindwing upperside. Hence the confusion of Philippi.

Already, Reed (1877) quite correctly suspected that *A. pales* is merely a variation of *A. coctei* occurring in Valdivia and characterized by obsolete hindwing underside spots, among other features specified by Philippi. Herrera (1974) treatment of *pales* was not consistent, as on the one hand he considers it as a

subspecies of *A. coctei* but on the distribution map, *pales* appears widely overlapping with *A. coctei coctei*. In their book, Peña and Ugarte (1997) misidentified “*A. pales*”. They illustrated a female of *A. barrosi*, little marked on the upperside but very diagnostic on the underside. Furthermore, the photo of a specimen in the wild apparently corresponds with *N. humilis* (C. Felder and R. Felder). We hereby, formally synonymize *Satyrus pales* as a subjective junior synonym of *Auca coctei coctei*.

95b. *Auca coctei nycteropus* (Reed, 1877), **comb. reinst., stat. reinst.** (Pl. VII, A&B; Pl. XI, B)

*Satyrus nycteropus* Reed, 1877, pl. III, fig. 2.

*Auca coctei nycteropus* (Reed); Herrera, 1974: 26.

*Auca nycteropus* (Reed); Lamas & Vilorio, 2004: 216.

*Neomaenas nycteropus* (Reed); Pyrcz, 2010: 231.

D: IV; FP: 1–2(mid); C: 1.

**Comments:** This subspecies was named and illustrated by Reed (1877) but there was no accompanying description. In the same paper, for an unclear reason, in several cases the text is not congruent with the names of the figured species. However, the provisions of the Code (ICZN, 12.2) allow the recognition of a name of a species/subspecies published before 1931 if accompanied by an indication, such as a figure. This appears to be the case here. The specimen illustrated as *Satyrus nycteropus*, although as with all the figures of Reed, rather sketchy and to some extent inaccurate, evidently refers to the populations of *Auca coctei* found in the northern part of the range of this species, north of Santiago, and especially in the region of Coquimbo. Individuals of these populations are characterized by the bright, contrasting hindwing underside markings with a prominent whitish suffusion distally to the postdiscal, zigzagging line. Also, the patch on the forewing underside is very wide, covering most of the wing surface, enclosing the subapical ocellus, and is a lighter orange than in more southerly populations.

Herrera (1974) was correct in the treatment of this taxon, as he identified it quite rightly as the northern subspecies of *A. coctei*. However Lamas and Vilorio (2004) considered it as a synonym of *A. coctei coctei*.

95c. *Auca coctei confusa* (Köhler, 1935) **comb. reinst., stat. nov.** (Pl. VII, C&D)

*Epinephele coctei* var. *confusa* (Köhler), 1935: 216; Hayward, 1958: 275, as syn. of *Auca coctei*; Pyrcz, 2010: 213, as syn. of *Neomaenas coctei*.

- *Epinephele nycteropus andensis* Köhler, 1939: 445, Lamas & Vilorio, 2004: 216, syn.

D: Río Negro, Neuquén, Chubút; (may penetrate Chile from Argentinean Neuquén and Chubút); FP: 1(L)-2(mid); C: 1.

D: V-XIV; FP: 11-3; C: 1.

**Comments:** Köhler (1935), in his brief description, states that the specimens from Nahuel Huapi are characterized by the reduced rufous suffusion of the forewing underside and the dull pattern of the hindwing underside. The comparison of several individuals from different localities in Neuquén indicates that effectively these are frequently the characters of Argentinian individuals. More so, they are usually characterized by their smaller size compared with Chilean specimens, even though there is some individual variation and some Argentinian specimens actually equal the size of Chilean *A. coctei*. They have very rarely any reddish scales on the hindwing upperside. The type (lectotype designated by Lamas, 1992) can be examined on the website [www.butterfliesofamerica.com](http://www.butterfliesofamerica.com). Hayward (1958) considers this taxon as a synonym of *A. coctei coctei* but he is obviously mistaken in the identification of the nominate *A. coctei* and, as stated above, he also considers *A. pales* as a valid, separate species. Lamas and Vilorio (2004) follow his arrangement. However, the specimens of *A. coctei* from Neuquén present additionally noticeable differences in their male genitalia compared with Chilean ones. Their valvae are even more elongated and extremely slender, and also the uncus is noticeably longer than in the Chilean specimens. Based on this, *Epinephele coctei* var. *confusa* is considered here as a subspecies of *A. coctei* whose distribution covers the eastern slopes of the Andes and western Patagonian lowlands in the Argentinian provinces of Neuquén and Chubút. Hayward (1958) also mentions *A. coctei* from Río Negro. We examined individuals from Esquel,

Chubút, whose colour patterns agree with the characters of this subspecies. We were unable to examine any specimens from Rio Negro.

*Epinephele nycteropus andensis* is another taxon described by Köhler from Argentina based on the specimens of Breyer collected in Lago Traful and Lago Gutierrez near San Carlos de Bariloche, Río Negro. Surprisingly, Köhler considered it a subspecies of *A. nycteropus*, to which he compared it, as if *nycteropus* was a well-known species, not an obscure taxon of doubtful validity from an unknown Chilean locality. On the other hand, he completely overlooked his own description of *Auca coctei* var. *confusa* published only a couple of years earlier! The type, which can be examined on the website [www.butterfliesofamerica.com](http://www.butterfliesofamerica.com) certainly agrees in all the details with the former subspecies of *Auca coctei*, and is thus considered as the synonym of *A. coctei confusa*. Hayward (1958) considered this taxon as a subspecies of *A. nycteropus* which he believed was a valid species sympatric with *A. coctei* in Argentina.

The southernmost population from Chile Chico (Aisén) presents several distinctive characters. All the examined individuals are small, averaging the size of typical *A. coctei confusa*, with rather elongated forewings with subacute apex, as in *A. coctei confusa*. However, they are particularly brightly patterned on the hindwing underside, due to the prominent suffusion of whitish scales, which makes out the pattern of postmedian, zigzagging lines, hardly noticeable in typical individuals of *A. coctei confusa*. We refrain however for the time being from naming it as a new subspecies until more distribution data, thus more comparison material is made available from Argentina, Neuquén and Chubút in particular.

96a. *Cosmosatyrus leptoneuroides leptoneuroides* C. Felder & R. Felder, [1867]. (Pl. V, B)

*Cosmosatyrus leptoneuroides* C. Felder & R. Felder, [1867]: 495.

- *Cosmosatyrus statia* Weymer, 1911 : 234, pl. 51a, syn.

D: IV–XI; FP: 12-3; C: 1.

96b. *Cosmosatyrus leptoneuroides plumbeola* (Butler, 1868), (Pl. V, C & D?)

*Tetraphlebia ? plumbeola* Butler; 1868: 95, pl. 2.

*Maniola plumbeola* (Butler); Kirby, 1871: 67.

*Cosmosatyrus plumbeolus* [sic] (Butler); Butler, 1881: 459.

*Cosmosatyrus leptoneuroides plumbeola* (Butler); Lamas & Viloría, 2004: 216.

- *Satyrus antarctica* Reed, 1877: pl. 2, fig. 4, syn.

- *Satyrus morania* Berg, 1877: 90, syn.

- *Erebia leptoneuroides* var. *duseni* Staudinger, 1889: 37, syn.

D: XI–XII & TDF; FP: 12-2; C: 1.

**Comments:** The nominate subspecies occurs in central and south central Chile. It is recognized by the considerably larger size than *plumbeola*, expressed in the wider and less elongated wings, and ventral colour patterns. The forms *morania* and *duseni* are considered as synonyms of *C. leptoneuroides plumbeola* and not of the nominate *C. leptoneuroides* as in Lamas and Viloría (2004).

97. *Elina montrolii* (Feisthamel, 1839)

*Satyrus montrolii* Feisthamel, 1839: 18, pl. 20.

*Lasiommata montrolii* (Feisthamel); Westwood, 1851: 387.

*Elina montrolii* (Feisthamel); Blanchard, 1852 : 29.

- *Satyrus lefebvrei* Guérin-Méneville, [1838]: 281, preocc.

- *Elina lefebvrei* [sic]; Butler, 1868 : 64.

- *Elina lefeburei* [sic]; Köhler, 1935 : 216.

D: V–XIV; FP: 12-3(E); C: 6.

98. *Elina vanessoides* Blanchard, 1852

*Elina vanessoides* Blanchard, 1852: 28, pl. 5, figs. 5, 6.

D: VIII–XI; FP: 10(L), 2-3; C: 4, 10.

99. *Faunula dubii* Pyrcz, 2012. (Pl.V, A)

- *Argyrophorus* n. sp.; Pyrcz, 2010: 216.

D: XI-XII; FP: 12(E)-1; C: 4, 6.

**Comments:** This recently described species is known so far only from the type series. D. Benyamini confirmed that it is uncommon in the field but very little can be advanced on its possible conservation status as yet.

100. *Faunula eleates* (Weymer, 1890)

*Pseudomaniola eleates* Weymer, 1890: 108, pl. 3, fig. 12.

*Neomaniola eleates* (Weymer); Forster, 1964, pl. 34.

*Faunula leucoglene eleates* (Weymer); Lamas & Vilorio, 2004: 216.

*Faunula eleates* (Weymer); Pyrcz, 2010: 223.

D: XV-II; FP: 11, 12, 4?; C: 2.

101. *Faunula euripides* (Weymer, 1890), (PL. V, E&F)

*Pseudomaniola euripides* Weymer, 1890: 108, pl. 3, fig. 10.

*Neomaniola euripides* (Weymer); Hayward, 1958: 18.

*Faunula euripides* (Weymer); Cerdeña *et al.* 2014: 220.

- *Pseudomaniola salomonis* Köhler, 1939: 444, syn.

D: I-XV; FP: 10-12; C: 10.

**Comments:** The taxonomy of the species was discussed in some detail by Pyrcz (2010, 2012) and Cerdeña *et al.* (2014), who also confirmed that Peña and Ugarte (1997) illustrated a silver individual variation of *F. euripides* from Antofagasta Region as *Argyrophorus penai*. The synonymy of *Pseudomaniola salomonis* Köhler was established by Lamas and Vilorio (2004).

102. *Faunula leucoglene* C. & R. Felder, 1867

*Faunula leucoglene* C. Felder & R. Felder, 1867: 488.

- *Faunula hypsophila* (Reed, 1877) nomen nudum.

D: XV-IX; FP: 11, 1-3; C: 1.

103. *Faunula patagonica* (Mabille, 1885)

*Erebia patagonica* Mabille, 1885: 55.

*Faunula patagonica* (Mabille); Hayward, 1953: 23.

D: X-XII; FP: 10(L)-1(E), 3?; C: 1.

104. *Faunula stelligera* Butler, 1881

*Faunula stelligera* Butler, 1881: 460, pl. 21, fig. 10.

*Tetraphelbia stelligera* (Butler); Hayward, 1958: 255; Peña & Ugarte, 1997: 284.

*Chillanella stelligera* (Butler); Herrera, 1966: 71; Lamas & Vilorio, 2004: 216; Pyrcz, 2012: 66.

*Faunula stelligera* Butler; Pyrcz, 2010: 223.

D: IV-XIV; FP: 10, 12-3; C: 1.

105a. *Homoeonympha boisduvalii boisduvalii* (Blanchard, 1852), **comb. reinst.**

*Erebia boisduvalii* Blanchard, 1852: 32.

*Homoeonympha boisduvalii boisduvalii* (Blanchard); Lamas & Vilorio, 2004: 216.

*Neomaenas boisduvalii boisduvalii* (Blanchard); Pyrcz, 2010: 230.- *Homoeonympha boisduvalii* form *hahnii* (Mabille, 1885) syn.

D: IX-XII & TDF; FP: 8-12, 2, 4; C: 2.

105b. *Homoeonympha boisduvalii pusilla* C. & R. Felder, [1867], **comb. reinst.***Homoeonympha pusilla* C. Felder & R. Felder, 1867: 487.*Homoeonympha boisduvalii pusilla* (C. Felder & R. Felder); Lamas & Vilorio, 2004: 216.*Neomaenas boisduvalii pusilla* (C. & R. Felder); Pyrcz, 2010: 230.

D: V-VI; FP: 9; C: 10.

106. *Homoeonympha vesagus* (Doubleday, [1849]), **comb. reinst.***Erebia vesagus* [Doubleday, 1849]: pl. 64, fig. 3.*Maniola vesagus* (Doubleday); Kirby, 1871: 64.*Neosatyrus vesagus* (Doubleday); Elwes, 1903: 284, pl. 14, figs. 9, 10.*Homoeonympha vesagus* (Doubleday); Lamas & Vilorio, 2004: 217.*Neomaenas vesagus* (Doubleday); Pyrcz, 2010: 230.- *Neosatyrus ochreivittatus* Butler, 1881: 26, syn.- *Neosatyrus violaceus* Butler, 1881: 463, pl. 21, fig. 8, syn.

D: V-VIII; FP: 9-12, 2?; C: 4, 10, 11.

107. *Nelia calvertii* (Elwes, 1903), (Pl. VI, C; Pl. X, A)*Elina calvertii* Elwes, 1903: 275, pl. 14, fig. 34.*Nelia calvertii* (Elwes); Hayward, 1953: 44.

D: VII-IX; FP: 12-1; C: 2.

108. *Nelia nemyroides* (Blanchard, 1852), (Pl. VI, D; Pl. X, C)*Satyrus nemyroides* Blanchard, 1852: 33, pl. 2, figs. 6, 7.*Epinephele nemyroides* (Blanchard); Kirby, 1871: 78.*Elina nemyroides* (Blanchard); Elwes, 274, pl. 14, fig. 5.*Elina nemyroides* [sic] Blanchard; Gaede, 1931: 482.*Nelia nemyroides* (Blanchard); Hayward, 1953: 44.

D: VI-X; FP: 11-2; C: 2, 4.

109. *Nelia ureta* Pyrcz & Benyamini, **n. sp.** (Pl. VI, A&B; Pl. X, E&F)

urn:lsid:zoobank.org:act:E4F83906-5418-4B0A-AA59-203BFFF0A0C

**Description:** This species differs from *Nelia nemyroides* in the different wing shape, less pronounced FW outer margin below apex, and wider HW; a slightly wider FWV orange patch with less regular inner margins, and the narrower and straighter HWV white band, not produced basally, and also in the lighter, yellowish antennal clubs. It differs from *Nelia calvertii* in the smaller size, the absence of any orange pattern on the HWD, and most notably in different ventral colour patterns, most notably in the lack of any orange brown suffusion in basal half of FWV. Male genitalia most notably differing from other two congeners by the massive uncus and shorter subunci.

**MALE:** Head: eyes black, lustrous, naked; antennae reaching  $\frac{2}{5}$  the length of costa, slender, shaft dorsally yellow brown, ventrally yellow, club wide and strongly flattened composed of 10 flagellomeres, divided laterally into a light yellow and yellow brown part, antennae mostly naked, except for some sparse whitish scales in basal half, and black scales on dorsal surface of clubs; labial palpi  $\frac{1}{2}$  the length of head, black, covered ventrally with long and rather sparse predominantly black and some light grey hair, laterally with similarly coloured but much shorter and somewhat denser hair; collar composed of elongated, steely grey scales. Thorax: dorsally black and mostly naked, except lateral golden brown hair, also covering the tegulae, legs black, femora covered with dense and long greyish hair, tibiae mostly naked, tarsi covered with greyish and white scales. Abdomen: dark brown, dorsally sparsely covered with greyish and brown hair, becoming thicker laterally and ventrally. Wings: FW costa slightly arched, apex blunt, outer margin slightly produced near apex. HW outer margin wavy, anal margin produced at tornus. FW and HW fringes alternately greyish

and white. FWD chestnut with a faint, barely visible orange area in postdiscal area, and a large androconial patch composed of darker scales covering median half of the wing from base beyond discal cell, some sparse lilac scales along costa and at apex. HWD uniform chestnut, hairy in basal part and along anal margin. FWV chestnut with a large, orange, roughly triangular, postdiscal patch extending from vein M1 into space Cu2-1A-2A, enclosing a brown subapical ocellus in space M1-M2, basal area suffused with dark brown, costal area with lilac scales. HWV chestnut with a dark brown suffusion and a concentration of black scales towards wing base, and some lilac and whitish scales dispersed over the entire wing surface with some concentrations along outer margin and along costa, a median white band, with irregular edges, wider and conspicuous at costa, gradually turning narrower and fainter towards wing median area, eventually fading away at vein Cu2. Male genitalia: Uncus massive, slightly longer than tegumen dorsum, with a sharp tip and a basal incision; subunci less than half the length of uncus, with a slightly uplifted sharp tip; pedunculus prominent; valva elongated, approximately the same width throughout, with an irregular dorsal surface and a blunt tip; saccus shallow and wide; aedeagus the length of valva, arched, wider in the middle, proximal entering two-fifths the length of aedeagus, tip sharp, all smooth (Pl. X, E).

FEMALE: Sexual dimorphism slight, expressed in the somewhat wider wings of the female, a shade lighter brown colour of FWD and HWD, and in the slightly more conspicuous orange elements on the FWD. Female genitalia (Pl. X, F): as illustrated.

**Types:** Holotype (♂): Chile, Reg. de Los Lagos, Volcán Calbuco, 03.I.2012, 900-1000 m, D. Benyamini leg., prep. genit. 05/26.04.2013 J. Lorenc, MNHNC; Paratypes: 1♀: Chile, Valdivia, La Unión, 23-29.I.1995, A. Ugarte leg., prep. genit. 256/30.10.2015 J. Lorenc, MZUJ; 1♂: Chile, Reg. de Los Lagos, Volcán Calbuco, 08.I.2014, 1000m, D. Benyamini leg., DBC.

D: X; FP: 12(L)-1; C: 10.

**Comments:** On 8.1.2014 over the timber line of Volcán Calbuco's Valdivian forest, D. Benyamini collected the worn male paratype. At the same time and the same locality fresh males of *Nelia calvertii* (Pl. VI, C) were perching along the climbing track. It was evident that while both species share the same biotope and same *Chusquea* sp. bamboo hostplant, *Nelia ureta* is on the wing earlier in season. On 22.4.2015 Calbuco Volcano erupted sending columns of ashes, local fires around the top and several explosions. This activity lasted until 1.5.2015. It was the 12<sup>th</sup> eruption since 1900; the last one recorded on 1996. At the time of the eruption *N. ureta*'s larval early stages were possibly on the hostplant or on adjacent plants. There was no place to hide and they died from high temperature, fire and were buried under tons of volcanic ashes. However the species passed similar and even larger eruptions and survived or re-established itself from nearby? localities. We leave this issue to be solved by future researchers.

110a. *Neomaenas ambiorix ambiorix* (Wallengren, 1858) (Pl. VIII, C&D; Pl. IX, A)

*Neosatyris ambiorix* Wallengren, 1858: 36.

*Maniola ambiorix* (Wallengren); Kirby, 1871: 67.

*Neomaenas ambiorix ambiorix* (Wallengren); Pyrcz, 2010: 230.

- *Neosatyris minimus* Butler, 1881: 461, pl. 24, fig. 7. syn.

D: V-IX; FP: 11-3, 4?; C: 1.

**Comments:** The nominate subspecies is first of all identified by the russet suffusion covering most of the FWD discal cell, somewhat variable among various populations, generally wider and better noticeable in the northern part of the species range, becoming darker red and more restricted in the south. Also, the FWV double subapical ocellus is particularly large.

110b. *Neomaenas ambiorix obscurator* Pyrcz & Boyer, n. ssp. (Pl. VIII, A; Pl. IX, B)

urn:lsid:zoobank.org:act:C9F0F63D-284B-4E94-A7D0-BBE660647AE0

*Neomaenas* n. sp. Pyrcz, MS; Pyrcz, 2010: 230.

**Description:** This subspecies is recognized by the faint or absent reddish FWV suffusion and small, minute or even absent, FWV subapical ocelli.

Description: MALE: Head: eyes blackish brown, naked; antennae reaching half the length of costa, slender, club composed of 10-11 flagellomeres, considerably wider than shaft, sandy yellow, densely covered with blackish and white scales at each segment base, except for lateral half of club, which is naked; labial palpi two-times the length of head, covered with dense hair of variable length, mostly grey or black, and sparsely white. Thorax: black, sparsely hairy, mostly on the sides; legs covered with dense, medium brown scales, tibiae and, particularly tarsi with numerous black spines along inner side. Abdomen: black, covered laterally and ventrally with dense scales, becoming progressively lighter from chestnut on the sides to brown ventrally. Wings: FW apex blunt, outer margin straight. HW subtriangular; fringes mocha brown, long. FWD uniform chocolate brown, hair in basal part. HWD chocolate brown, with some golden scales along anal margin, sparsely hairy throughout. FWV chocolate brown, in some individuals with a reddish suffusion in median area, mostly in discal cell, and two minute subapical black ocelli with white pupils in M1-M2 and M2-M3. Male genitalia: Plate IX fig. B, not differing from the nominate subspecies.

FEMALE: Hitherto unknown.

**Type material:** Holotype (♂): Argentina, Rio Negro, W of Bariloche, Cerro López, 01.I.2003, 1500 m, D. Benyamini leg., prep. genit 01/26.07.2011 A. Zubek, MZUJ; Paratypes : 1♂: Argentina, Rio Negro, W of Bariloche, Cerro López, 01.I.2003, 1500 m, D. Benyamini leg., prep. genit 04/17.07.2012 J. Lorenc, DBC; 2♂, Argentina, Rio Negro, Puerto Blest, 11.1.1996, prep. genit. 05/31.8.2012 J. Lorenc, P. Boyer leg., MZUJ and PBF.

D: Argentina: Bariloche, Cerro López ; FP: 1(early); C: 10.

**Comments:** Although *N. ambiorix obscurator* has not been reported from Chile so far, its known distribution area west of Bariloche is only a few kilometres from the Chilean border with a continuity of habitats and no topographical barrier, so this subspecies is to be expected to occur in the X Region.

111. *Neomaenas coenonymphina* Butler, 1881

*Neomaenas coenonymphina* Butler, 1881: 454, pl. 21, fig. 4.

D: V-VI; FP: 12-3; C: 6, 11.

112. *Neomaenas edmondsii* (Butler, 1881)

*Argyrophenga edmondsii* Butler, 1881: 457, pl. 21 fig. 6.

*Neomaenas ? edmondsii* (Butler); Elwes, 1903: 279.

*Neomaenas edmondsii* (Butler); Weymer, 1911: 236.

D: VIII-XIV; FP: 12-4(E); C: 1, 11.

113. *Neomaenas fractifascia* Butler, 1881

*Neomaenas fractifascia* Butler, 1881: 455, pl. 21, fig. 3.

- *Neomaenas fractifascia patagonica* Bryk, 1944: 13, pl. 1, fig. 1, syn.

D: VII-XIV; FP: 1-3; C: 1.

114a. *Neomaenas humilis humilis* (C. Felder & R. Felder, [1867]). (Pl. VIII, B; Pl. IX, D)

*Stygnus humilis* C. Felder & R. Felder, [1867]: 489.

*Erebia humilis* (C. & R. Felder); Kirby, 1871: 67.

*Neomaenas ? humilis* (C. & R. Felder); Elwes, 1903: 279.

*Homoeonympha humilis* (C. Felder & R. Felder); Hayward, 1958: 260, figs. 50, 177.

- *Satyris persephone* Reed, 1887, pl. 2, fig. 3, nomen nudum.

- *Erebina simplex* Bryk, 1944: 15, syn.

D: VIII-X; FP: 12-3; C: 1.

**Comments:** *N. humilis* is difficult to recognize from its congener *N. ambiorix* due to the fact that the sympatric populations of the two species have similar colour patterns expressed in particular in the size of the FWV subapical ocelli and the presence or absence of the FWV reddish suffusion. The two species are however easy to separate by comparing their male genitalia.



114b. *Neomaenas humilis ambiomatzi* Pyrcz & Beyamini, **n. ssp.** (Pl. VIII, E&F; Pl. IX, C)

urn:lsid:zoobank.org:act:A4235B0F-FD55-44AD-84CF-E8F89427CA66

**Description:** This subspecies is recognized by the FWV russet suffusion covering most of the FWD discal cell, extending as far as the double subapical ocellus, which is significantly larger than in other populations of this species.

**Description:** only MALE: Head: eyes dark chocolate brown, naked; antennae reaching half the length of costa, slender, club composed of 10-11 flagellomeres, spoon-shaped, orange brown, sparsely with brown scales at each segment base, club naked; labial palpi two-times the length of head, covered with dense hair of variable length, laterally black, ventrally grey-brown. Thorax: black, sparsely hairy, mostly on the sides; legs covered with dense, medium brown scales, tibiae and, particularly tarsi with numerous black spines along inner side. Abdomen: black, covered laterally and ventrally with dense scales, becoming progressively lighter from chestnut on the sides to brown ventrally. Wings: Forewing apex blunt, outer margin straight; fringes mocha brown, long. HW subtriangular; fringes mocha brown, long. FWD uniform chocolate brown. HWD chocolate brown, with a light golden sheen. FWV medium brown, grey-grown along costa and distal margin, a conspicuous reddish suffusion in median area covering most of discal cell, in such specimens a dark brown postdiscal line, in some specimens red orange patch extending to subapical area, and the postiscal brown line is not apparent; a large black subapical ocellus, with a double white pupils in M1-M2 and M2-M3, ringed with pale yellow. HWV mocha brown, turning dark brown towards wing base, a dark brown, zigzagging postdiscal line, in some specimens not apparent; a row of five snow white submarginal dots, edged with black, of variable size among individuals, the largest of all being usually the one in M3-Cu1. Male genitalia (Pl. IX, C): Differ from the nominate subspecies in the slightly longer uncus, thicker in the basal part, and in the dorsal concavity at the junction of tegumen and uncus, otherwise similar to the nominate subspecies.

FEMALE: The female is larger than the male. There is a faint reddish suffusion in the discal cell on the FWD, and along the outer margin of the HWD. HWV is lighter, than in the male, chestnut, otherwise similar.

**Type material:** Holotype (♂): Chile, Bío Bío, Recinto, 02.II.2009, 780-790m, T. Pyrcz leg., prep. genit. 01/19.07.2012 J. Lorenc, MNHNC; Paratypes: 1 ♂: Chile, Bío Bío, Termas de Chillán, 22-25.II.2009, 1350-1370 m, T. Pyrcz leg., prep. genit. 04/01.10.2009 J. Lorenc, MZUJ; 1 ♂: Chile, Maule, Curicó, El Planchón, 01-06.II.2003, 2500 m, D. Benyamini leg., prep. genit. 08/19.07.2012 J. Lorenc, DBC; 1 ♂: Chile, Maule, near Curicó, Siete Tazas, 29.XI.1992, 1100 m, D. Benyamini leg., prep. genit. 02/08.10.2012 J. Lorenc, DBC; 1 ♂: Chile, Talca, Alto Vilches, 05.XII.1999, 1200 m, D. Benyamini leg., prep. genit. 10/15.10.2012 J. Lorenc, MZUJ; 1 ♀: Chile, Bío Bío, Trancas - Aserradero, 22-25.II.2009, 1350-1370 m, T. Pyrcz leg., MZUJ, 2 ♂: Chile, Bío Bío, San Pablo vers Laguna Amarga km3, S36°15'32 W71°25'14, 19.II.2009, 550 m, P. Boyer leg., prep.genit. 04/31.8.2012, J. Lorenc, PBF; 18 ♂ and 3 ♀: Chile, O'Higgins, Cauil - Bucalemu, S34°32'84 W72°01'09, 12.I.2016, 170 m, P. Boyer leg., PBF and MZUJ.

**Etymology:** This subspecies epithet is a composite of *ambiorix*, the sympatric species, and Jess Matz, the American entomologist who accompanied the senior author in his research trip to Chile in 2009.

D: VI-VIII; FP: 11(L)-2; C: 1.

**Comments:** This subspecies occurs in central Chile from the O'Higgins to the Bío Bío regions, where it is sympatric with *Neomaenas ambiorix ambiorix*. It is to be noted that the population from Cañete (P. N. Nahuelbuta area) in southern Bío Bío near the border with Araucanía presents an intermediate phenotype between the nominate and *N. h. ambiomatzi* with typically all brown and red marked individuals coexisting in time and space.

115. *Neomaenas inornata* Elwes, 1903 (Pl. VIII, G)

*Neomaenas inornata* Elwes, 1903: 278, pl. 14, figs. 1, 2.

D: V-XIV; FP: 12-2; C: 2, 5(Valparaíso province), 11.

116a. *Neomaenas poliozona poliozona* (C. & R. Felder, 1867)

*Epinephele poliozona* C. Felder & R. Felder, 1867: 493.

*Homoeonympha poliozona* (C. Felder & R. Felder); Hayward, 1958: 67, fig. 23.

*Neomaenas poliozona* (C. Felder & R. Felder); Heimlich, 1962: 113.

- *Satyryus valdivianus* Reed, 1877, pl. 2, fig. 2, nomen nudum.

- *Satyryus thelxiope* Reed, 1877, pl. 2, fig. 7, nomen nudum.

- *Neosatyryus reedi* ? var. *fuscescens* Butler, 1881: 485, pl. 21, fig. 9, syn.

D: IX-X; FP: 1-4; C: 1, 11.

116b. *Neomaenas poliozona reedi* (Butler, 1881), **stat. rev.** (Pl. VI, G&H)

*Neosatyryus reedi* Butler, 1881: 463, pl. 21, fig. 9.

D: VI-IX Central coastal Araucania; FP: 2; C: 1.

**Comments:** This taxon was synonymized by Pyrcz (2010: 230) with the nominate *N. poliozona poliozona*. Upon the examination of the description and the type specimen, we reached the conclusion that *N. p. reedi* represents the northern subspecies of *N. poliozona* recognized from the nominate subspecies by the HWV colour pattern.

117. *Neomaenas servilla* Wallengren, 1858

*Neomaenas servilla* Wallengren, 1858: 78.

- *Stibomorpha decorata* Butler, 1874: 205; 1874: 179: pl. 62, fig. 3, syn.

D: V-VIII; FP: 11-2, 3(E) in Chillan; C: 5, 11.

118. *Neomaenas simplex* (Butler, 1881)

*Argyrophenga simplex* Butler, 1881: 458.

*Neosatyryus simplex* (Butler); Elwes, 1903: 284.

D: VIII-IX; FP: 2; C: 1.

119. *Neomaenas schajovskoi* (Hayward, 1954). (Pl. VIII, H; Pl. IX, E&F)

*Homoeonympha schajovskoi* Hayward, 1954: 17, fig. 3.

*Homoeonympha shajovskoi* [sic]; Hayward, 1958: 261, figs. 51, 178, 179.

*Neomaenas schajovskoi* [sic]; Pyrcz, 2010: 230.

- *Satyryus chiloensis* Reed, 1877: pl. 3, fig. 8, nomen nudum.

D: X-XIV; FP: 12; C: 10.

D: X, (Argentina, Cero López, Barriloche); FP: 12(M)-1(E); C: 2.

**Comments:** This species is reported for the first time formally here from Chile. It worth pointing out that in Reed's (1877) article there is an illustration signed « *chiloensis* » which implies it occurs in the Chilean Chiloe archipelago. Unfortunately, it was not followed by any descriptive text, and consequently was considered by Lamas and Vilorio (2004) (ICZN, Art. 12) as a *nomen nudum*. However, « *chiloensis* » was treated under *Neomaenas thelxiope*. Pyrcz (2010 : 230) considered *chiloensis* as a synonym of *Neomaenas thelxiope* while here *thelxiope* Reed, is treated as a synonym of the nominate *N. poliozona poliozona*. We positively identified *chiloensis* as representing *Neomaenas schajovskoi* (based on the original figure and a specimen identified as « *chiloensis* » in the NHM (illustrated by d'Abrera, 1988). Therefore, the presence of *N. schajovskoi* in Chile was already detected over 140 years ago.

120. *Neomaenas wallengrenii* Butler, 1881

*Neomaenas wallengrenii* Butler, 1881: 456, pl. 21, fig. 5.

- *Neomaenas ljungerae* Bryk, 1944: 12, pl. 1, fig. 8, syn.

D: VIII-XIV; FP: 11(L)-3(E); C: 10.

121. *Quilaphoetus janirioides* (Blanchard, 1852), **comb. reinst.**

*Satyrum janirioides* Blanchard, 1852: 34, pl. 2, fig. 8.

*Elina janirioides* (Blanchard); Heimlich, 1972: 168, fig. 24.

*Quilaphoetus janirioides* (Blanchard); Herrera, 1991: 277.

*Neomaenas janirioides* (Blanchard); Pyrcz, 2010: 230.

- *Satyrum limonias* Philippi, 1859: 1091, syn.

- *Epinephele dryas* C. Felder & R. Felder, 1867: 492, syn.

- *Epinephele blanchardii* Kirby, 1871: 78, syn.

- *Epinephele* [sic] *limonias* var. *quinquepunctata* Silva, 1916: 32, syn.

- *Epinephele janirioides* var. *quinquepunctata* Silva, 1916: 34, fig. 4, syn.

D: IV–XIV; FP: 11-3(E); C: 2, 5(in Choapa province).

**Comments:** Hayward (1953) included *Satyrum janirioides* Blanchard in the newly described genus *Auca*. It was later transferred to the new genus *Quilaphoetus* Herrera (Herrera, 1966), alongside *Q. monachus* (Blanchard). Pyrcz (2010) suggested *Quilaphoetus* should be treated alongside several other weakly differentiated genera as a junior synonym of *Neomaniola*. However, subsequent research proved that the two species form a monophyletic clade defined by one outstanding synapomorphy, the hairy eyes, naked in all other temperate Neotropical Satyrinae (Hodór and Pyrcz, unpubl.). Therefore, they are transferred here formally back to *Quilaphoetus* considered as a valid genus.

122a. *Quilaphoetus monachus monachus* (Blanchard, 1852), **comb. reinst.** (Pl. VI, F)

*Satyrum monachus* Blanchard, 1852: 35.

*Satyrum monachus* [sic] Blanchard; Reed, 1877: pl. 2, fig. 5.

*Stibomorpha monachus* (Blanchard); Butler, 1874: 179, pl. 62, fig. 2.

*Epinephele monachus* [sic]; Elwes, 1903: 276.

*Neomaenas monachus* (Blanchard, 1852); Hayward, 1958: 265.

*Quilaphoetus monachus* (Blanchard); Herrera, 1966: 69; Lamas & Viloría, 2004: 217.

*Neomaenas monachus* (Blanchard); Pyrcz, 2010: 230.

- *Pedaliodes lugubris* Butler, 1870: 25, syn.

- *Satyrum luctuosus* Reed, 1877: pl. 2, fig. 5, nomen nudum.

- *Maniola monachus sacerdos* Bryk, 1944: 14.

D: VIII-IX; FP: 1(L)-4(E); C: 1.

122b. *Quilaphoetus monachus valdiviae* (C. Felder & R. Felder, 1867), **comb. reinst., stat. reinst.** (Pl. VI, E)

*Epinephele valdiviae* C. Felder & R. Felder, 1867: 493.

*Quilaphoetus monachus valdiviae* (C. Felder & R. Felder, 1867); Lamas & Viloría, 2004: 217, as syn. of nominate *Q. monachus*.

- *Satyrum luctuosus* Reed, 1877: pl. 2, fig. 5, nomen nudum.

D: IX-XI, XIV; FP: 1-2; C: 1.

**Comments:** Hayward (1958), and subsequently Lamas and Viloría (2004: 217) and Pyrcz (2010: 230) considered this taxon as a synonym of the nominate *Neomaenas monachus*. However, *Epinephele valdiviae* was described from Valdivia in the central and southern part of the range of this species where local populations are characterized by the consistently darker wing colour pattern and smaller size, and are therefore recognizable as a subspecies.

123. *Spinantenna tristis* (Guérin-Méneville, 1830)

*Argynnis tristis* Guérin-Méneville, 1830: pl. 15, fig. 5.

*Satyrum tristis* (Guérin-Méneville), 1830: 281.

*Spinantenna tristis* (Guérin-Méneville); Hayward, 1953: 38, figs. 3, 62, 84.

- *Satyrum flora* Philippi, 1859: 267, syn.

- *Pedaliodes oaxes* Butler, 1870: 25, syn.
  - *Stibomorpha oanes*[sic] Butler; Kirby, 1877: 702, syn.
  - *Stibomorpha reedii* Butler, 1877: 735, syn.
- D: VII-X; FP: 12-3; C: 2, 11.

124. *Tetraphlebia germainii germainii* C. Felder & R. Felder, 1867  
*Tetraphlebia germainii* C. Felder & R. Felder, 1867: 488  
 - *Epinephiele*[sic] (*Satyrus*) *promaucana* Reed, 1877: pl. 3, fig. 5, syn.  
 D: RM-VIII; FP: 12-2(E), 4?; C: 4, 5.

## CONCLUSIONS

**Composition of the fauna** - Part II of the Chilean list includes 38 species of Nymphalidae (Satyrinae). Estimating the number of species of Lycaenidae which will appear in Part III as 67 we reach at a total of 191 species recorded in Chile.

Comparing our new check-list with the catalogue in Peña and Ugarte (1997), a further 22 species are added to previously reported 169 species (Table 1, updated). Importantly, the number of new species to Chile is actually 34 as 12 species are removed from the catalogue, either synonymized, or representing historical mistakes of single records of Lycaenidae species. An explanation of the treatment of questionable species is given in Part III.

Family	Num. of species	Num. of species (%)	Num. of species (Peña & Ugarte, 1997)
Papilionidae	1	0.52	1
Pieridae	33	17.28	29
Nymphalidae (Part 1 - Danainae, Heliconiinae, Nymphalinae, Libytheinae)	15	7.85	11
Nymphalidae (Part 2 - Satyrinae)	38	19.90	34
Lycaenidae*	67	35.08	59
Hesperiidae	37	19.37	35
Total	191	100	169

TABLE 1 (Part I update) – Composition of the Chilean butterfly families (\*estimated number)

### Part II summary :

**Butterfly distribution in 15 regions in Chile** – Table 2 and Fig. 1 list the number of species per region; maximum number of species are 25 in Bio Bio VIII Region, 21 in Araucania, 18 in Maule and Los Lagos. We get over 10 species between 31° and 42° latitude south. The minimum number of species flying in Atacama (III Reg.) is 2 species, Tarapaca (I Reg.) 3 species, Parinacota (XV) and Antofagasta (2) 4 species each.

**Flight period of the species** – this is depicted in months in Table 3 and Fig. 2; no satyrine are on the wing between May and July, one species flies in August and 2 in September. The numbers rise quickly to 17 in November and 31 in December; higher than any other butterfly family in Chile - the Pierids are second with 25 species. Then the numbers decline; 28 in January, 26 in February and 21 in March. It is important to note that during their annual pick activity from November to March each species produce usually only one

generation. Interestingly, there is frequently an apparent temporal exclusion between the allied or externally similar sympatric species, in which case their flight period does not overlap or overlap just marginally. Such a phenomenon has been noted, for example, in the case of *Auca coctei* and *A. barrosi*, and *Neomaenas humilis* and *N. ambiorix*.

**Conservation status** – is summarized in Table 4 where:

65.8% (25 species) and 21.1% (8 species) respectively are not endangered or possibly not endangered;

15.8% (6 species) are rare;

26.3% (10 species) are under increasing stress (categories 5, 6, 7, and 8);

No satyrid is known to be extinct;

No satyrid is known to be a migrant;

For 21.1% (8 species) we do not have sufficient data and 21.1% (8 species) are geographically restricted = endemic. The Chilean satyrids present several exceptional values; as many as 81.6% are considered as not endangered and possibly not endangered, which is considerably more than the estimations for the next family – the Hesperiiidae with combined values of 56.7%. No single species is known to be a migrant or extinct. A total of 8 satyrid species are endemic (21.1%), which is the highest value among the Chilean butterflies, followed by the Hesperiiidae with 5 species (13.5%) and the Pieridae 1 (2.9%). In the category of data deficiency, the Satyrinae 21.1% (8 species) are next to the Pieridae 38.2%, (13) and the Hesperiiidae 29.7% (11).

## Latitude and Region

Papilionidae	18.5° - Arica-Parinacota (XV)	20° - Tarapacá (I)	24° - Antofagasta (II)	27.5° - Atacama (III)	30.5° - Coquimbo (IV)	33° - Valparaíso (V)	33.5° - Metropolitana (13)	34.5° - O'Higgins (VI)	35.5° - Del Maule (VII)	37° - Del Bío Bío (VIII)	38.5° - De la Araucanía (IX)	40° - De los Lagos (XIV)	42° - De los Ríos (X)	46° - De Aisén (XI)	52° - Magallanes (XII)	Rapa Nui (Isla Pascua)
Papilionidae %	0.0	0.0	0.0	100	100	100	100	100	100	100	0.0	0.0	0.0	0.0	0.0	0.0
Pieridae	12	8	11	8	10	11	10	9	9	10	11	8	5	3	6	0
Pieridae %	35.3	23.5	32.4	23.5	29.4	32.4	29.4	26.5	26.5	29.4	32.4	14.7	8.8	17.6	0.0	0.0
Nymphalidae (Part 1)	6	3	2	4	7	6	7	7	8	7	7	6	5	4	4	1
Nymphalidae (Part 1) %	40.0	20.0	13.3	26.7	46.7	40.0	46.7	46.7	53.3	46.7	46.7	40.0	33.3	26.7	26.7	6.7
Nymphalidae (Part 2)	4	3	4	2	9	15	15	17	18	25	21	18	12	9	7	0
Nymphalidae (Part 2) %	10.5	7.9	10.5	5.3	23.7	39.5	39.5	44.7	47.4	65.8	55.3	47.4	31.6	23.7	18.4	0.0
Hesperiidae	17	7	8	8	10	14	16	14	16	18	15	14	10	7	2	0
Hesperiidae %	45.9	18.9	21.6	21.6	27.0	37.8	43.2	37.8	43.2	48.6	40.5	37.8	27.0	18.9	5.4	0.0
total	39	21	25	22	36	46	48	47	51	60	54	46	32	23	19	1
total %	20.6	11.1	13.2	11.6	19.0	24.3	25.4	24.9	27.0	31.7	28.6	24.3	16.9	12.2	10.1	0.5

TABLE 2 (updated from part I) - Butterfly species distribution in Chilean political regions

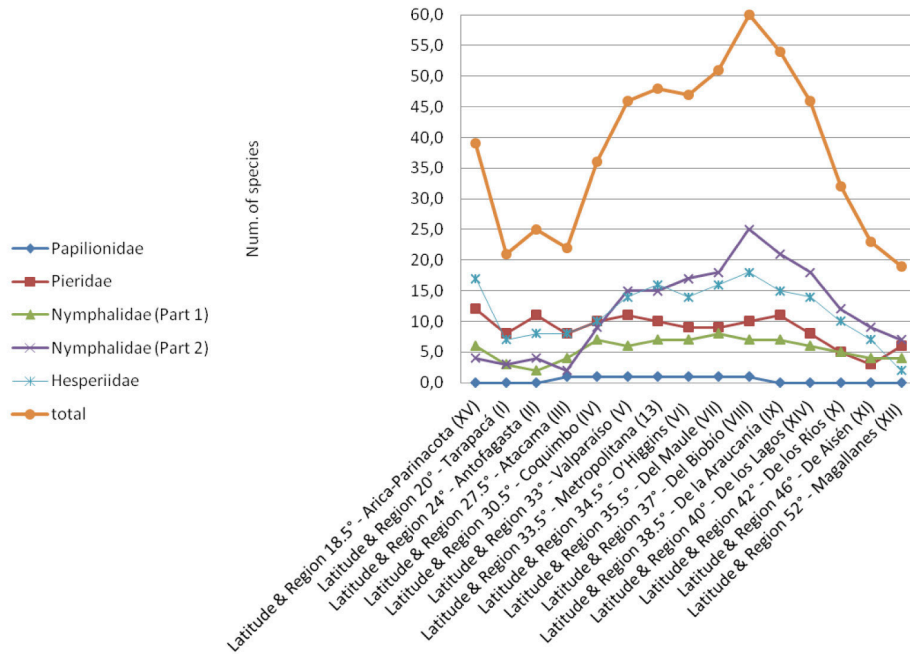


FIGURE 1. (Figure 3 updated from part I) Butterfly species distribution in Chilean political regions

	Flight Period											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Papilionidae	1	1	1	1	1	1	1	1	1	1	1	1
Papilionidae %	100	100	100	100	100	100	100	100	100	100	100	100
Pieridae	29	30	22	19	8	5	6	7	11	14	16	25
Pieridae %	85.3	88.2	64.7	55.9	23.5	14.7	17.6	20.6	32.4	41.2	47.1	73.5
Nymphalidae (Part 1)	12	12	9	8	3	2	1	4	4	7	8	10
Nymphalidae (Part 1) %	80.0	80.0	60.0	53.3	20.0	13.3	6.7	26.7	26.7	46.7	53.3	66.7
Nymphalidae (Part 2)	28	26	21	7	0	0	0	1	2	8	17	31
Nymphalidae (Part 2) %	73.7	68.4	55.3	18.4	0.0	0.0	0.0	2.6	5.3	21.1	44.7	81.6
Hesperiidae	30	31	25	14	4	2	2	4	7	15	19	21
Hesperiidae %	81.1	83.8	67.6	37.8	10.8	5.4	5.4	10.8	18.9	40.5	51.4	56.8
total	100	100	78	49	16	10	10	17	25	45	61	88
total %	53	53	41	26	8	5	5	9	13	24	32	47

TABLE 3. (updated from part I) - Months flight period of Chilean butterflies

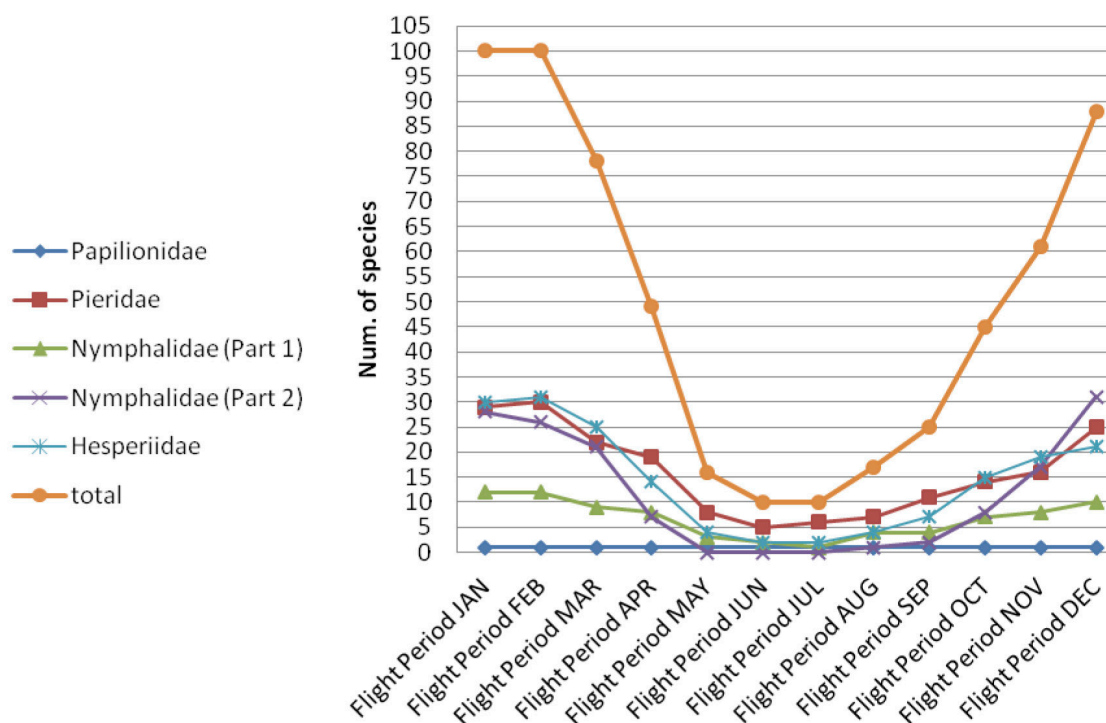


FIGURE 2. (Figure 4 updated from part I) - Flight period of Chilean butterflies by month

TABLE 4. (updated from part I) - Summary of butterfly conservation status in Chile

	Conservation status										
	1	2	3	4	5	6	7	8	9	10	11
Papilionidae	1										
Papilionidae %	100										
Pieridae	10	2	4	12	2	1	1		4	13	1
Pieridae %	29.4	5.9	11.8	35.3	5.9	2.9	2.9		11.8	38.2	2.9
Nymphalidae (Part 1)	6	2	10	6						1	
Nymphalidae (Part 1) %	40.0	13.3	66.7	40.0						6.7	
Nymphalidae (Part 2)	25	8		6	4	3	2	1		8	8
Nymphalidae (Part 2) %	65.8	21.1		15.8	10.5	7.9	5.3	2.6		21.1	21.1
Hesperidae	14	7	2	3		8		1		11	5
Hesperidae %	37.8	18.9	5.4	8.1		21.6		2.7		29.7	13.5
total	56	19	16	27	6	12	3	2	4	33	14
total %	30	10	8	14	3	6	2	1	2	17	7



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## Appendix, Catalogue (including subspecies)

Column 1, List of Species Continued from part I. Column 2, Satyrinae serial no. Column 3 Scientific Name

1	2	3
87	1	<i>Argyrophorus antarcticus</i> (Mabille, 1885)
88	2	<i>Argyrophorus argenteus</i> Blanchard, 1852
89a	3	<i>Argyrophorus chiliensis chiliensis</i> (Guérin-Méneville, [1830])
89b	4	<i>Argyrophorus chiliensis elwesi</i> (Bryk, 1944)
89c	5	<i>Argyrophorus chiliensis magallanicus</i> Herrera, 1965
90	6	<i>Argyrophorus gustavi</i> (Staudinger, 1898)
91a	7	<i>Argyrophorus monticolens monticolens</i> (Butler, 1881)
91b	8	<i>Argyrophorus monticolens pintatus</i> Pyrcz & Boyer, <b>n. ssp.</b>
92	9	<i>Argyrophorus poaeneis</i> (Heimlich, 1959)
93	10	<i>Argyrophorus williamsianus</i> Butler, 1868
94	11	<i>Auca barrosi</i> (Silva, 1917), <b>comb. reinst.</b>
95a	12	<i>Auca coctei coctei</i> (Guérin - Méneville, [1838]), <b>comb. reinst.</b>
95b	13	<i>Auca coctei nycteropus</i> (Reed, 1877) <b>comb. reinst., stat. reinst.</b>
95c	14	<i>Auca coctei confusa</i> (Köhler, 1935) <b>comb. reinst., stat. nov.</b>
96a	15	<i>Cosmosatyrus leptoneuroides leptoneuroides</i> C. & R. Felder, [1867]
96b	16	<i>Cosmosatyrus leptoneuroides plumbeola</i> (Butler, 1868)
97	17	<i>Elina montrolii</i> (Feisthamel, 1839)
98	18	<i>Elina vanessoides</i> Blanchard, 1852
99	19	<i>Faunula dubii</i> Pyrcz, 2012
100	20	<i>Faunula eleates</i> (Weymer, 1890)
101	21	<i>Faunula euripides</i> (Weymer, 1890)
102	22	<i>Faunula leucoglène</i> C. & R. Felder, 1867
103	23	<i>Faunula patagonica</i> (Mabille, 1885)
104	24	<i>Faunula stelligera</i> Butler, 1881
105a	25	<i>Homoeonympha boisduvalii boisduvalii</i> (Blanchard, 1852), <b>comb. reinst.</b>
105b	26	<i>Homoeonympha boisduvalii pusilla</i> C. & R. Felder, [1867], <b>comb. reinst.</b>
106	27	<i>Homoeonympha vesagus</i> (Doubleday, [1849]), <b>comb. reinst.</b>
107	28	<i>Nelia calvertii</i> (Elwes, 1903)
108	29	<i>Nelia nemyroides</i> (Blanchard, 1852)
109	30	<i>Nelia ureta</i> Pyrcz & Benyamini, <b>n. sp.</b>
110a	31	<i>Neomaenas ambiorix ambiorix</i> (Wallengren, 1858)
110b	32	<i>Neomaenas ambiorix obscurator</i> Pyrcz & Boyer, <b>n. ssp.</b>
111	33	<i>Neomaenas coenonymphina</i> Butler, 1881
112	34	<i>Neomaenas edmondsii</i> (Butler, 1881)
113	35	<i>Neomaenas fractifascia</i> Butler, 1881
114a	36	<i>Neomaenas humilis humilis</i> (C. & R. Felder, [1867])
114b	37	<i>Neomaenas humilis ambiomatzi</i> Pyrcz & Benyamini, <b>n. ssp.</b>
115	38	<i>Neomaenas inornata</i> Elwes, 1903
116a	39	<i>Neomaenas poliozona poliozona</i> (C. & R. Felder, 1867)
116b	40	<i>Neomaenas poliozona reedi</i> (Butler, 1881), <b>stat. rev.</b>
117	41	<i>Neomaenas servilla</i> Wallengren, 1858
118	42	<i>Neomaenas simplex</i> (Butler, 1881)
119	43	<i>Neomaenas schajovskoi</i> (Hayward, 1954)
120	44	<i>Neomaenas wallengrenii</i> Butler, 1881
121	45	<i>Quilaphoetus janirioides</i> (Blanchard, 1852), <b>comb. reinst.</b>
122a	46	<i>Quilaphoetus monachus monachus</i> (Blanchard, 1852), <b>comb. reinst.</b>
122b	47	<i>Quilaphoetus monachus valdiviae</i> (C. & R. Felder, 1867), <b>comb. reinst., stat. reinst.</b>
123	48	<i>Spinantenna tristis</i> (Guérin-Méneville, 1830)
124	49	<i>Tetraphlebia germainii germainii</i> C. & R. Felder, 1867

Plate III - New species to Chile, all specimens nearly life size



*Danaus p. plexippus* - Copiapo, Atacama, Leg. D. Benyamini



*Danaus eresimus erginus* - Elqui, Coquimbo, Leg. A. Ugarte



*Vanessa braziliensis* - Zapahuira, 3100m, Arica, Leg. H. Vargas



*Vanessa carye* - aberrant, Paso de Jama, Chile/Argentina, Leg. D. Benyamini



*Phoebis argante chincha* - Valle de Azapa, Arica, Leg. H. Vargas



*Phoebis a. argante* - Paso Bermejo, Chile



*Colias euxanthe* - Visviri, 4500m, Arica, Leg. D. Benyamini



*Yramea sobrina* - Coronel Alcerreca, 3850m, Arica, Leg. D. Benyamini



*Colias euxanthe* - Ancolacane, 4195m, Arica, Leg. D. Benyamini



*Colias erika* - Cerro Larancagua, 4700m, Arica, Leg. D. Benyamini



*Colias euxanthe* - aberrant, Parinacota, 4500m, Arica, Leg. M. Galvez



*Colias euxanthe* - Co. Larancagua, 4800m, Arica, Leg. D. Benyamini

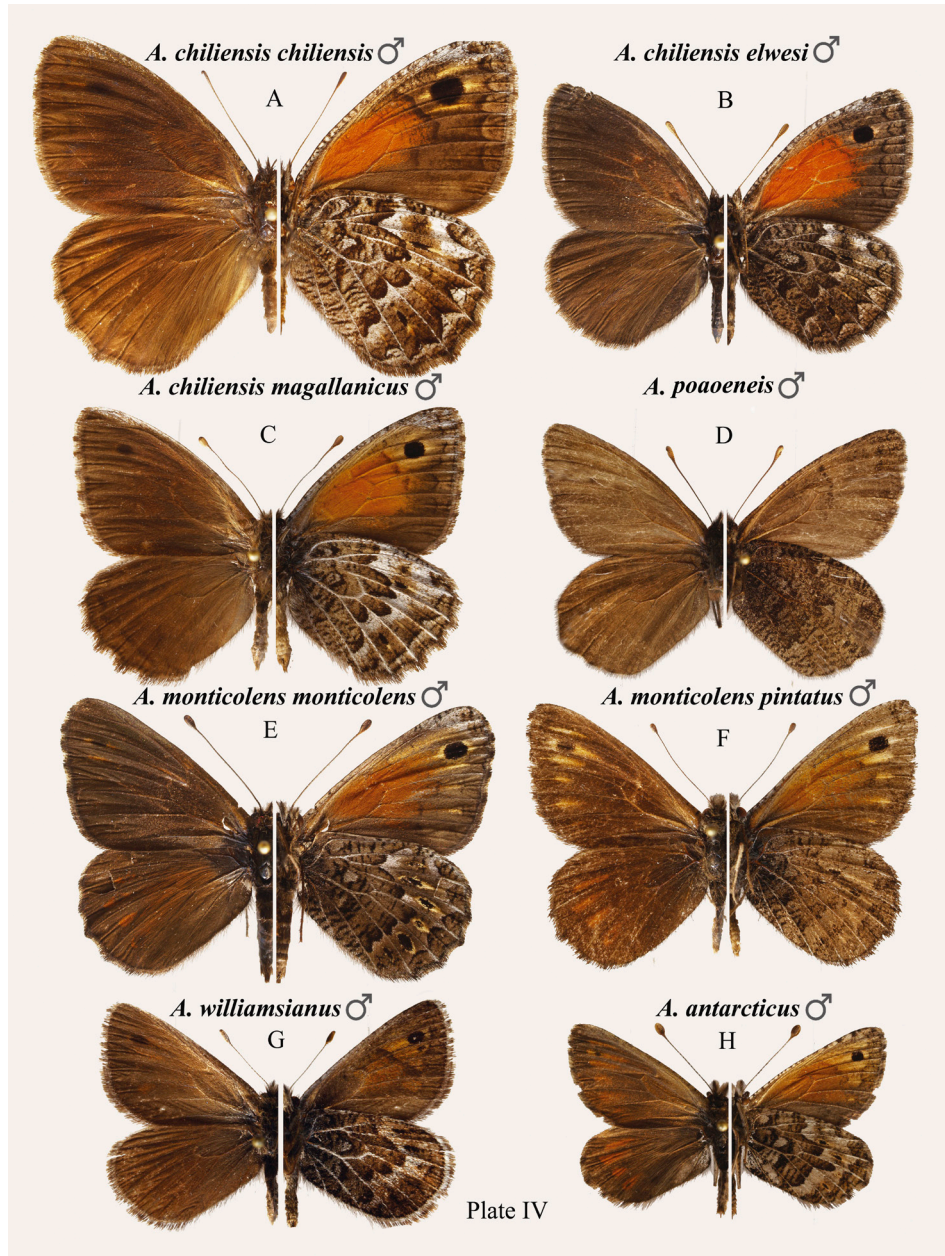


PLATE IV - Adults, males (dorsal: left, ventral: right)

- A. *Argyrophorus chiliensis chiliensis* male (Río Blanco, Malleco, Chile)  
 B. *Argyrophorus chiliensis elwesi* male (Volcán Domuyo, Neuquén, Argentina)  
 C. *Argyrophorus chiliensis magallanicus* male (Río Gallegos, Santa Cruz, Argentina)  
 D. *Argyrophorus poaoeneis* male (La Hoya - Esquel, Chubút, Argentina)  
 E. *Argyrophorus monticolens monticolens* male (Refugio Llama, Araucanía, Chile)  
 F. *Argyrophorus monticolens pintatus* male Holotype (Cerro Wayle, Neuquén, Argentina)  
 G. *Argyrophorus williamsianus* male (Monte Aymond, Magallanes, Chile)  
 H. *Argyrophorus antarcticus* male (Ruta 5, SE Esperanza, Santa Cruz, Argentina)

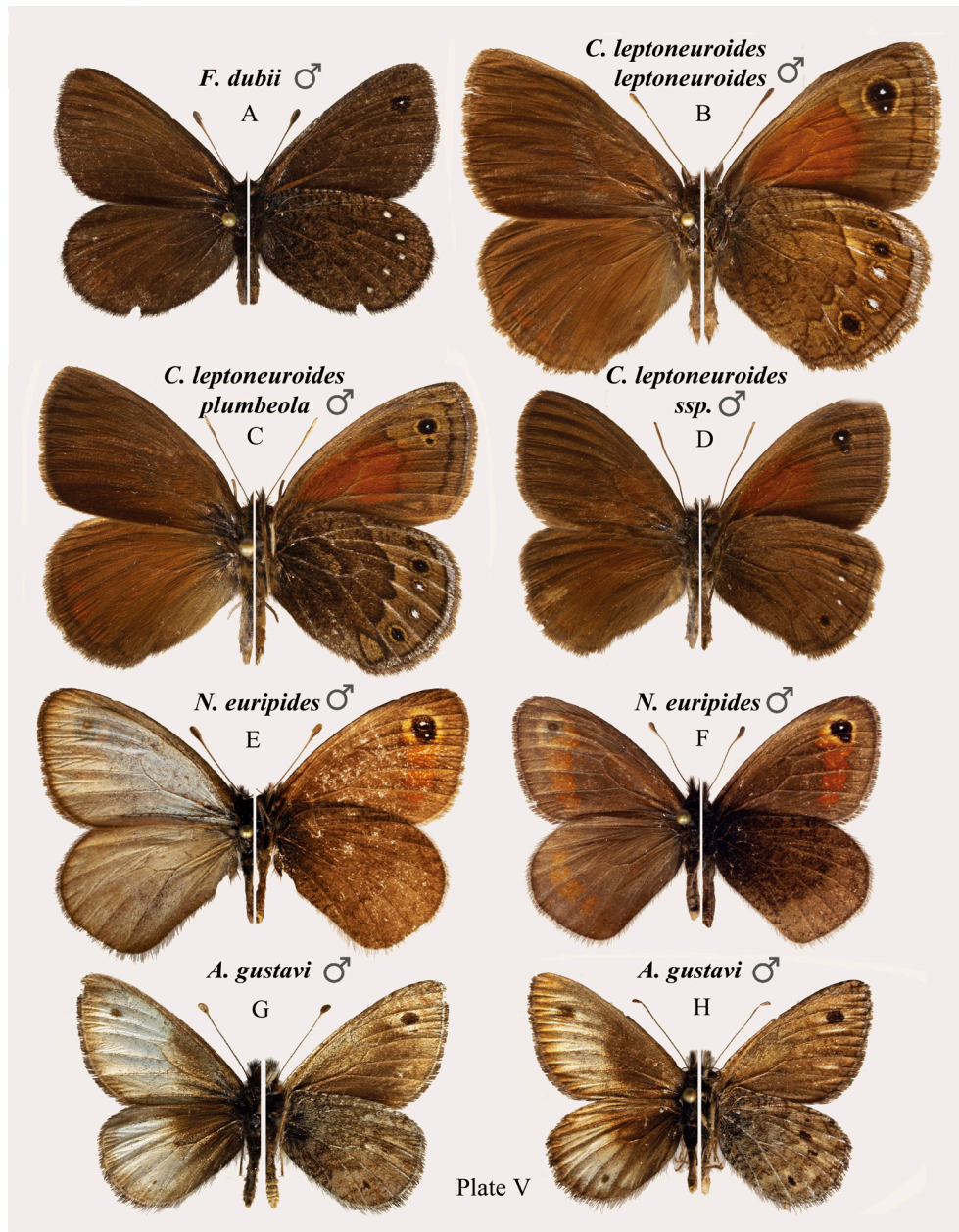


PLATE V - Adults, males (dorsal: left, ventral: right)

- A. *Faunula dubii* male Holotype (Retén Teniente Merino, 6km S Gallegos Chico, Magallanes, Chile)  
 B. *Cosmosatyrus leptoneuroides leptoneuroides* male (Malleco, Nahuelbuta, Chile)  
 C. *Cosmosatyrus leptoneuroides plumbeola* male (Caño San Gregorio, Magallanes, Chile)  
 D. *Cosmosatyrus leptoneuroides ssp.?* male (Volcán Domuyo, Neuquén, Argentina)  
 E. *Faunula euripides* silver form male (Río Grande, Jujuy, Argentina)  
 F. *Faunula euripides* brown form male (El Quemado, Jujuy, Argentina)  
 G. *Argyrophorus gustavi* silver form (*penai*) male (Salar de Huasco, Tarapacá, Chile)  
 H. *Argyrophorus gustavi* silver-brown intermediate form male (Salar de Surire, Arica, Chile)

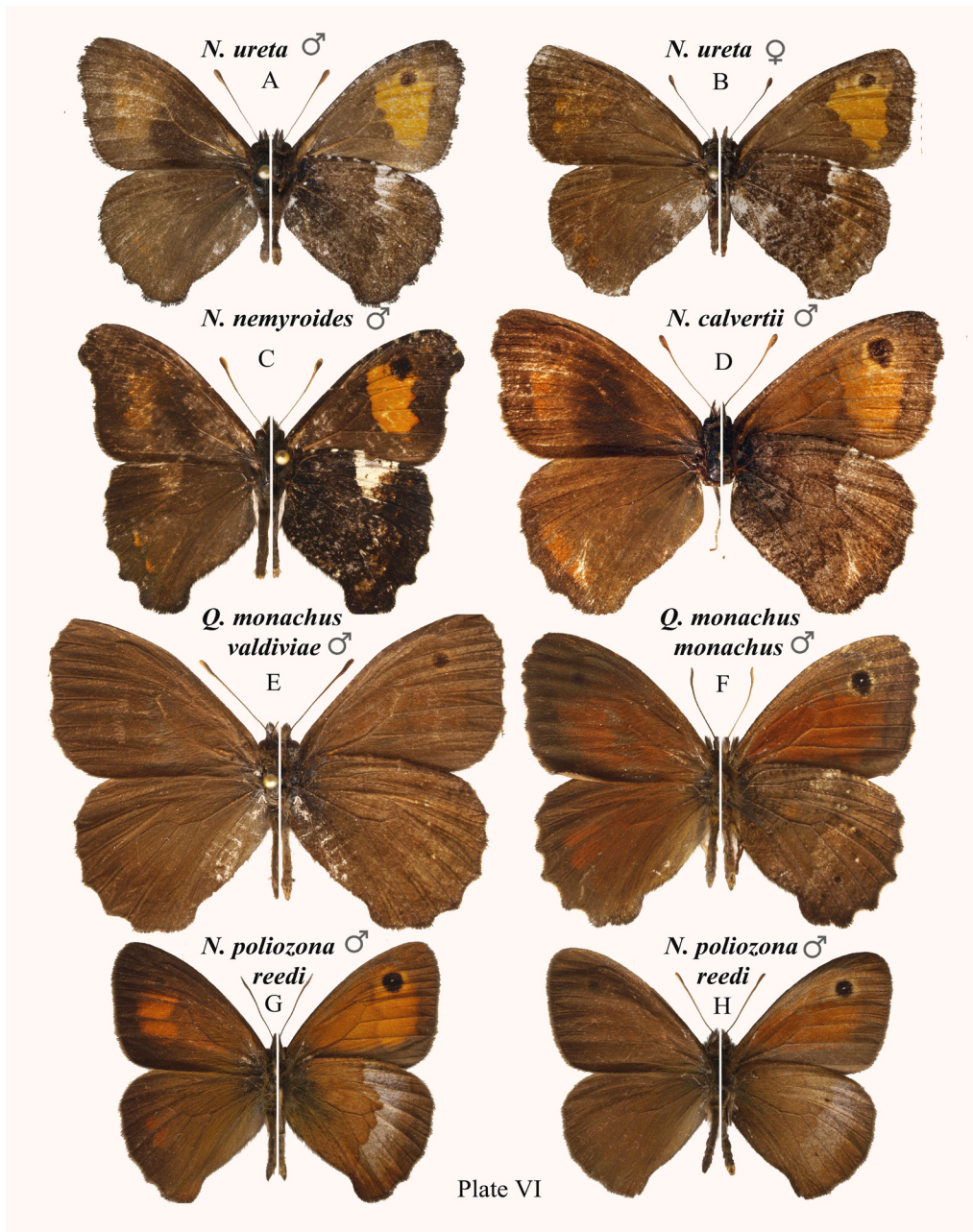


PLATE VI - Adults (dorsal: left, ventral: right)

- A. *Nelia ureta* male Holotype (Volcán Calbuco, Los Lagos, Chile)
- B. *Nelia ureta* female Paratype (La Unión, Valdivia, Chile)
- C. *Nelia nemyroides* male (Volcán Calbuco, Los Lagos, Chile)
- D. *Nelia calvertii* male (Talca, Alto Vilches, Chile)
- E. *Quilaphoetus monachus valdiviae* male (Osorno, Puyehue, Chile)
- F. *Quilaphoetus monachus monachus* male (Curacautín, Araucanía, Chile)
- G. *Neomaenas poliozona reedi* male form / population (Termas de Manzanar, Araucanía, Chile)
- H. *Neomaenas poliozona reedi* male form / population (Coipue Viejo, Araucanía, Chile)



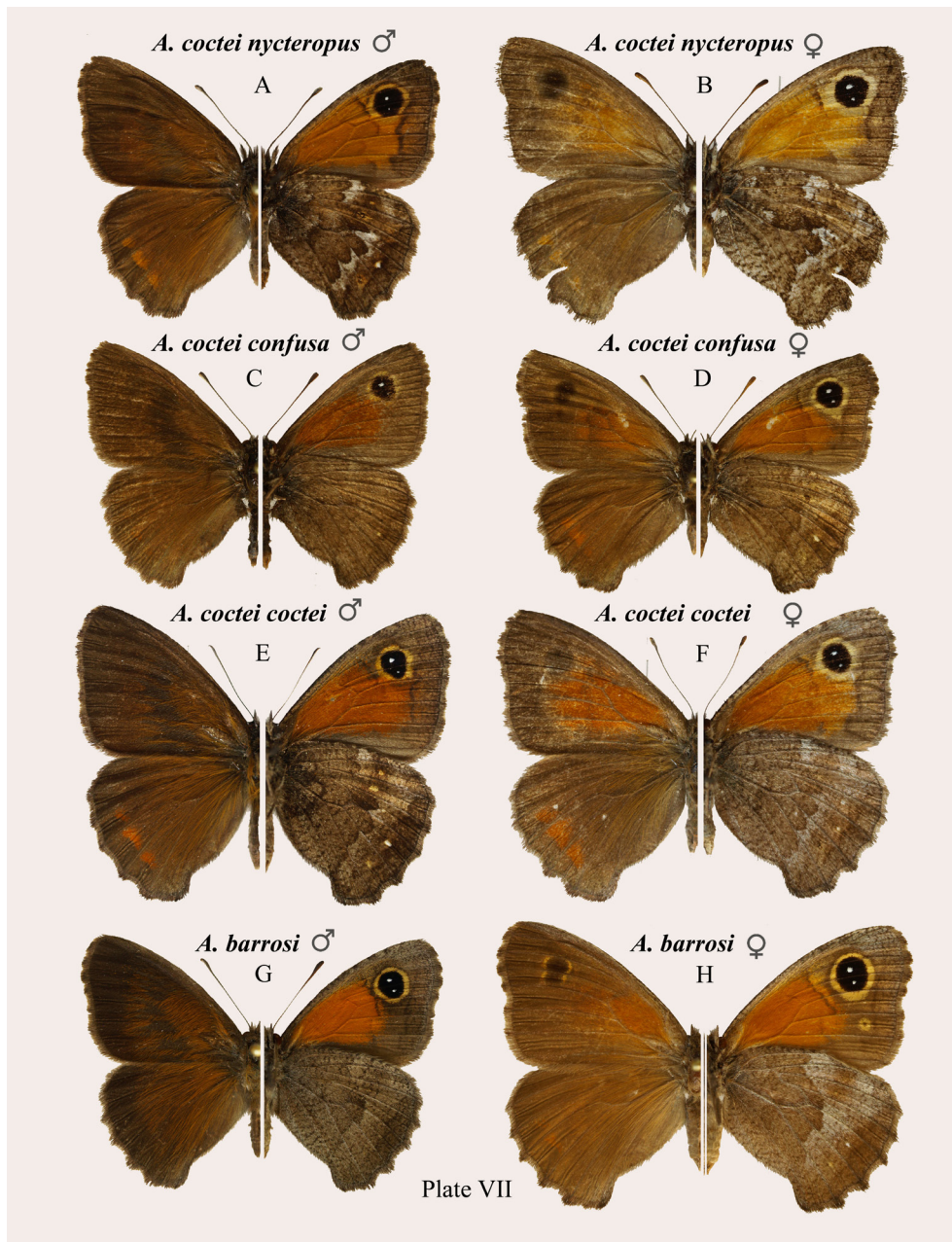


PLATE VII - Adults (dorsal: left, ventral: right)

- A. *Auca coctei nycteropus* male (Los Vilos, Coquimbo, Chile)  
 B. *Auca coctei nycteropus* female (Los Vilos, Coquimbo, Chile)  
 C. *Auca coctei confusa* male (Chos Malál, Neuquén, Argentina)  
 D. *Auca coctei confusa* female (Chos Malál, Neuquén, Argentina)  
 E. *Auca coctei coctei* male (Recinto, Bío Bío, Chile)  
 F. *Auca coctei coctei* female (Recinto, Bío Bío, Chile)  
 G. *Auca barrosi* male (La Serena, Coquimbo, Chile)  
 H. *Auca barrosi* female (La Serena, Coquimbo, Chile)

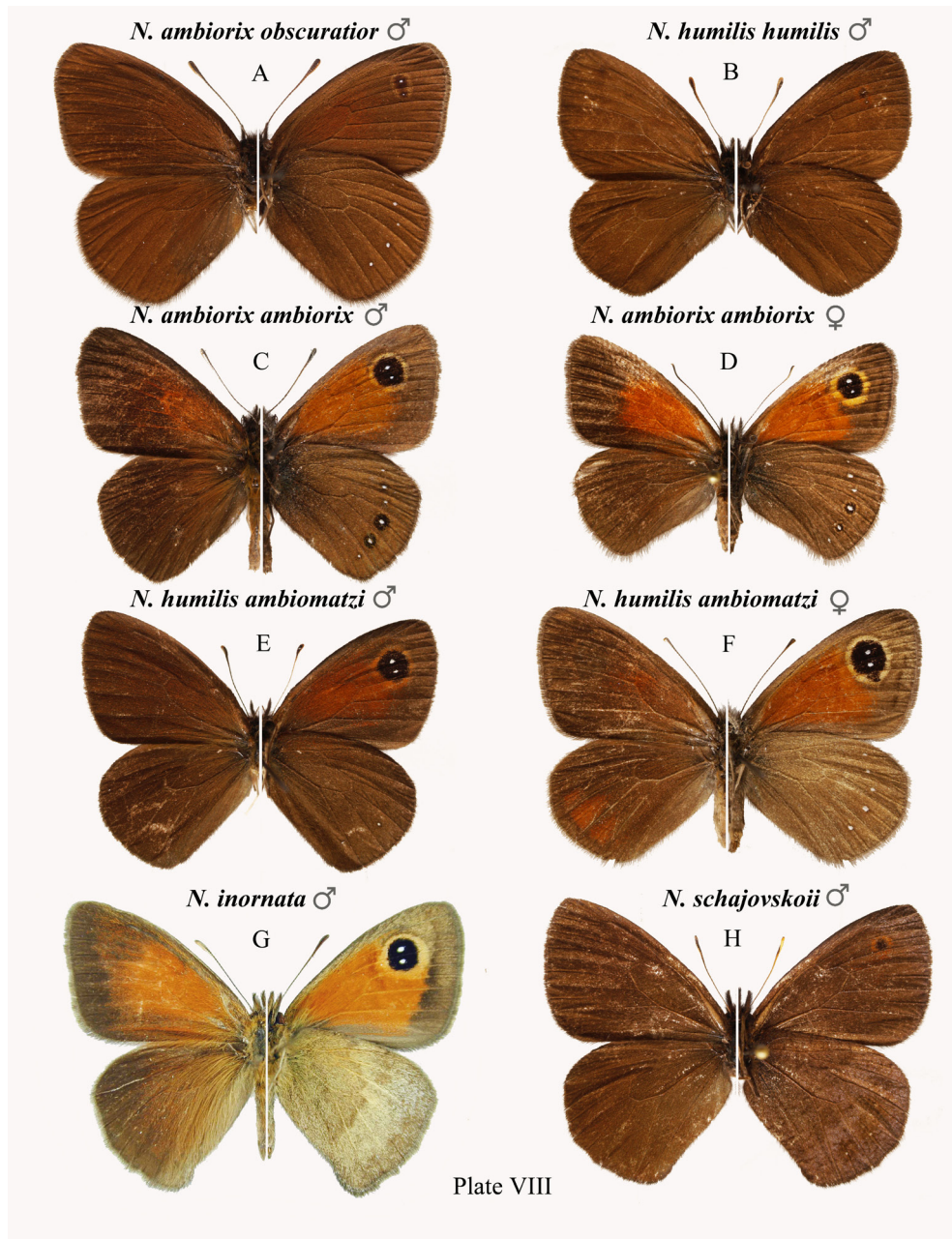


PLATE VIII - Adults (dorsal: left, ventral: right)

- A. *Neomaenas ambiorix obscurator* male Holotype (Cerro López, Río Negro, Argentina)  
 B. *Neomaenas humilis humilis* male (Chaltén, Los Lagos, Chile)  
 C. *Neomaenas ambiorix ambiorix* male (Cuesta de Icabache, Valparaiso, Chile)  
 D. *Neomaenas ambiorix ambiorix* female (Cuesta de Icabache, Valparaiso, Chile)  
 E. *Neomaenas humilis ambiomatzi* male Holotype (Recinto, Bío Bío, Chile)  
 F. *Neomaenas humilis ambiomatzi* female Paratype (Termas de Chillán, Bío Bío, Chile)  
 G. *Neomaenas inornata* male (Ralco, Bío Bío, Chile)  
 H. *Neomaenas schajovskoi* male (Rupanco, Los Lagos, Chile)

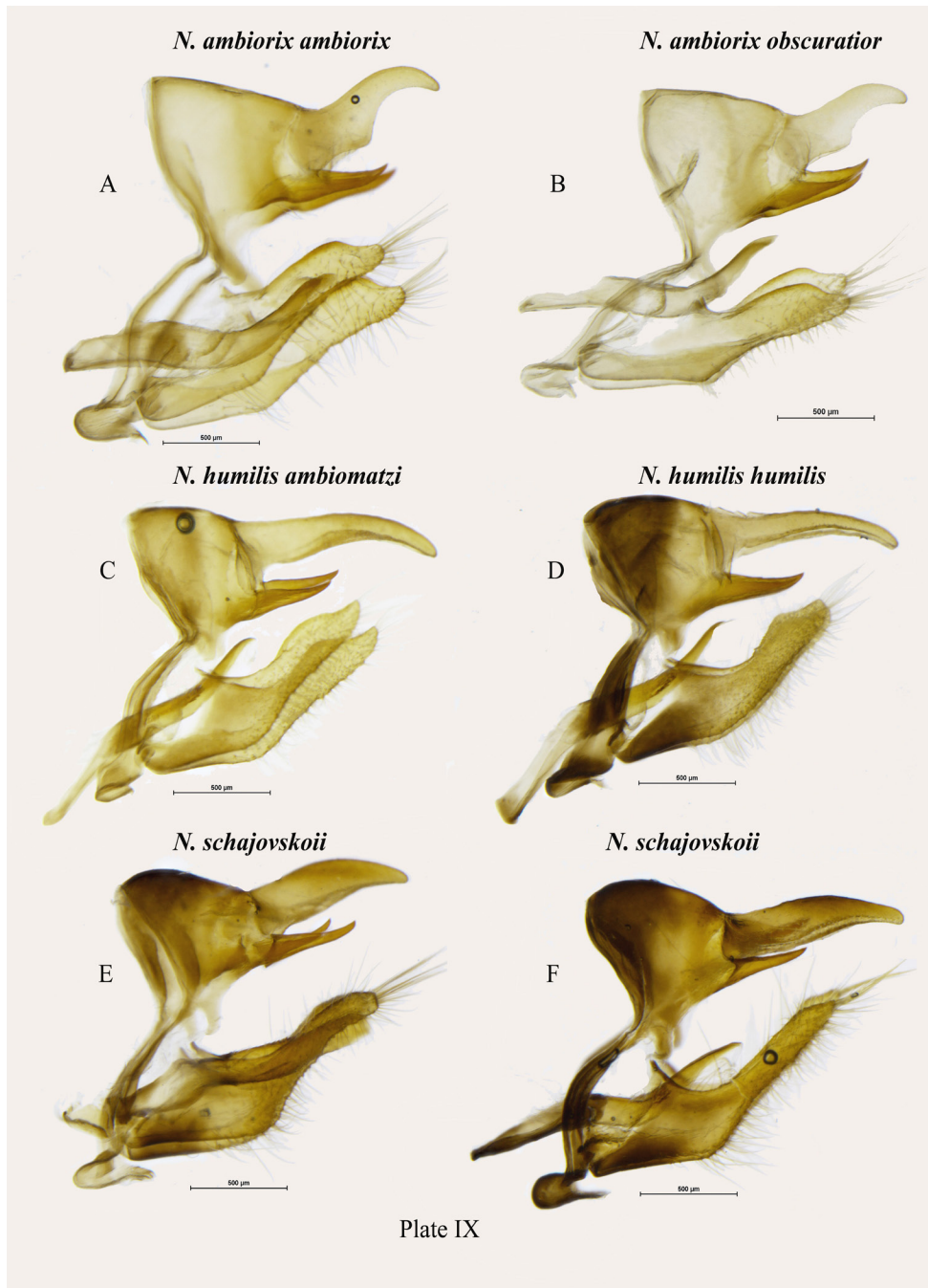


PLATE IX - Male genitalia (lateral view)

- A. *Neomaenas ambiorix ambiorix* (El Morado, Región Metropolitana, Chile)
- B. *Neomaenas ambiorix obscurator* (Cerro López, Río Negro, Argentina)
- C. *Neomaenas humilis ambiomatzi* (Las Trancas, Bío Bío, Chile)
- D. *Neomaenas humilis humilis* (Puyehue, Los Lagos, Chile)
- E. *Neomaenas schajovskoi* (Cerro López, Río Negro, Argentina)
- F. *Neomaenas schajovskoi* (Rupanco, Los Lagos, Chile)

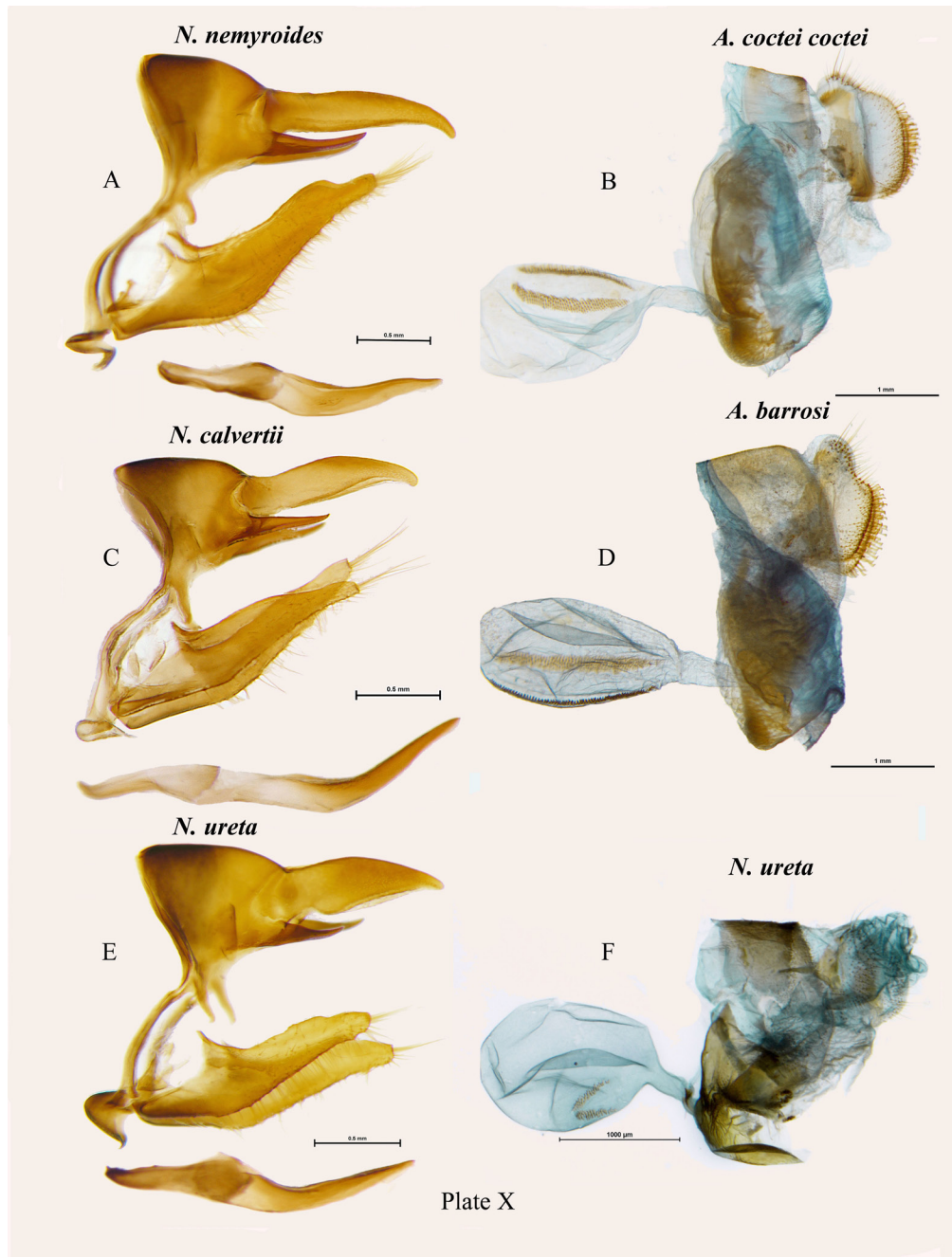


PLATE X - Male and female genitalia (lateral view)

- A. *Nelia nemyroides*, male (Volcán Calbuco, Los Lagos, Chile)  
 B. *Auca coctei coctei*, female (Til Til, Región Metropolitana, Chile)  
 C. *Nelia calvertii*, male (Miraflores, Talca, Chile)  
 D. *Auca barrosi*, female (Villa Paulina, Región Metropolitana, Chile)  
 E. *Nelia ureta* male (Volcán Calbuco, Los Lagos, Chile)  
 F. *Nelia ureta* female (La Unión, Valdivia, Chile)

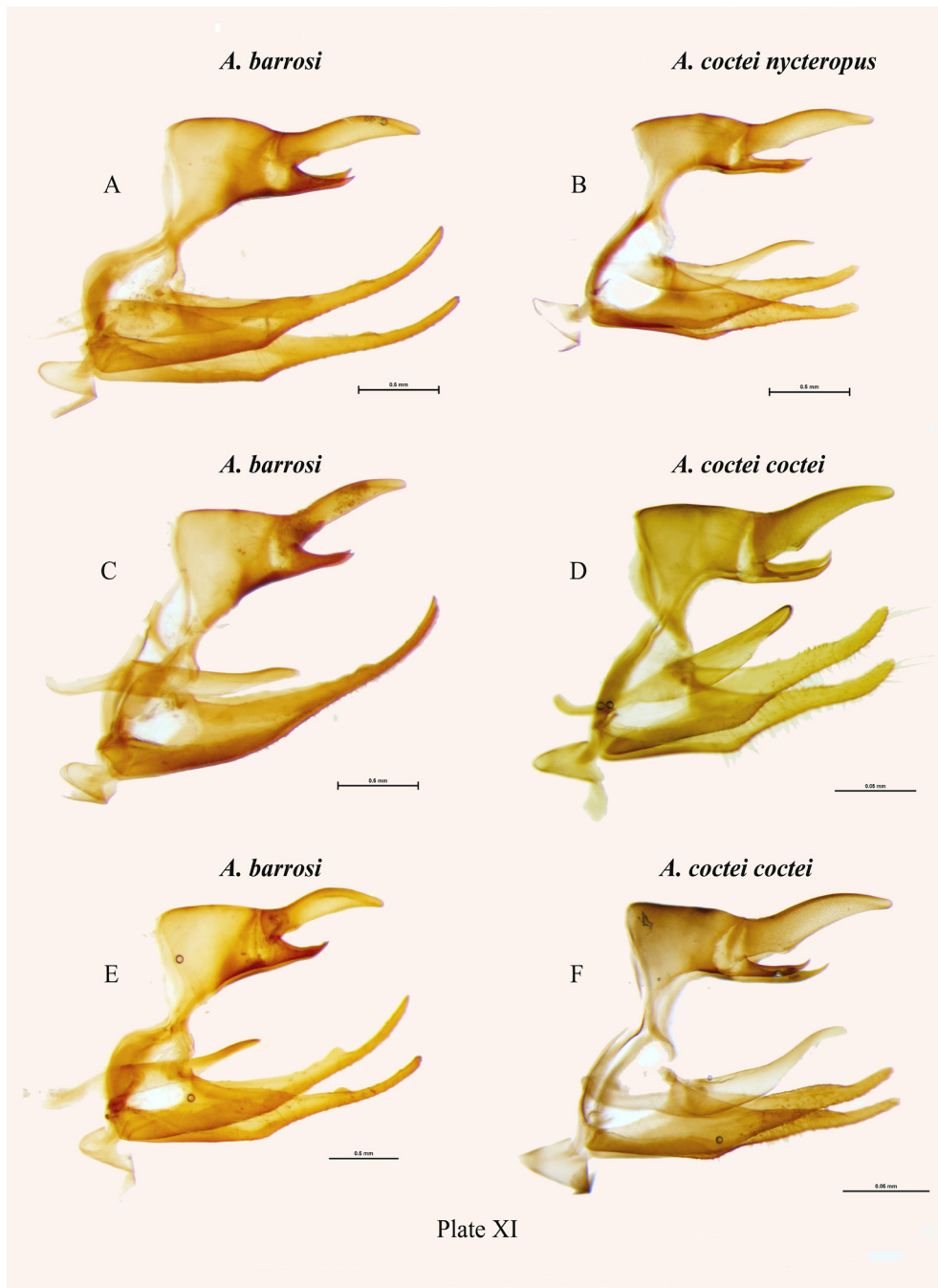


PLATE XI - Male genitalia (lateral view)

- A. *Auca barrosi* (Maipo, Región Metropolitana, Chile)
- B. *Auca coctei nycteropus* (Cuncumén, Coquimbo, Chile)
- C. *Auca barrosi* (Monte Patria, Coquimbo, Chile)
- D. *Auca coctei coctei* (El Morado, Región Metropolitana, Chile)
- E. *Auca barrosi* (Coirón, Coquimbo, Chile)
- F. *Auca coctei coctei* (Recinto, Bio Bío, Chile)

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