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# Pronophiline butterflies of the highlands of Chachapoyas in northern Peru: faunal survey, diversity and distribution patterns (Lepidoptera, Nymphalidae, Satyrinae)

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ABSTRACT. Butterflies of the tribe Pronophilini (Nymphalidae, Satyrinae) are surveyed in the highlands of Chachapoyas covering the northern part of the Andean Eastern and Central Cordilleras in Peru. 112 species are reported and discussed including their geographic distributions, altitudinal ranges and identification keys. 55 new taxa (35 species and 20 subspecies) are described: *Apexacuta improvisa* n. sp., *A. superior* n. sp., *Corades tripunctata necrufa* n. ssp., *Corderopedaliodes corderoi exornata* n. ssp., *Daedalma. fraudata* n. sp., *D. vertex* n. sp., *D. boliviana peruviana* n. ssp., *Eretris apuleina* n. sp., *E. mendoza* n. sp., *E. truncatina* n. sp., *E. porphyria transmaraniona* n. ssp., *Junea dorinda quasinegra* n. ssp., *Lymanopoda araneola* n. sp., *L. dyari* n. sp., *L. inde* n. sp., *L. ingasayana* n. sp., *L. magna* n. sp., *L. acraeida chavezi* n. ssp., *L. albocincta intermedia* n. ssp., *Lasiophila cirta atropurpurea* n. ssp., *Manerebia benigni* n. sp., *M. diffusa* n. sp., *M. haywardi* n. sp., *M. trirufa* n. sp., *M. benigni tessmanni* n. ssp., *M. ignilineata jalca* n. ssp., *Mygona poeania magalyae* n. ssp., *Oxeoschistus iphigenia* n. sp., *Panyapedaliodes stellata* n. sp., *P. phila certa* n. ssp., *Pedaliodes albicilia* n. sp., *P. aureola* n. sp., *P. boettgeri* n. sp., *P. demathani* n. sp., *P. erschoffi* n. sp., *P. jelskii* n. sp., *P. maruda* n. sp., *P. simplissima* n. sp., *P. sophismata* n. sp., *P. stuebeli* n. sp., *P. sztolcmani* n. sp., *P. uaniuna* n. sp., *P. woytkowskii* n. sp., *P. cledonia molesta* n. ssp., *P. petri maasseni* n. ssp., *P. phrasicla rufa* n. ssp., *P. sztolcmani gilvaecosta* n. ssp., *Proboscis pomarancia* n. sp., *Pronophila bernardi* n. sp., *P. tremocrata* n. sp., *P. epidipnis perplexa* n. ssp., *Pseudomaniola mirabilis extrema* n. ssp., *Punapedaliodes flavopunctata minima* n. ssp., *Steremnia lucillae* n. sp., *S. agraulis agraulina* n. ssp. Several new combinations, new status and synonymies are established. Species richness in the surveyed area is evaluated along potential altitudinal transects and compared to other north Andean localities. Pronophilines are sampled along an elevational transect in Molinopampa reporting 45 species belonging to 20 genera. Data on altitudinal distributions of individual species and changes in the community structure are discussed and compared with similar studies in Colombia and Venezuela. Examples of parapatric distributions along elevational gradients are pointed out. Geographic distribution patterns and faunal units within the surveyed area are identified and their affinities are discussed.

Key words: entomology, taxonomy, zoogeography, Lepidoptera, Satyrinae, Pronophilini, new taxa, species richness taxonomy, Andes, Peru, altitudinal distribution.

## INTRODUCTION

### THE TRIBE PRONOPHILINI

MILLER (1968), in the first modern taxonomic revision of the Satyridae, characterised the tribe Pronophilini REUTER (1896) within the sub-family Satyrinae. HARVEY (1991) downranked this and several others of MILLER's tribes to the rank of sub-tribes within the tribe Satyrini. VILORIA (Ph.D.) concurred with HARVEY but removed from the sub-tribe Pronophilina the genera *Manerebia* STAUDINGER, *Idioneurula* STRAND, *Diaphanos* ADAMS & BERNARD and *Tamania* PYRCZ and transferred them to the predominantly Holarctic Erebiina. He also suggested that all the Austral genera found in Peru, Chile and Argentina (i.e. *Argyrphorus* BLANCHARD, *Eteona* DOUBLEDAY, *Neomaenas* WALLENGREN etc.) considered by MILLER as Pronophilini, belong to the Australian sub-tribe Hypocystina. MILLER's (1968) paper remains the only comprehensive taxonomic revision of the Satyrinae worldwide, despite some obvious deficiencies, as, for example, an incorrect definition of the type of venation of the Pronophilini (PYRCZ Ph.D.; VILORIA Ph.D.) and not taking into account such an important taxonomic character as male genitalia. HARVEY's (1991) revisional classification of the Nymphalidae (*sensu lato*) was heavily based on larval morphology data, which was then almost completely unknown for the pronophilines and, therefore, could not be used. The conclusions of VILORIA (Ph.D.) regarding the genus *Manerebia* are based on few morphological characteristics, most of them quantitative, except for the lack of setose eyes in *Manerebia*, and are not taken into account herein. It is beyond the scope on the present paper to discuss in detail the tribal level systematics of the Satyrinae. Undoubtedly, the ultimate status and the generic composition of the Pronophilini require a comprehensive revision, which can be carried out in the future when more comparative data, especially on the morphology of larval stages become available.

For the purposes of this paper, the Pronophilini are treated as a cohesive group identified from other Neotropical Satyrinae based primarily on ecological features. They are exclusively tropical montane, whereas other tribes of Neotropical Satyrinae, the Haeterini and the Euptychiini, are mostly lowland or premontane (except for the euptychiine genus *Forsterinaria* HAYWARD). Approximately 95% of all recognised species of Pronophilini occur in the tropical Andes from Venezuela to northern Argentina (LAMAS, VILORIA & PYRCZ 2004). They are by far the best-represented group of butterflies in terms of species richness and abundance in cloud forest habitats (ADAMS 1985, 1986; PYRCZ & WOJTUSIAK 1999, 2002). The systematics and the zoogeography of North Andean pronophilines (Ecuador, Colombia and Venezuela) are relatively well known thanks to the contributions of

BROWN (1941, 1943, 1944), ADAMS & BERNARD (1977, 1979, 1981), ADAMS (1985, 1986), VILORIA (1994), PYRCZ (1995, 1999, 2000), PYRCZ & VILORIA (1999), PYRCZ & WOJTUSIAK (1999, 2002), PYRCZ *et al.* (1999), VILORIA & PYRCZ (2002) and VILORIA *et al.* (2003). Bolivian and Argentine faunas were monographed by HAYWARD (1958, 1963) and FORSTER (1964). Their papers are however far from being exhaustive and have identification errors. There are no published surveys of the pronophiline fauna of Peru at all. The only recent references on this tribe are descriptive papers dealing with a few central (PYRCZ 2003) and southern Peruvian species (LAMAS 1997, 1999) and incomplete local surveys of Lepidoptera in general (LAMAS *et al.* 1999, 2003).

The most outstanding characteristic of the pronophilines is their altitudinal distribution pattern. Most species are distributed in well-defined and sometimes very narrow bands of altitude (ADAMS 1985, 1986; RAGUSO & GLOSTER 1993; PYRCZ & WOJTUSIAK 1999, 2002). This aspect of their ecology will be discussed in the second part of this paper. Another notable feature of the pronophilines is the high percentage of endemic taxa in all surveyed ranges. Endemism ratio is the highest in the peripheral ranges of the northern Andes, especially in the Sierra Nevada de Santa Marta, Cordillera de Mérida and Sierra de Perijá (ADAMS 1985).

Pronophiline butterflies, similarly to other satyrines, are mostly sedentary (ADAMS 1986; DEVRIES 1987) and are often stenobionts associated with perhumid habitats within the cloud forest environment (ADAMS 1986; PYRCZ & WOJTUSIAK 2002). Most species show restricted vagility and even though this aspect of their behaviour has not been studied rigorously, field observations indicate that adults keep close to their potential host plants or roosting places and move little vertically or horizontally. Some species are territorial and hilltopping behaviour is characteristic for *Junea*, *Steremnia* and some species of *Corades* and *Daedalma*. Even though the biology of the Pronophilini remains largely unexplored, it appears that their larvae are oligophagous on montane bamboo, chiefly of the genus *Chusquea* (Poaceae) (SCHULTZE 1929; ADAMS & BERNARD 1981; DEVRIES 1987, HEREDIA & VILORIA 2004) and *Swallenchloa* (PYRCZ, WILLMOTT & HALL 1999). Several species of Pronophilini seemingly use also other Poaceae, such as paramo *Stipa* and *Calamagrostis* grasses (BROWN 1941; VILORIA & PYRCZ 1999), woody cane (MILLER 1986) and *Guadua* bamboo (PYRCZ 2000). PELZ (1997) reared *Pedaliodes parepa* (HEWITSON) in Germany on a substitute food plant, a grass *Poa annua* (Poaceae). GREENEY & PYRCZ (in prep.) reared on *Chusquea* various Ecuadorian pronophilines including *Daedalma*, *Corades*, *Pronophila*, *Eretris* and *Pedaliodes*. Montane bamboos are more abundant in clearings and ecotones and are typical plants for the early stages of natural succession. Human activity may, in some circumstances, favour *Chusquea* and therefore acts in favour of maintaining Pronophilini populations or even locally increasing their densities (ANDRADE 1994; PYRCZ & WOJTUSIAK 1999).

A reliable way of obtaining sufficient material for statistical analysis is a crucial factor in ecological and zoogeographical studies (BROWN 1982). Fortunately, adults of all species of Pronophilini are readily attracted to decomposing

organic matter, particularly to faeces, carrion and rotten fruits. Therefore, the use of baits provides a very good method of sampling (PYRCZ & WOJTUSIAK 1999, 2002).

## THE HIGHLANDS OF CHACHAPOYAS

The highlands of Chachapoyas in northern Peru do not form a clear-cut geographic entity; therefore, the area of study is defined on the basis of combined physical and administrative features. In administrative terms, this work concerns the southern half of the department of Amazonas constituted by the provinces of Bongara, Luya, Chachapoyas and Rodríguez de Mendoza (additionally, data from two localities situated in the neighbouring department of San Martín were added). From the physical geography viewpoint it encompasses the northern part of the Eastern and Central Cordilleras of the Andes on the right bank of the Río Marańon.

The landscape of this part of the Andes is very complex. The Eastern Cordillera consists of a central main block and several ridges extending northwards and northeastwards. Its highest elevation is the Cerro Ignacio at 4025 m situated northeast of the village of Olleros, in the central part of the studied area, whereas the highest peak in the northern, isolated massif north of Pomacochas reaches 3620 m. The highest elevation of the north-south oriented Central Cordillera in the department of Amazonas is the Cerro Pagrapagra at 4285 m. The valleys of the Ríos Utcubamba, flowing into the Río Marañon, and Huambo, an affluent of the Río Huallaga, separate the two Cordilleras. Other tributaries of the Río Marańon flowing north are the rivers Chiriaco and Nieva, and the tributaries of the Río Huallaga directed south and eastwards are the rivers Mayo, Saposoa, Huambo and Jelache. Small lakes of post-glacial origin are located in the central area of the sampled area near Molinopampa, at approximately 3200 m. The largest lake in the area is the Laguna de Pomacochas situated on the ridge separating the Chiriaco and Utcubamba valleys at an elevation of 2000 m.

The eastern slopes of the highlands of Chachapoyas below 1000 m are covered with humid premontane forests structurally similar to the Amazonian *hylea*. Above this altitude commences the domain of the tropical montane forest, except the western part of the range, on leeward slopes, where the climate is much drier and cloud forest communities appear only above 1800-2000 m (DILLON 1994). The climate in the deep valleys of the Ríos Utcubamba and Sonche is dry and their vegetation varies depending on the altitude, the exposure and the inclination of slopes from sub-desert to deciduous forests. Steep ridges are covered with xeric communities dominated by cactus (*Echinocactus*, *Cereus* and *Opuntia*) and bromeliads (*Tillandsia* and *Puya*), while gentler slopes are covered with deciduous forests with legume trees of *Prosopis*, *Acacia*, *Piptadenia* and *Parkinsonia* (PODBIELKOWSKI 1987). Other characteristic genera include *Capparis* (Capparaceae), *Cordia* (Boraginaceae), *Eriotheca* (Bombacaceae), *Loxopterygium* (Anacardiaceae) and *Muntingia* (Tiliaceae). The herbaceous layer is dominated

by numerous species of Asteraceae, Fabaceae, Solanaceae and Poaceae. The lower belt of the tropical montane forest at 1000-2400 m is floristically extremely rich and particularly well represented families of plants are Myrtaceae, Proteaceae, Melastomataceae, Malpighiaceae and Cunoniaceae (PODBIELKOWSKI *op. cit.*). A very particular element of this forest is a species of an endemic palm that dominates this community at 2000-2500 m in the area of Ocol. Smaller trees, an abundance of epiphytes and the presence of Holarctic elements such as *Quercus* and *Juglans* characterise the upper cloud forest belt, also called ceja. Most characteristic trees for this forest zone are *Weinmannia* (Cunoniaceae), *Cassia* (Fabaceae), *Ocotea*, *Persea* (Lauraceae), *Miconia* (Melastomataceae); *Cedrela*, *Guarea*, *Ruagea*, *Schmardaea* (Meliaceae), *Myrsine* (Myrsinaceae), *Cinchona* (Rubiaceae), *Prunus*, *Hesperomeles* (Rosaceae), *Zanthoxylum* (Rutaceae), *Ficus*, *Morus* (Moraceae), *Cupania* (Sapindaceae) and *Solanum* (Solanaceae) (PODBIELKOWSKI *op. cit.*). Montane bamboos, chiefly of the genus *Chusquea* (Poaceae), host plants of the pronophilines, are distributed within the whole altitude range of the montane forest but are more abundant above the elevation of 2500 m. *Podocarpus* conifers, *Chusquea* gramines and *Alnus* trees are particularly associated with very humid habitats along watercourses. *Escallonia*, *Rapanea* and *Polylepis* shrubs and *Blechnum* ferns dominate the transition belt between the forest and open formations above it, called sub-paramo. Also, Asteraceae and Ericaceae become evident. The non-forested areas above 3200 m are known as *paramo* or humid *puna* types of vegetation also called *jalca* in this part of the Andes. Bunch grasses of *ichu*-type (*Calamagrostis*, *Festuca*, *Stipa*) and montane *Ericaceae* (*Befaria*, *Disterigma*, *Gaultheria*) shrubs are the most typical floristic elements. Paramo species include sedges (*Carex*, *Oreobolus*, *Scirpus*), composites (*Baccharis*, *Bidens*, *Diplostephium*, *Hieracium*, *Senecio*, *Werneria*) ericads, and scrophs (*Bartsia*, *Calceolaria*). Forest gullies with *Polylepis* trees in some areas stretch to over 3400 m, whereas paramo-like open formations with *Puya*, partly secondary or due to local edaphic conditions, descend occasionally down to 2500 m, for example, along the Molinopampa - Ocol road.

The natural environment of this area of the Andes, as elsewhere, is unfortunately heavily disturbed as a result of growing human populations. Therefore, the primary vegetation is limited to patches of various sizes or is absent altogether from large portions of land, particularly in the river valleys and at intermediate elevations. Even the paramo uplands are not spared from human invasion. Extensive grazing is the most common, even if not a particularly lucrative type of agricultural activity. Large expanses of forest are logged and burned for pastures. Small-scale logging actually favours several fast growing endemic plants characteristic for the first and second stage of succession, such as *Rapanea*, *Brunellia*, *Cecropia*, *Alnus* and *Chusquea*, but usually the land exposed after clearing forests is used for *Eucaliptus* and *Pinus* plantations or is rapidly covered with invasive secondary ferns. Repeated burning of already deforested areas does not allow any natural or semi-natural succession to occur and brutal erosion rapidly ends up the process of soil degradation.

## HISTORY OF RESEARCH

The fauna of Pronophilini of the highlands of Chachapoyas was hitherto one of the less known of the entire Andes. Even though some material of cloud forest butterflies was obtained in this region as early as in the middle of XIX century, the naturalists who visited northern Peru throughout the years have paid little attention to the pronophilines. Only a few species were described from this part of the Andes prior to this study. In consequence, a half of the 112 species reported herein represent new taxa at the specific or subspecific level.

HEWITSON (1861) was the first author to describe two species of pronophilines from the highlands of Chachapoyas - *Pronophila peruda* and *Pronophila paneis*. Even though HEWITSON indicated vaguely their origin as "Amazonas" and "Upper Amazonas" they undoubtedly came from Chachapoyas because both are endemic to this part of the Andes. BUTLER (1873) described a widespread species *Corades peruviana* and mentioned that he obtained his material from a certain Degand before 1858. LAMAS (1980) suggested that the BUTLER material was probably from the area situated between Moyobamba (San Martín) and Chachapoyas (Amazonas). Marc DE MATHAN, a French customs officer, carried out two expeditions to Peru (1879-1889 and 1906-1909) and collected numerous species of butterflies occurring in the surveyed area, currently deposited in the BMNH. Among them are *Lasiophila cirta* and several new species of *Manerebia* and *Pedaliodes* all from the area of Pomacochas. Konstanty JELSKI [1837-1896] and Jan SZTOLCMAN [1854-1928], Polish ethnologists and naturalists, visited over ten years many localities of northern Peru including Chachapoyas, Huambo, Huayabamba and Moyobamba. SZTOLCMAN (1912) published a chronicle of their expeditions *Peru - Wspomnienia z podróży* (Peru – memories of a journey). JELSKI and SZTOLCMAN gathered an interesting collection of butterflies, based on which several new species were described, however none of them were pronophilines. Unfortunately, the bulk of their material was destroyed during World War II and only a few specimens survived in major museums, including the BMNH and the MUSM. A German botanist Gustav WALLIS [1830-1878] also collected butterflies in the departments of Amazonas, San Martín and Cajamarca (LAMAS 1980), but apparently no pronophilines. Moritz Alfons STÜBEL [1835-1904], a German explorer, carried out a Pan-American expedition accompanied by Wilhelm REISS. They visited several localities in the surveyed area, including Chachapoyas, Molinopampa and Rioja. WEYMER and MAASSEN (1890) published a chronicle of their explorations, and WEYMER (1890) described, based on their material, two species of pronophilines: *Pedaliodes flavopunctata* and *Corades tripunctata*. Oscar Theodor BARON [1847-1926], a German collector explored numerous localities in the department of Amazonas in 1893 and 1895 (SALVIN 1895; BARON 1897; LAMAS 1980). Otto THIEME [1837-1907] collected in several localities in central and northern Peru and monographed most genera of pronophilines (1905, 1907). He described one species occurring in the area of Chachapoyas, *Pronophila colocasia*. Antwerp Edgar PRATT and his son Felix collected butterflies in northern Peru, apparently

also in the department of Amazonas (LAMAS 1980). All their pronophilines deposited in the BMNH are however from the area of Huancabamba (Piura) (HORN & KAHLE 1936; LAMAS 1980). Harry WATKINS, a contemporary of Pratt, gathered a valuable collection of Peruvian butterflies, visiting Chachapoyas at least once in 1924 (LAMAS 1980). Feliks WOYTKOWSKI [1892-1966], a Polish naturalist, entomologist and botanist, who established himself in Peru in 1929, carried out four collecting expeditions to the highlands of Chachapoyas, between 1936 and 1964. Most of his butterflies were sold to American museums and private collections. Gerardo LAMAS, the head of the department of entomology of MUSM (Lima), sampled the highlands of Chachapoyas on several occasions starting in the 1970s accompanied by other entomologists (Jim MALLET and Robert ROBBINS among others). His brief visits resulted in a relatively few specimens of pronophilines collected mostly along the roads Pedro Ruíz - Tarapoto and Chachapoyas - Mendoza, all deposited in MUSM. Over the last two decades local collectors from Rodríguez de Mendoza and Juanjuy, Benigno CALDERÓN, Manuel TAFUR and Ananías TAFUR, have been collecting north Peruvian butterflies. In 1998, Janusz WOJTUSIAK and Tomasz PYRCZ (Zoological Museum of the Jagiellonian University) carried out extensive sampling for pronophiline butterflies in the highlands of Chachapoyas.

## MATERIAL AND METHODS

Samplings were carried out with traps (type Owen, 1971) baited with faeces and operational as follows: 15 traps for 20 days in Molinopampa - Granada along an elevational transect; 8 traps along the Tingo - Ocol road for 10 days; 6 traps in Pirruro for 5 days; 6 traps in El Chido for 5 days. Butterflies were also collected with entomological nets (2-3m extensions). Additional material was obtained from local collectors based in Rodríguez de Mendoza and Juanjuy. All the individuals were identified in the Zoological Museum of the Jagiellonian University in Kraków and checked against type material in the BMNH (London). Additional types were examined in MNHN (Paris), ZMHU (Berlin) and MIIZ (Warsaw) and based on the photographic database of G. LAMAS (MUSM, Lima). Genitalia preparations were made in MZUJ (Kraków) and MUSM (Lima). Genital structures were preserved in glycerol vials. Photos were taken with a Minolta Dimage 5 digital camera. 1:100.000 maps of the sampled area made by the Instituto Geográfico Nacional in Lima were used. Statistical analysis was performed with Statistica 6 and 7 version programs.

## COLLECTING LOCALITIES

1. Molinopampa - Granada trail (6º07'S 77º32'W), 2500 – 3400 m, pastures below 2500 m, patchy primary cloud forest, secondary along trail, with bamboo thickets at 2500-3000 m, elfin forest predominantly bamboo, patchy

ichu paramo at 3000-3250 m, ichu puna with remnants of cloud forests in gullies above 3250 m, June-August 1998, 2000-2003;
2. Molinopampa - Pipus road (6°12'S 77°37'W), relatively dry cloud forests mixed with secondary puna with bunch grasses and puyas, scarce bamboo along roadsides, 2200 – 2350 m, June-August 1998;
3. Tingo - Ocol road (6°13'S 77°33'W), mainly thick bamboo forest, mostly secondary, locally boggy paramo, 2400 – 2500 m, June-August 1998;
4. El Cedro, Qda. Pirruro, Qda. Llanohuaico and Qda. Totomal north of Rodríguez de Mendoza (6°21'S 77°22'W), secondary lower montane and mid-elevation cloud forest, 1700 – 2100 m, 1999-2002;
5. Quebrada El Chido and Peña Blanca near Pomacochas (5°47'S 78°03'W), patchy cloud forest and pastures, above 2800 m thick elfin forest, 2200 – 3200 m; June - August 1998, 1999-2002;
6. Abra Pardo Miguel (Alto Río Nieva), Balzapata - Nuevo Cajamarca road (5°43'S 77°48'W), lower and mid-elevation montane forest, mostly secondary, 2200-2600 m; 1999-2003;
7. Jorge Chavez and Cacerío Afluente, Balzapata - Nuevo Cajamarca road (5°41'S 77°42'W), premontane and lower montane forest, patchy primary, mostly secondary, 1400-1800 m, 2002-2003;
8. Leimebamba - Abra Barro Negro road (6°45'S 77°51'W), cloud and elfin forest, above 3200 m humid puna, 2800-3600 m; 2000-2001;
9. La María near Lamud (6°18'S 78°03'W), relatively dry cloud forest with abundant puyas, patchy primary mixed with secondary forest and pastures, 2200 – 2400 m; 2000-2001.

## CONSULTED COLLECTIONS

**BMNH**: The Natural History Museum, London, United Kingdom.
**GR**: Collection of Gabriel Rodríguez, Medellín, Colombia.
**JFLC**: Collection of Jean Francois Le Crom, Bogotá, Colombia
**MIIZ**: Muzeum i Instytut Zoologii Polskiej Akademii Nauk, Warsaw, Poland.
**MNHN**: Muséum National d'Histoire Naturelle, Paris, France.
**MUSM**: Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru.
**MZUJ**: Muzeum Zoologiczne Uniwersytetu Jagiellońskiego, Kraków, Poland.
**MBLI**: Collection of Maurizio Bollino, Lecce, Italy.
**PB**: Collection of Pierre Boyer, Le Puy Sainte Réparade, France.
**SMTD**: Staatliche Naturhistorische Sammlung, Museum für Tierkunde, Dresden, Germany.
**TWP**: Collection of Tomasz Wilhelm Pyrcz, Warsaw, Poland.
**ZMHU**: Zoologisches Museum, Humboldt Universität, Berlin, Germany.
**ZSBS**: Zoologisches Staatssammlung München, Münich, Germany.

ACRONYMS USED

**FW**: forewing
**HW**: hindwing
**D**: dorsal surface
**V**: ventral surface

## ANNOTATED CHECK-LIST OF GENERA AND SPECIES

The following check-list was elaborated primarily based on the specimens collected by this author in various localities of the highlands of Chachapoyas in 1998 and the specimens obtained by local collectors between 1999 and 2003. Two species were included in the check-list even though they have not been collected so far in the surveyed area their distribution pattern. Although, mostly thanks to this study, the fauna of Pronophilini of this region is currently one of the best known of the entire Andes, the catalogue is still incomplete. Several species, mostly known from central Peru, are likely to occur in the highlands of Chachapoyas and the failure to report them is due to the still defficient sampling in certain localities and at particular elevations. This remark refers specifically to *Corades melania* STAUDINGER, *Oxeoschistus duplex* GODMAN, *Manerebia cyclopella* STAUDINGER, *Pedaliodes exanima* (ERSCHOFF), and *Pherepedaliodes nubilia* PYRCZ & VILORIA.

### *Lymanopoda* WESTWOOD, 1851

*Lymanopoda* WESTWOOD, 1851 (May): pl. 67, figs. 6, 7. Type species: *L. samius* WESTWOOD, by original designation.
*Sarromia* WESTWOOD, 1851(May): 402. Type species: *L. obsoleta* WESTWOOD, by original designation. Synonymy established by WESTWOOD, 1851(July).
*Zabirnia* HEWITSON, 1877: 92. Type species: *Z. zigomala* HEWITSON, by monotypy, **n. syn.**
*Trophonina* RÖBER, 1892: 22. Type species: *L. acraeida* BUTLER, by original designation, **n. syn.**
*Sabatoga* STAUDINGER, 1897: 143. Type species: *L. mirabilis* STAUDINGER, by original designation. Synonymy established by ADAMS & BERNARD, 1977: 270.

GENERIC INTRODUCTION: PYRCZ (Ph.D.) and PYRCZ *et al.* (1999) reviewed the morphology of *Lymanopoda*. Adults of this genus are small to medium-sized butterflies (FW length 20-25 mm) compared to other members of the tribe. They are characterised by triangular FW usually with an acute apex and often a convex outer margin, oblong HW, often with scalloped outer margins and a short tail-like extension of vein Cu1 in some species. Antennae are rather short, approximately 2/5 the length of the costa. Eyes are covered with short, sparse setae. Wing coloration varies greatly between species, ranging from white, dull brown to rufous, metallic silver, green and blue. Two synapomorphies of the genus *Lymanopoda* can be identified in the wing pattern. FW ocelli in cells Cu1-Cu2 and

Cu2-1A are always displaced basally in relation to the remainder. HWV median band is broken, displaced in the discal cell and connected to the post basal band („pierellization" type distortion of the ground plan *sensu* SCHWANWITSCH, 1925). It is not apparent in some white species, in which the underside pattern is simplified. More characters defining the genus are found in the male genitalia. There is a developed superuncus, which is a bulbous projection of tegumen on the junction with uncus. Gnathos is atrophied and instead there is a (usually) strongly sclerotized sub-scaphium. Valvae have two prominent sculptured processes on the dorsal surface (in a few cases atrophied). Possible synapomorphies are also identified in the female genitalia - a sclerotized lamella of anal papillae on the distal part of the posterior apophysis, an accessory gland (probably) producing an egg gluing secretion posterior to the ostium bursae.

*Trophonina* RÖBER (1892) is considered a subjective junior synonym of *Lymanopoda*, **n. syn.** Its type species, *L. acraeida*, BUTLER possesses all the generic synapomorphies of *Lymanopoda* as specified above and shown by PYRCZ (Ph.D.). *Zabirnia* is also a synonym of *Lymanopoda*, **n. syn.** Its type species, *Z. zigomala,* is a female of the Ecuadorian subspecies of *Lymanopoda acraeida* GODMAN.

The species of *Lymanopoda* show intricate patterns of horizontal and altitudinal distribution. Whereas one, *L. obsoleta* (WESTWOOD), is nearly Pan Andean, most species have much more restricted distributions and several are single range endemics. They are found in premontane forests from around 800 m (*L. panacea* HEWITSON), in cloud forests and up to boggy paramo up to 4000 m, *L. huilana* WEYMER (PYRCZ 2003). Most species occur within defined and sometimes very narrow bands of elevation (ADAMS 1985; PYRCZ & WOJTUSIAK 1999, 2002). *L. obsoleta* occurs at approximately 1800-2900 m (ADAMS 1986; PYRCZ & WOJTUSIAK 1999, 2002), while *L. marianna* STAUDINGER is known in a narrow band between 3000-3200 m (ADAMS & BERNARD 1981).

As far as is known, the larvae of *Lymanopoda* feed on *Chusquea* in the cloud forest (SCHULTZE 1929; ADAMS 1985), or *Swallenchloa* bamboo (Poaceae) in the paramo (PYRCZ Ph.D.), and exceptionally on other gramines (PYRCZ *et al.* 1999). The early stages were described for only one species, *L. samius* WESTWOOD (SCHULTZE 1929).

Adults of cloud forest *Lymanopoda* are strongly attracted to decomposing organic material, including carrion, dung, urine, fruits, and mineral matter found in mud (ADAMS 1985, 1986). On the other hand, the paramo species are not attracted to bait. They are energetic butterflies, flying low above the ground, zigzagging among *Espeletia* composites, being active only during longer periods of sunshine, whereas the cloud forest species are less motile, usually not moving away from stands of their *Chusquea* hosts. Individuals can be observed for several consecutive days in the same spot.

### *Lymanopoda acraeida malia* GODMAN, 1905
(Fig. 2)

*Lymanopoda acraeida* BUTLER, 1868: 171, pl. 4, fig. 6.
*Lymanopoda malia* GODMAN, 1905: 188.
*Lymanopoda acraeida* BUTLER var. *malia* GODMAN; WEYMER, 1912: 250, pl. 53, row a.

REMARKS: *L. acraeida* ranges from Ecuador (Tungurahua) to Bolivia (Yungas) on the eastern slopes of the Andes. It is easily recognised from other congeners by the presence of brick red or orange markings on the FWD and occasionally the HWD. Three subspecies were recognised prior to this study. The nominotypical *L. acraeida* occurs in southern Peru (outer eastern slopes in Cusco and Puno) and Bolivia (Yungas) and is characterised by the larger size than other subspecies, more elongate FW, red markings reduced to the subapical area of the FWD, absent on the HW. An undescribed subspecies occurs in Cusco (Machu Picchu area) and possibly in Apurimac (PYRCZ in prep.). *L. acraeida malia* is found in central (Junín, Huánuco, Pasco) and northern Peru (San Martín, Amazonas). In the sampled area it occurs in the valley of Huambo in the southern portion of the highlands of Chachapoyas. It is characterised by the wide orange submarginal patches on the FWD and the HWD distal one third. The new subspecies described below has considerably smaller orange markings on the FWD, almost completely fading on the HWD. *L. acraeida zigomala* found in eastern Ecuador is smaller, has a different shape of the FWD orange patches than other subspecies and only vestigial orange markings on the HWD. *L. acraeida* occurs at lower elevations than most congeners except *L. panacea* and *L. venosa* and occasionally *L. ferruginosa* found in similar habitats. In the area of Rodríguez de Mendoza individuals of *L. acraeida malia* were collected particularly high at approximately 1800 m. However elsewhere, records of individuals of *L. acraeida zigomala* collected at 800 m are known (PYRCZ Ph.D.).

### *Lymanopoda acraeida chavezi* PYRCZ, n. ssp.
(Figs. 1, 121)

TYPE SERIES:
***Holotype*** ♂: Peru, San Martín, Pardo Abra Miguel – Nueva Cajamarca road, Jorge Chavez, 1400 m, 11.XII.2002, B. Calderón *leg*., MUSM; ***Paratypes*** **(20** ♂♂**)**: **8**♂♂: Peru, San Martín, Pardo Abra Miguel – Nueva Cajamarca road, Jorge Chavez, 1400 m, 11.XII.2002, B. Calderón *leg*., MUSM; **2** ♂♂: Jorge Chavez, V.2003, 1400-1800 m, M. Tafur *leg.*, TWP; **1**♂: Cacerío Afluente, V.2003, 1200-1600 m, M. Tafur *leg.*, TWP; **3** ♂♂: Jorge Chavez, 1400 m, I.2003, B. Calderón *leg*., PB; **2** ♂♂: Jorge Chavez, 1000-1450 m, II.2003, B. Calderón *leg*., PB.

DIAGNOSIS: This subspecies has smaller upperside orange markings than *malia*, especially on the HW, and larger than *zigomala*, which has no trace of orange on the HW. It is consistently larger than *zigomala*, about the size of *malia*. The upperside ground colour is blackish brown, darker than in other subspecies.

DESCRIPTION: Male (Fig. 1): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW (length: 22-26 mm, mean: 24.5 mm, n=20). FWD blackish brown; a row of six elongate orange submarginal patches between R5-M1 and Cu2-1A, somewhat variable in size, 2-3 mm wide. HWD blackish brown; a row of submarginal orange patches from Rs-M1 to M2-M3, variable in size, in some individuals well marked in others faint or barely visible. FWV blackish brown; outer one-third and along costa orange; venal stripes black; apex medium brown. HWV medium brown, all venal and intervenal stripes black.

Male genitalia (Fig. 121): As illustrated, not differing noticeably from other subspecies.

Female: Hitherto unknown.

ETYMOLOGY: This subspecies is named after its type locality, Jorge Chavez.

REMARKS: *L. acraeida chavezi* is known so far only from its type locality and nearby localities, where it was collected at 1200-1600 m flying alongside *L. panacea* HEWITSON, *Pedaliodes phrasiclea* GROSE-SMITH and *Eretris oculata* (C. & R. FELDER).

### *Lymanopoda venosa* BUTLER, 1868

*Lymanopoda venosa* BUTLER, 1868: 171, pl. 4, fig. 5.

REMARKS: *L. venosa* is similar in wing shape to *L. acraeida* but it is smaller and has no markings on the dull brown upperside, except for a slightly lighter subapical and submarginal area of the FW. *L. venosa* occurs in low elevation cloud forests along the east slopes of the Andes from the Bolivian Yungas in the south to the Cordillera del Cóndor on the Peru-Ecuador border in the north. Available data indicate its altitudinal range as 1000-1600 m. It is a rare species wherever it exists and generally single individuals are observed flying alongside much more common *L. acraeida* and *L. panacea. L. venosa* has not been collected in the highlands of Chachapoyas so far, but given its distribution pattern it certainly occurs at lower elevations in the eastern part of the surveyed area.

### *Lymanopoda panacea panacea* HEWITSON, 1869

*Lymanopoda panacea* HEWITSON, 1869: 35.

REMARKS: The wing shape of *L. panacea* is similar to *L. venosa* and *L. acraeida*, the size of the latter, but darker on both surfaces and has noticeable black ocelli on the underside. It is most similar to *L. albocincta*, which basically differs only in having a white HWV median band. *L. panacea*, alongside *L. acraeida* and *L. venosa* inhabits lower elevations than most pronophilines. *L. panacea gortyna* (WEYMER) a local subspecies from the Eastern Cordillera in Colombia is known to occur as low as 800 m (KRÜGER 1925; ADAMS 1986; PYRCZ 1999). The nominotypical *L. panacea* distributed between Ecuador and northern

Peru occasionally is found in the highlands of Chachapoyas slightly above 2200 m, but its maximum abundance corresponds to 1600-1800 m. In central Peru (Junín, Pasco) occurs *L. panacea venusia* HOPFFER (1874). The subspecies *ocellifera* BUTLER, 1873, incorrectly synonymized with the nominotypical (ADAMS 1986), is found in southern Peru (Cusco).

### ***Lymanopoda albocincta intermedia* PYRCZ, n. ssp.**

(Figs. 3, 4, 122)

*Lymanopoda albocincta* HEWITSON, 1861: 157, pl. 9, fig. 5.

TPE SERIES:

***Holotype*** ♂: Peru, Amazonas: Abra Pardo Miguel, 2200-2550 m, VI.2002, B. Calderón *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Abra Pardo Miguel, 2200-2400 m, III.2002, B. Calderón *leg*., TWP. ***Paratypes*** (**13** ♂♂): **2** ♂♂: Peru, Abra Pardo Miguel, 2200-2550 m, VI.2002, B. Calderón *leg*., TWP; **1** ♂: same data but III.2002, TWP; **1** ♂: Alto Río Nieva, 2100 m, 10.VII.1984, J. Mallet *leg.*, MUSM; **1** ♂: 5km W Pomacochas, 2000 m, 18.II.1978, G. LAMAS *leg.*, MUSM; **2** ♂♂: Abra Pardo Miguel, 2200 m, 0542/7748, 11.XI.1998, G. LAMAS *leg.*, MUSM; **1** ♂: El Oso, near Laguna de Pomacochas, 2800-2950 m (unreliable), VI.2000, B. Calderón *leg.*, MBLI; **1** ♂: Peña Blanca, Laguna de Pomacochas, 2900-3050 m (unreliable), VI.2000, B. Calderón *leg.*, MBLI; **1** ♂: Alto Río Nieva, 2300 m, VI.2002, B. Calderón *leg*., PB; **1** ♂: same data but II.2002, PB; **2** ♂♂: Rodríguez de Mendoza, 1500-3000 m, B. Calderón *leg*., PB.

DIAGNOSIS: In the males of this subspecies the HWV white median band is wider than in *issacha* BUTLER and narrower than in the nominotypical subspecies. Moreover, *L. albocinta isaacha* has conspicuous FWV black ocelli in M3-Cu1 and Cu1-Cu2 not apparent in other subspecies. The female of *intermedia* does not differ noticeably from the nominotypical subspecies.

DESCRIPTION: Male (Fig. 3): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW (length: 23-24 mm; mean: 23.4 mm; n=3) triangular with a sub acute apex, outer margins straight. HW outer margin gently protruded between veins M2 and M3, tornus at straight angle. FWD uniformly dark-brown. HWD uniformly dark-brown. FWV brown with glossy, reddish overcast overall; two tiny submarginal white dots in M1-M2, M2-M3. HWV dark-brown; oblique, straight median white band from costa to inner margin near tornus, composed of seven segments, cut through at veins, 0.5-0.8 mm wide; barely noticeable dark-brown, sinuate submarginal line.

Male genitalia (Fig. 122): As illustrated, not differing noticeably from the nominotypical.

Female (Fig. 4): FWD pale brown; two black postmedian ocelli with white pupils in cells M3-Cu1 and Cu1-Cu2 plus two white dots in M1-M2 and M2-M3 displaced distally in relation to the ocelli. HWD uniformly dull brown. FWV light brown; black ocelli the same size as on the upperside, circled with pale yellow; white dots as on the upperside. HWV light brown with faint darker brown bands in median area from costa to discal cell and in postmedian area from discal cell end to anal margin.

ETYMOLOGY: *intermedia* (Lat., adj.) for the intermediate width of its HWV white median band in relation to other two recognised subspecies.

REMARKS: Prior to this study only two subspecies of *L. albocincta* were identified. The nominotypical occurs throughout Colombia, in Venezuela and northeastern Ecuador. *L. albocincta isaacha* is found only in the Ecuadorian Chocó. *L. albocincta intermedia* is distributed from northern Peru to southern Ecuador. Another, as yet undescribed, subspecies is found in central Peru (Pasco) and is characterised by the wide HWV white band, as wide as in the nominotypical *albocincta* (PYRCZ in prep.). In Pasco at its southern distribution limit *L. albocincta* is locally sympatric with a closely related taxon *L. apulia* HOPFFER, whose range extends further South. *L. albocincta* replaces allopatrically at higher elevations its very close ally, possibly only an ecotype, *L. panacea*. Except for the presence or absence of the HWV white bands no other morphological differences were found between the two. On the other hand, there are salient synapomorphies at the genital level shared by *L. albocincta* and *L. panacea* (BROWN 1943; PYRCZ Ph.D.). *L. albocincta* occurs at 1600-2400 m.

### *Lymanopoda obsoleta* (WESTWOOD, 1851)

(Figs. 123)

*Sarromia obsoleta* WESTWOOD [May 1851]: pl. 67, fig. 5.
*Lymanopoda obsoleta* (WESTWOOD); WESTWOOD [July 1851]: 402.
*Lymanopoda larunda* HOPFFER, 1874: 361. Synonymy established by WEYMER, 1912: 247, pl. 52, row e, 248.

REMARKS: *L. obsoleta* is one of the most widespread species of the tribe Pronophilini. It is distributed, without any substantial phenotypic variation, between the Venezuelan Cordillera de la Costa and Bolivia. In the northern and central Andes it is replaced at higher elevations by the closely related *L. dietzi* ADAMS & BERNARD, *L. altis* WEYMER, and *L. confusa* BROWN. In the surveyed area its upper parapatric replacement is *L. magna* n. sp., described below. *L. obsoleta* has a particularly wide altitudinal range. It is a common species found at 1800-2600 m, but locally it is found almost at timberline (PYRCZ & WOJTUSIAK 1999, 2002). In the Chanchamayo valley in central Peru it exceptionally descends to 1200 m. *L. obsoleta* is recognised by the uniformly glossy, chestnut upperside, acute FW apex and squarish HW. FWV pattern is nearly uniformly brown except for some lighter apical scaling, while the HWV is a mosaic of shades of brown with a slightly lighter median band.

### *Lymanopoda magna* PYRCZ, n. sp.

(Figs. 5, 6, 124)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2650-3250 m, 06.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa - Granada, 3000-3200 m, IX.2002, B.

Calderón *leg.*, TWP; ***Paratypes*** (**26** ♂♂) **5** ♂♂: Peru, Abra Pardo Miguel, 2200-2550 m, VI.2002, B. Calderón *leg.*, Amazonas, Molinopampa - Granada, 2650-3250 m, 06.VII.1998, T. Pyrcz & J. Wojtusiak *leg.*, MUSM; **1** ♂: same data but 2565 m, 26.VIII.1998; **1** ♂: same data but 2800-3100 m, 20.VIII.1998; **1** ♂: same data but 2665 m, 01.VII.1998; **1** ♂: same data but 2715 m, 01.VII.1998; **1** ♂: same data but 2765 m, 03.VII.1998; **1** ♂: same data but 2715 m, 05.VIII.1998; **1** ♂: same data but 2800-3100 m, 20-30.VI.1998; **1** ♂: Amazonas, Pomacochas, Qda. El Chido, 2200-2800 m, 09.VII.1998 (10 TWP; 2 MZUJ; 2 BMNH); **2** ♂♂: Peña Blanca, Laguna de Pomacochas, 2900-3050 m, VI.2000, B. Calderón *leg.*, MBLI; **5** ♂♂: Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón *leg.*, MBLI; **1** ♂: 2 km from Granada, 3400 m, X.2001, B. Calderón *leg.*, MBLI; **1** ♂: Pomacochas, El Oso, 3200 m, 26.V.2000, B. Calderón *leg.*, PB; **1** ♂: Molinopampa, XI.2000, B. Calderón *leg.*, PB; **1** ♂: same data but III.2002, TWP; **2** ♂♂: Abra Pardo Miguel, 2200-2400 m, III.2002, B. Calderón *leg.*, TWP.

DIAGNOSIS: This species very closely resembles *L. obsoleta* from which it differs by slightly larger size, larger FWV ocelli in M3-Cu1 and Cu1-Cu2 enclosed within a brick red diffused patch, and a reddish or pinkish suffusion of the HWV.

DESCRIPTION: Male (Fig. 5): *Head*: eyes chocolate-brown, covered with short, sparse setae; palpi 4 mm long, chestnut, covered with short chestnut hair; antennae 3/8 the length of the costa, chestnut with sparse white scales at base of each segment, club slightly flattened and concave, darker, slightly curved at the tip. *Thorax*: dorsally blackish-brown, hairy, ventrally covered with dense chestnut hair; legs light beige. *Abdomen*: dorsally and laterally blackish-brown, ventrally paler brown. *Wings*: FW (length: 23-26 mm; mean=24.75 mm; n=16) triangular, apex acute, outer margins slightly incised below apex. HW angular with outer margin slightly wavy and produced at vein M3. FWD uniformly dark-brown, except for a lustrous chestnut basal and post basal suffusion; basal 1/3 of costa brick red. HWD dark-brown, slightly lighter in basal 1/3. FWV dark-brown with a wide brick red basal overcast from base to postdiscal area and in submarginal area in cells M3-Cu1 and Cu1-Cu2; subapical and apical area dark violet; two minute subapical white dots in cells M1-M2 and M2-M3; two large black ocelli enclosed within red area in cells M3-Cu1 and Cu1-Cu2, with white pupils; occasionally a third ocellus displaced distally relative to remainder in Cu2-1A. HWV pinkish with three roughly parallel, indistinct darker violet bands, one from mid discal cell to apex, second across postdical area, third along outer margin; six faint, indistinct in some individuals, black postmedian dots with white pupils in a shallow curve pointing basally, generally visible in all the cells, two of them in cell Cu2-1A.

Male genitalia (Fig. 124): Similar to *L. obsoleta* except for the longer superuncus, thinner uncus, and more numerous “teeth” on the dorsal surface of dorsal valval process.

Female (Fig. 6): FW length 26 mm (n=1). FWD medium brown; basal area along costa shiny chestnut; two black ocelli with violet pupils in cells M3-C1, Cu1-Cu2; two subapical fenestrulla, a bigger one in M1-M2 and a tiny one in M2-M3. HWD uniformly medium brown, lustrous. FWV brown in median and marginal area, beige in basal area, along costa and on apex; black ocelli as the upperside, enclosed within an irregular, brick red patch; subapical fenestrulla as

on the upperside. HWV pinkish-beige; a faint brown stripe from inner margin towards median area; a series of five dark-brown, tiny dots from cell M1-M2 to Cu2-1A aligned in a shallow curve pointing basally.

ETYMOLOGY: This species is dedicated to Mrs. Magna Galo, the owner of the hotel in Molinopampa where the author was hosted during his study, and incidentally its epithet also refers to its larger size (*magna*, big in Latin) compared to its closest ally, *L. obsoleta*.

REMARKS: Throughout northern Andes *L. obsoleta* is replaced parapatrically at higher altitudes by close relatives - *L. confusa* BROWN in southern Ecuador - *L. altis* WEYMER in central Ecuador and most of Colombia - *L. dietzi* ADAMS & BERNARD and allied species in the Cordillera de Mérida in Venezuela - *L. maletera* ADAMS & BERNARD in the Sierra de Perijá on the Colombia-Venezuela border. All these upper parapatric allies of *L. obsoleta* form a monophyletic group defined by two synapomorphies of male genitalia - a particularly long and thin dorsal valval process, and a long, well developed superuncus. As indicated by quantitative data on altitudinal distribution obtained during the course of this study, *L. magna* also replaces *L. obsoleta* at higher elevations. *L. magna* shares with some northern Andean superior parapatric allies of *L. obsoleta* two common characters, the pinkish or violet HWV ground colour, characteristic of *L. dietzi* and *L. confusa*, and the prominent superuncus. However, *L. magna* has a shorter dorsal valval process and in this respect it is indistinguishable from *L. obsoleta*. *L. magna* is known also to occur in the Abiseo National Park in southern San Martín province, which is apparently its southern distribution limit since it has not been found in the heavily sampled Carpish (Huánuco) and Oxapampa (Pasco) areas. *L. magna* was collected along the Molinopampa - Granada transect at 2700-3000 m. In Pomacochas it was found at slightly lower elevations, down to 2400 m.

### *Lymanopoda ferruginosa* BUTLER, 1868

(Fig. 7, 125)

*Lymanopoda ferruginosa* BUTLER, 1868: 169, pl. 4, fig. 3.

REMARKS: *L. ferruginosa* is among the smallest representatives of the genus averaging 17-19 mm of FW length. It occurs along the eastern slopes of the Andes in Peru, Bolivia and northern Argentina. Individuals of *L. ferruginosa* and *L. rana* are misidentified in various museums, including the BMNH. Recent fieldwork in northern and central Peru shows that *L. ferruginosa* and *L. rana* are widely sympatric species. Considerable difference in size and the rusty FWV of *L. rana* are the most straightforward diagnostic characters. The upperside of *L. ferruginosa* is all dark-brown, with faint apical fenestrulla on the FW. FWV is blackish, with faint reddish markings showing in discal cell in some individuals, two or three minute white subapical dots, and two faint black ocelli with white pupils in M3-Cu1 and Cu1-Cu2. HWV ground colour varies between sandy yellow, beige and light brown with a steely distal and basal reddish suffusion, with three, roughly

parallel, red-brown bands, postmedian and submarginal one merge into a wider band from costa to mid discal cell. The lower half of discal cell is filled with shiny milky yellow. Six faint, or indistinct, black postmedian dots are arranged in a shallow curve pointing basally, generally visible in each cell. Some individuals are lighter brown with shapeless reddish markings appearing on the HWD, usually in the median area. They correspond to an individual form described by WEYMER (1912) as f. *translucida*. A similar variation exists in *L. rana*. *L. ferruginosa* is found at 1200-2200 m, but is more common at around 1400-1800 m.

### *Lymanopoda rana* WEYMER, 1912 n. stat.

(Fig. 8, 126)

*Lymanopoda ferruginosa* var. *rana* WEYMER, 1912: 247, pl. 52 row d.

REMARKS: *L. rana* was described as a variation of *L. ferruginosa* from Peru. It is in fact a separate species consistently different from *L. ferruginosa* in size, colour pattern and male genitalia (see under *L. ferruginosa*). It occurs in central (Junín, Huánuco, Pasco) and northern (San Martín, Amazonas) Peru. In southern Peru (Cusco) a closely related taxon was identified, representing possibly a subspecies of *L. rana* (PYRCZ in prep.). *L. rana* is locally sympatric with *L. ferruginosa* at 1800-2000 m, but also occurs at higher elevations, to 2400 m, which is above the upper elevational limit of *L. ferruginosa*.

### *Lymanopoda araneola* PYRCZ, n. sp.

(Figs. 9, 10, 11, 127)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2800-3100 m, 20.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas: Molinopampa - Granada, 2800-3100 m, 26.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; ***Paratypes*** (**212** ♂♂ and **4** ♀♀): **1** ♂: Peru, Amazonas, Molinopampa - Granada, 2650-3050 m, 27.VI.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **17** ♂♂: same data but 2650-3250 m, 29.VI.1998, MUSM; **1** ♂: same data but 3065 m, 01.VII.1998, TWP; **1** ♂: same data but 2965 m, 01.VII.1998, TWP; **1** ♂: same data but 2865 m, 01.VII.1998, TWP; **6** ♂♂: same data but 3000-3250 m, 01.VII.1998, TWP; **2** ♂♂: same data but 3100-3400 m, 03.VII.1998, TWP; **1** ♂: same data but 3065 m, 03.VII.1998, TWP; **5** ♂: same data but 3000-3300 m, 03.VII.1998, TWP; **1** ♂: same data but 3065 m, 03.VII.1998, TWP; **1** ♂: same data but 3115 m, 04.VII.1998, TWP; **1** ♂: same data but 3065 m, 04.VII.1998, TWP; **1** ♂: same data but 3015 m, 04.VII.1998, TWP; **6** ♂♂: same data but 2650-3100 m, 04.VII.1998, TWP; **40** ♂♂: same data but 2650-3250 m, 06.VII.1998, (30 TWP; MZUJ 5; BMNH 5); **13** ♂♂: same data but 2800-3100 m, 20.VIII.1998, TWP; **4** ♂♂: same data but 2800-3100 m, 26.VIII.1998, TWP; **1** ♂: same data but 3115 m, 26.VIII.1998, TWP; **1** ♂: same data but 3015 m, 29.VIII.1998, TWP; **1** ♂: same data but 2865 m, 29.VIII.1998, TWP; **1** ♂: Tingo - Ocol, 2400-2550 m, 02.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **1** ♂: Qda. El Chido, 2180-2800 m, 18.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **1** ♂: Rodríguez de Mendoza, Cedro, 2400 m, 15.IX.1998, B. Calderón *leg*., TWP; **1** ♂: Alto Río Nieva, 2000-2200 m, I.2003, B.Calderón *leg*., PB; **1** ♂: same data but 2300 m, II.2003, PB; **1** ♂: Molinopampa, XI.2000, B.Calderón *leg*., PB; **8** ♂♂: Peña Blanca, Laguna de Pomacochas, 2900-3050 m, VI.2000, B. Calderón *leg.*, MBLI; **2** ♂: Molinopampa - Granada, 2900-2950 m, X.2000, B. Calderón *leg.*; **3** ♂♂: same data but M. Tafur *leg*., TWP; **3** ♂♂: same data but III.2003, 3100-3250 m, TWP; **5** ♂♂: same data but 3000 m, MBLI; **2** ♂♂: same data but 3050 m, MBLI; **25** ♂♂: same data but 3100 m, MBLI; **30** ♂♂: same data but 3300 m, MBLI;

**6** ♂♂: same data but 3350 m, MBLI; **2** ♂♂: same data but 3400 m, MBLI; **1** ♂: 2 km. from Granada, 3400 m, X.2001, B. Calderón, MBLI; **7** ♂♂: near Abra de Barro Negro, Leimebamba-Balsas, 3550-3650 m, 1-15.XII.2001, B. Calderón *leg.*, MBLI; **6** ♂♂: Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., GR; **1** ♀: Molinopampa - Granada, 2650-3250 m, 06.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **2** ♀♀: Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón *leg.*, MBLI; **1** ♀: same data but 3000 m, MUSM.

DIAGNOSIS: This species closely resembles *L. excisa* WEYMER, a species occurring in the northern Andes, by its shape and uniform dark-brown upperside, but differs in male genitalia. Both dorsal and apical processes on the valvae are shorter and thicker. FWV postmedian ocelli are barely distinguishable from the ground colour in *L. araneola*, contrary to *L. excisa* and its southern allopatric replacement, *L. sp.* PYRCZ (in prep.) (from Huánuco, Junín and Pasco) both with well-differentiated ocelli in M3-Cu1 and Cu1-Cu2. HWV ground colour varies from yellow to beige and reddish-brown but is never violet contrary to the locally sympatric *L. dyari* n. sp. (described below).

DESCRIPTION: Male (Figs. 9, 10): *Head*: eyes blackish-brown, covered with short, sparse setae; palpi twice the length of the head, gray, covered with short and rather sparse hair, ventrally light gray, laterally beige and dorsally brown; antennae half the length of the costa, rufous, with sparse white scales at base of each segment, club slightly flattened and concave, darker brown, slightly curved at the tip. *Thorax*: dorsally blackish-brown, densely hairy, ventrally pale gray; legs: tibia pale gray, femur and tarsus pale brown. *Abdomen*: dorsally and laterally blackish-brown, ventrally paler brown. *Wings*: FW (length: 18-23 mm; mean=19.2 mm; n=109) triangular, with slightly falcate apex, outer margin incurved below apex; HW oval. FWD lustrous dark-brown, except for red-brown basal third of FW costa. HWD uniformly lustrous dark-brown. FWV blackish-brown; basal area suffused with brick red, in some individuals extending into discal cell; three minute white subapical dots in R5-M1, M1-M2 and M2-M3, and two barely visible, in some individuals indistinct, in M3-Cu1, Cu1-Cu2 displaced basally relative to remainder; costa, apex and outer margin varying between beige, rufous and light brown. HWV variable, in some individuals yellowish barely patterned, in others beige or reddish-brown; usually three roughly parallel, faint darker brown bands: median, postdiscal, and submarginal; six faint, or indistinct, black postmedian dots arranged in a shallow curve pointing basally, generally apparent in each cell.

Male genitalia (Fig. 127): Superuncus shallow; uncus stout and blunt; dorsal process on the valvae short and stout, with several small “teeth”; apical process stout, with several prominent “teeth”; saccus tubular and thin; aedeagus nearly straight, longer than valvae.

Female (Fig. 11): FW length: 22 mm (n=2); differs little from the male except that lighter brown on the dorsal surface and, although given important individual variation of the males it is difficult to generalise, apparently lighter marked on the underside.

ETYMOLOGY: *araneola* (Lat.) - little spider.

REMARKS: This species occurs in high elevation cloud forests, generally above 2800 m, occasionally almost to timberline. It is locally very common. It is known so far only in the highlands of Chachapoyas where it occurs in both central Molinopampa and northern La Peca units. *L. araneola* is replaced in central Peru (Huánuco, Pasco, Junín) by an undescribed, closely related species (PYRCZ in prep.).

### *Lymanopoda dyari* PYRCZ, n. sp.

(Figs. 12, 128)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Road Leimebamba - Balsas, Abra Barro Negro, 6°46´S, 77°57´W, 3550-3650 m, 01-15.I.2001, B. Calderón *leg.*, MBLI (to be deposited in MUSM); ***Paratypes*** (**5** ♂♂): same data as the holotype (3 MBLI, 2 TWP).

DIAGNOSIS: Shape and size similar to *L. inde* n. sp. but the two species vary in underside colour pattern, *L. dyari* lacks diagnostic white venal stripes of *L. inde*. *L. dyari* is also similar to *L. araneola* but it can be immediately recognised by the smaller size and the rufous - magenta ground colour of the HWV.

DESCRIPTION: Male (Fig. 12): *Head*: eyes chocolate-brown, lustrous, covered with sparse setae; palpi twice the length of the head, covered with short, brown hair; antennae 2/5 the length of the costa, coffee brown, club twice as thick as shaft, slightly concave. *Thorax*: dorsally blackish-brown, ventrally pale brown, legs (tibiae and femora) covered with brown hair. *Abdomen*: dark-brown dorsally and laterally, pale brown ventrally. *Wings*: FW (length: 17,5-18.5 mm; mean: 18 mm, n=2) oblong, costa slightly arched, apex subacute, outer margin slightly convex and incised below apex. HW oval. FWD blackish-brown, lustrous; costa at base rufous; a sinuate row of five minute whitish postmedian-submarginal dots, three of them in cells R5-M1, M1-M2 and M2-M3 parallel to outer margin, two in cells M3-Cu1 and Cu1-Cu2 displaced towards wing base; fringes dark-brown. HWD uniformly blackish-brown, lustrous, paler brown along anal margin; fringes orange-brown, very short. FWV pale dark-brown, chestnut along costa; apex dusted with magenta; a row of white ocelli ringed with black aligned as on the upperside. HWV ground colour rufous violet dusted with magenta particularly in discal cell, along costa and along upper edge of vein M2 where it forms a distinct lighter stripe; a delicate darker brown ripple-like pattern covering the whole HWV.

Male genitalia (Fig. 128): Uncus short and blunt, superuncus shallow, valval dorsal process prominent erect and rather narrow, dentate along inner margin, distal process slightly longer than dorsal with short little “teeth”, aedeagus one fourth longer than valvae, slightly arched. Male genitalia are most similar to *Lymanopoda rana*.

ETYMOLOGY: This species is dedicated to the American naturalist H. G. DYAR, who lead an entomological expedition to Peru in 1911, and described a few taxa of pronophilines (DYAR 1913), all of them unfortunately resulted synonymous.

REMARKS: This species is known so far from a series of specimens collected in the paramo at the highest point of the Leimebamba - Balsas road. It is apparently an upper parapatric replacement of *L. araneola*, which occurs in the cloud forest at immediately lower elevations in the same area.

### *Lymanopoda ingasayana* PYRCZ, n. sp.

(Figs. 13, 14, 129)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada trail, Cerro Ingasayana, 3350 m, VIII.1998, T. Pyrcz & J. Grados *leg.*, MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa - Granada trail, 3300 m X.2000, B. Calderón *leg.*, *ex coll.* MBLI, TWP; ***Paratypes*** (**10** ♂♂): **1** ♂: Peru, Amazonas, Molinopampa - Granada trail, Cerro Ingasayana, 3350 m, VII.1998, T. Pyrcz & J. Wojtusiak *leg.*, MZUJ; **1** ♂: Molinopampa - Granada trail, 3100 m, X.2000, B. Calderón *leg.*, MBLI; **2** ♂♂: same data but 3150-3250 m, MBLI; **1** ♂: same data but 3300 m, MBLI; **2** ♂♂: same data but TWP; **3** ♂♂: Molinopampa 2900-3100 m, I.2001, B. Calderón *leg.*, PB.

DIAGNOSIS: It can be distinguished from the parapatric ally, *L. araneola*, by the light, sandy yellow, almost uniform HWV, straight - instead of truncate - FW outer margin, and by the fact that the HWV postmedian black dots form a row parallel to the outer margin - curved basally in *L. araneola*.

DESCRIPTION: Male (Fig. 13): *Head*: eyes chocolate brown, lustrous; frons with a tuft of brown hair; palpi twice the length of the head, dorsally beige, covered with rather short ochreous hair on the first and second segment, shorter and brown on the third; antennae 2/5 the length of the costa, ochreous with white scales at base of each segment, club twice the width of shaft, brown. *Thorax*: dorsally blackish-brown; legs ochreous, tibiae and femora hairy. *Abdomen*: dorsally and laterally blackish-brown, ventrally lighter dull brown. *Wings*: FW (length: 20-21.5 mm, mean: 20.7 mm, n=3) costa very slightly arched; apex acute; outer margin very slightly incised below apex and nearly straight; tornus gently arched. HW oval; very gently arched costa, regular outer margin; tornus curving nearly at 90°; FWD dark-brown, lustrous; three minute subapical dots in cells R5-M1, M1-M2 and M2-M3 plus a fourth one, displaced basally in M3-Cu1; fringes ochreous; HWD uniformly dark-brown, lustrous, anal margin sulphurous; FWV dark-brown; costa, apex and outer margin ochreous; basal area slightly suffused with red; a minute red discal spot; white subapical dots in R5-M1, M1-M2 and M2-M3 as on the upperside, two white spots displaced basally in M3-Cu1 and Cu1-Cu2 ringed with black; HWV ochreous; a slightly darker, brown suffusion forming a wide patch in basal and median area, except for an area free of brown at base and in lower outer one-third of discal cell; a row of black postmedian-submarginal dots in all the cells, parallel to outer margin.

Male genitalia (Fig. 129): Uncus thin, short, superuncus shallow, valvae without dorsal process, dorsal and distal surface serrate, aedeagus one fourth longer than valvae, slightly curved in the middle. Male genitalia are unlike any

congener found in the highlands of Chachapoyas because of characteristic valvae devoid of the secondary dorsal process.

Female (Fig. 14): FWD dull dark-brown; FW white subapical and postdiscal dots better marked than in the male. HWD dull dark-brown; faint submarginal brick red patches showing in cells M1-M2, M2-M3; anal margin pale yellow becoming progressively dusted with orange and then brick red towards tornus. FWV ground colour dark-brown suffused with brick red in the entire discal cell, along lower part of outer margin and at tornus; costa, apex and upper half of outer margin light yellow. HWV almost uniformly milky yellow; slightly more contrasting yellow markings visible towards outer one-third.

ETYMOLOGY: This species is named after the Cerro Ingasayana, the type locality.

REMARKS: *L. ingasayana* is known to occur in the paramo uplands of the area of Molinopampa. Its presence is to be expected in other Peruvian localities situated further south. *L. ingasayana* is apparently a rare species. Thus far, only a couple of individuals were collected along an old pre-Hispanic trail leading to the village of Granada in one spot situated in a mosaic of humid puna and elfin forest. They fly alongside *Punapedaliodes flavomaculata* (STAUDINGER), *Pedaliodes albicilia* n. sp. and *Steroma agraulis agraulina* new ssp. described below.

### ***Lymanopoda inde* PYRCZ, n. sp.**

(Figs. 15, 16, 130)

[*Lymanopoda spec?* KOENIG, 2004: pl. XV, fig. 11.]

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada trail, 3150-3250 m, X.2000, B. Calderón *leg*., *ex coll.* M. Bollino, MUSM; ***Allotype*** ♀: Peru, Amazonas: Molinopampa - Granada trail, 3300 m, X.2000, B. Calderón *leg*., *ex coll.* MBLI, TWP; ***Paratypes*** (**40** ♂♂ and **1** ♀): **5** ♂♂: Peru, Amazonas, Molinopampa - Granada trail, 3150-3250 m, X.2000, B. Calderón *leg*., TWP; **3** ♂♂: same data but 3100 m, MBLI; **21** ♂♂: same data but 3150-3250 m, 5 MUSM; 16 MBLI; **2** ♂♂: same data but 3300 m, MBLI; **1** ♂: same data but 3400 m, MBLI; **1** ♂: Molinopampa - Granada trail, VI.2002, B. Calderón *leg.*, TWP; **4** ♂♂: Molinopampa, XI.2000, B. Calderón *leg*., PB; **2** ♂♂: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg*., PB; **1** ♀: Molinopampa, XI.2000. B. Calderón *leg*., PB; **1** ♂: same data but III.2003, M. Tafur *leg*., TWP.

DIAGNOSIS: Size and shape are similar to *L. dyari* but the HWV white venal stripes allow an immediate recognition of this species.

DESCRIPTION: Male (Fig. 15): *Head*: eyes chocolate-brown, lustrous, covered with sparse setae; labial palpi long, two and a half the length of the head covered with short, light beige hair; antennae 2/5 the length of the costa, dorsally light beige, ventrally brown, club prominent, spoon-like, blackish-brown. *Thorax*: dorsally blackish-brown, ventrally grayish-black; legs beige. *Abdomen*: dorsally and laterally dark-brown, ventrally light beige. *Wings*: FW (length: 17-19 mm; mean: 17.8 mm; n=6) oblong, costa slightly arched, apex blunt, outer margin markedly convex; fringes short, orange. HW oval, apex arched, outer margin slightly bent at vein M2; fringes very short, orange. FWD medium brown, lus-

trous; a sinuate row of five minute yellowish postmedian-submarginal dots, three of them in cells R5-M1, M1-M2 and M2-M3 parallel to outer margin, two in cells M3-Cu1 and Cu1-Cu2 displaced towards wing base. HWD uniformly medium brown, lustrous. FWV dark-brown, except for a lighter costa; apex and outer margin varying from chestnut to beige; a row of milky-white ocelli ringed with black aligned as on the upperside, in some individuals not apparent. HW ventral area ground colour varying between chestnut and beige; all veins, including vestigial discal veins, marked with milky-white stripes; a diffused, dark-brown median band, discontinuous on the veins and stripes of same colour running along discal cell from wing base to the outer margin, from the 1/3 of vein Rs to base of vein M1 and along outer, lower edge of discal cell; a faint submarginal line of same colour; a row of black postmedian-submarginal dots in all cells parallel to outer margin.

Male genitalia (Fig. 130): Uncus massif reduced to a short and acute; superuncus shallow; valvae shortened in distal part, dorsal process stout, dentate along inner margin, distal process reduced to a short blunt tip. Genitalia are unique among other *Lymanopoda* found in the highlands of Chachapoyas because of the reduction of the primary apical process and the prominent dorsal process of the valvae.

Female (Figs. 16): FW length 18 mm (n=1). FWD ground colour dull dark-brown; a wide, irregular light orange patch covering one third of the wing from postmedian to submarginal area, enclosing a series of black ocelli with white pupils in the subapical area in cells R5-M1, M1-M2 and M2-M3, two displaced basally in M3-Cu1 and Cu1-Cu2 and another one closer to tornus in Cu2-1A. HWD dull dark-brown, with a wide light orange area covering distal one third of the wings, enclosing a row of submarginal black spots parallel to the outer margin. FWV pattern reflected from the upperside with light orange markings. HWV almost uniformly milky white, except for a darker shade running from base through discal cell to outer margin where spreading wider; unlike the males, no white venal stripes.

ETYMOLOGY: *inde* (Lat., adv.) - from an indefinite place

REMARKS: This is one of the most puzzling taxa of the genus *Lymanopoda*. The first known specimen of this species deposited in the collection of the MNHN Paris bears two enigmatic labels attached to it, one of them saying "N.Peru", whereas the other "umbratilis cotype", obviously incorrect, as *L. inde* does not even closely resemble *L. umbratilis* (ROSENBERG & TALBOT). The original specimen from Paris museum proved however to belong to a different subspecies than the one discovered in 1999 in the highlands of Chachapoyas and it will be described in a separate paper (PYRCZ in prep.). *L. inde* is not related closely to any congener as demonstrated in a cladistic analysis by PYRCZ (Ph.D.). It has a number of very particular characters both in the colour pattern and male genitalia structure. The row of HW submarginal black dots is parallel to the outer margin, a feature shared by *L. ingasayana* and a group of north Andean high paramo species - *L. huilana* WEYMER, *L. melia* WEYMER, *L. ichu* PYRCZ, WILLMOTT & HALL and

*L. caracara* PYRCZ, WILLMOTT & HALL. Exclusive features of *L. inde* are exceptionally long labial palpi, relative to the size of head the longest within the genus. In the male genital structures the most outstanding is the shape of the valvae, with a very thick prominent dorsal process and a short, blunt apical one, incidentally similar to *L. nevada* (KRÜGER) found in the Colombian Sierra Nevada de Santa Marta. Undoubtedly, the morphology of *L. inde* is a mixture of primitive and highly specialised characters making its current phyletic status unsteady.

## *Eretris* THIEME, 1905

*Eretris* THIEME, 1905: 131. Type species: *Pronophila decorata* C. & R. FELDER, by subsequent designation, HEMMING, 1943: 24.

GENERIC INTRODUCTION: Although there hasn't been any cladistic study of the genus *Eretris* THIEME, it is apparently monophyletic and can be easily recognised by a series of adult morphology characters, particularly the characteristic very short, slender antennae, reaching 1/3 the length of the costa. Labial palpi are also short and are covered with long and dense hair. FW length of *Eretris* averages 2 cm. HW have sinuate outer margins and the anal margin is produced at tornus (DEVRIES 1987). Dorsal patterns of wings are uniformly brown with an occasional anal suffusion of red or orange and submarginal ocelli showing through from the underside, generally more prominent in the females. FWV are barely patterned except for darker elements of the ground plan (median, postmedian and submarginal lines). HWV have characteristic fully developed submarginal ocelli and a series of brown or rufous bands of the ground plan, usually edged with orange, reddish or yellow. Male genitalia are characterised by slender, bar-like valvae, with smooth ampulla, very short, pointed gnathos and flat, short aedeagus.

Hosts and early stages of *Eretris* have not been described except for DEVRIES (1980, 1987) who reported the oviposition on *Chusquea* bamboo and described the egg of *Eretris suzannae* DEVRIES in Costa Rica. The genus *Eretris* is distributed from Central America (Guatemala) to Bolivia and possibly northernmost Argentina. Up to six species can be found parapatrically along an altitude gradient (PYRCZ & WOJTUSIAK 1999). Some species of *Eretris* - *E. suzannae*, *E. oculata* WEYMER, *E. depresissima* PYRCZ - occur below 1000 m, at lower elevations than most pronophilines. Other live near the upper forest limit, at 3200 m - *E. centralis* KRÜGER, *E. apuleja* - none however occurs in the paramo grassland. Microhabitats and behaviours are variable. Lower strata cloud forest species prefer to stay in the shadowy understory - *E. depresissma*, *E. oculata* - other - *E. porphyria*, *E. apuleja* - rather perch and patrol in the subcanopy and seldom descend to the ground level, unless attracted by the organic matter in decomposition. *Eretris* are not particularly energetic flyers. Wings resemble *Manerebia*. They are fragile insects and avoid straying into open areas.

The fauna of *Eretris* in the northern Andes has been discussed in several papers (ADAMS & BERNARD 1977, 1979, 1981; ADAMS 1986; PYRCZ 1999; PYRCZ &

WOJTUSIAK 1999; PYRCZ & VILORIA in press), in which new species and subspecies were described. On the other hand, the systematics of this genus in central and southern tropical Andes remains completely unexplored. The only species hitherto described south of the Huancabamba deflection is *E. subpunctata* (GROSE-SMITH & KIRBY, 1894) and the only relevant bibliographic source is FORSTER (1964). This state of the matter does not reflect the fact that the fauna of *Eretris* in Peru and Bolivia is poor but is merely the result of the lack of data. Herein, six species are reported from the highlands of Chachapoyas. Three of them are new.

### *Eretris oculata* (C. & R. FELDER, 1867)

(Figs. 17, 18)

*Pedaliodes oculata* C. & R. FELDER, 1867: 472.
*Eretris oculata* (C. & R. FELDER); THIEME, 1905: 133.
*Eretris calisto oculata* (C. & R. FELDER); ADAMS, 1986: 255-256.
*Eretris oculata* (C. & R. FELDER); PYRCZ, 1999: 229.

REMARKS: This large species is characterised, as compared to other congeners occurring on the east slopes of the Andes, by the large size and lack of any yellow or orange scaling on the HWV. *E. oculata* has recently been discovered in the highlands of Chachapoyas. It is also found in Colombia, its type locality (KRÜGER 1925; PYRCZ 1999) and Ecuador (Cordillera del Cóndor). It occurs in premontane or low elevation cloud forest, at 1000-1400 m, and is relatively uncommon.

### *Eretris calisto* (C. & R. FELDER, 1867)

(Figs. 19, 20)

*Pedaliodes calisto* C. & R. FELDER, 1867: 472.
*Eretris calisto* (C. & R. FELDER); THIEME: 1905: 133.

REMARKS: *E. calisto* was described from "Bogotá". The comparison material from Colombia is scarce and comes from scattered localities. It is however possible to observe that the individuals most closely matching the type [in BMNH, examined] are found along the eastern slopes of the Andes (PYRCZ 1999) in southeastern Colombia and northeastern Ecuador. Those from the western slopes of the Eastern Cordillera (FASSL 1918; ADAMS 1986), the Central Cordillera and eastern slopes of the Western Cordillera (PYRCZ 1999) are smaller with slightly less zigzagging HWV postdiscal band. *E. calisto kogui* ADAMS & BERNARD (1977) described from the Sierra Nevada de Santa Marta is small with faint HWD markings otherwise only slightly differing from the Central Cordillera specimens. A local population in the upper Napo and Pastaza rivers in central Ecuador is recognised by small HWV ocelli, however in the populations found further south in Zamora-Chinchipe the ocelli are as large as in the nominotypical subspecies, with slightly more zigzagging HWV postdiscal band. The individuals found in the highlands of Chachapoyas have somewhat smaller HWV ocelli and in this respect

resemble closely those found in central Ecuador. They show important individual variation affecting the wingspan, size of the ocelli, the colour of the HWV, which coupled with the scarcity of comparison material and the complexity of this species zoogeography made me abstain from naming a new subspecies. *E. calisto* occurs along the eastern slopes of the Andes parapatrically above its closely related ally, *E. oculata*, incorrectly synonymized by ADAMS (1986), as pointed out by PYRCZ (1999), which is bigger and has no reddish or yellow suffusion on the HWV, whereas on the western slopes it is replaced at lower elevations by *E. lecromi* PYRCZ (1999) and *E. depresissima* (PYRCZ). The altitude range of *E. calisto* is 1500-2200 m.

### ***Eretris mendoza* PYRCZ, n. sp.**

(Figs. 21, 2, 131)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, El Cedro, 2000-2200 m, VII-VIII.1998, T. Pyrcz *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Rodríguez de Mendoza, El Cedro, 21.VIII.1998, B. Calderón *leg.*, TWP; ***Paratypes*** (**12** ♂♂ & **1** ♀): **2** ♂♂: Peru, Amazonas, Rodríguez de Mendoza, El Cedro, 2000-2200 m, 25.VIII.1998, B. Calderón *leg*., TWP; **1** ♂: same data but 24.IX.1998, TWP; **1** ♂: same data but 31.VIII.1998, TWP; **6** ♂♂: same data but VII-VIII.1998, T. Pyrcz *leg.*,3 TWP, 3 MUSM; **2** ♂♂ & **1** ♀: same data but III.2002, TWP.

DIAGNOSIS: This species is recognised from the most similar sympatric *E. calisto* by the smaller HWV ocelli and the conspicuous submarginal steely suffusion. The latter character allows an easy identification from another sympatric congener *E. apuleina* n. sp. (described below), wich additionally has a wide HWV rusty suffusion.

DESCRIPTION: Male (Fig. 21): *Head*: eyes chocolate brown; palpi twice the length of the head covered with dark brown hair; antennae two-fifth the length of the costa, slender, club only slightly thicker than shaft, dorsally chestnut, club orange, terminal segments dark brown, ventrally orange, terminal segments dark brown. *Thorax*: dorsally and ventrally blackish brown, legs dark brown. *Abdomen*: dorsally and laterally blackish brown, ventrally dull brown. *Wings*: FW (length: 22-24 mm, mean: 22.8 mm, n=13) apex obtuse, outer margin straight. HW outer margin slightly undulating. FWD uniformly medium to dark brown, a shade lighter and lustrous in distal one-fourth; a faint submarginal dark brown line. HWD uniformly medium to dark brown, a shade lighter in distal one-fourth; a sinuate dark brown submarginal line; in most examined specimens two faint submarginal ocelli in Cu1-Cu2 and Cu2-1A, black ringed with brick red. FWV dull medium brown; a faint median dark brown line across discal cell; a slightly better marked postmedian brown line from costa to tornus, zigzagging from M3 to tornus; a dark brown submarginal line parallel to outer margin and a thin margin line of same colour. HWV medium brown; a dark brown submedian line from costa to 1A; a brick red postmedian band, irregular, roughly undulating from costa to M3, with three sharp basal incisions from vein Cu1 to 1A, basally suffused with orange and yellow scales from vein M3 to anal margin, yellow

scales being denser towards postmedian band inner edge; a row of six black submarginal ocelli with red pupils and ringed with brick red, somewhat variable in size but generally small or medium, not touching brick bands basally or distally, roughly of similar size, the biggest of all are in cells Rs-M1 and Cu1-Cu2, whereas the smallest in cell M1-M2, occasionally missing; a brick red submarginal band, plus a thin parallel marginal line of same colour; the area between postmedian and submarginal line suffused with steely gray.

Male genitalia (Fig. 131): Uncus with a distinctive hump at base; gnathos half the length of the uncus; valvae slender and straight without any processes; saccus long and wide shovel-like; aedeagus short and curved, wider basally, distally with a termite soldier head-like tip.

Female (Fig. 22): FWD pale brown, considerably lighter than the male; submarginal and marginal dark brown lines. HWD pale brown, same as on the FW; submarginal and marginal dark brown lines; three small black HWD submarginal ocelli ringed with red in cells M3-Cu1 to Cu2-1A. FWV similar to the male but lighter. HWV similar to the male but lighter and devoid of submarginal steely silver scaling.

ETYMOLOGY: This species is named after its type locality, Rodríguez de Mendoza.

REMARKS: There are several Peruvian superficially similar species (including at least four undescribed) resembling *E. subpunctata* (SMITH & KIRBY) described from Bolivia and *E. ocellifera* (C. & R. FELDER) from Colombia and Ecuador. They are very difficult to identify based solely on wing colour pattern because of rather important infraspecific variation involving the most conspicuous elements. The genitalia of *E. mendoza* are however unlike any of them with a characteristic hump on the base of uncus and a wide shovel-like saccus. *E. mendoza* is a mid-elevation cloud forest species, relatively common at 1600-2400 m, found above *E. calisto* and widely within the lower altitudinal range of *E. apuleina* n. sp. (described below).

### *Eretris porphyria transmaraniona* PYRCZ, n. ssp.

(Figs. 23, 24, 132)

*Pronophila porphyria* C. & R. FELDER, 1867: 470. Type locality: "Venezuela", 1 male lectotype (designated by PYRCZ & VILORIA) in BMNH [examined].
*Eretris porphyria* (C. & R. FELDER); THIEME, 1905: 132.
*Pedaliodes mariona* WEEKS, 1902: 10. Synonymy established by ADAMS, 1986: 254.

TYPE MATERIAL:

***Holotype*** ♂: Peru, Amazonas, Peña Blanca, Río El Chido, 2950 m, 07.VII.1999, B. Calderón *leg.*, MUSM. ***Allotype*** ♀: Peru, Cajamarca, Tabaconas, VIII.1996, I. Aldas *leg*., TWP. ***Paratypes*** (**10** ♂♂): **1** ♂: Peru, Cajamarca, Tabaconas, VIII-IX.1995, I. Aldas *leg*., TWP; **1** ♂: Charape - Rumipite, IX.1997, I. Aldas *leg*., TWP; **5** ♂♂: Ecuador, Zamora-Chinchipe, Zumba vía Calderón, 2000-2300 m, V.1998, A. Jasiński *leg*., (3 MUSM, 1 MZUJ, 1 BMNH); **1** ♂: same data but vía San Andres, TWP; **1** ♂: valle del Río Zamora, TWP; **1** ♂: San Ramón, XI.1997, I. Aldas *leg*., TWP.

DIAGNOSIS: This subspecies closely resembles *E. porphyria pesudoperija* PYRCZ (1999) occurring in the Colombian Central Cordillera, from which it differs

by a narrower HWV yellowish wedge extending from anal margin towards wings median area basally to postmedian band, and more wavy postmedian band particularly in the cell Cu1-Cu2.

DESCRIPTION: Male (Fig. 23): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW (length: 20-23 mm; mean=21.1 mm; n=11) dorsal surface dark brown, slightly lighter towards outer half, lustrous; a thin, dark brown submarginal line, parallel to outer margin, slightly sinuate, barely noticeable in some individuals. HWD dark brown; an even darker, sinuate submarginal line better marked than on the forewing. FWV medium brown, dull; a series of three, roughly parallel dark brown lines running from costa to inner margin, postbasal, postmedian and submarginal, latter two slightly closing on each other towards inner margin; the area between postmedian and submarginal lines lighter; postbasal line bordered distally with steely scales, same scales present as well along distal edge of discal cell, along distal edge of postmedian line from costa to vein M2 and between submarginal brown and a thin rufous marginal band. HWV dark brown; an even darker postbasal sinuate line running from costa to inner margin; three thin postmedian, submarginal and marginal bands; postmedian band gradually increasing delicately wavy culminating in a shallow notch pointing basally in cell Cu1-Cu2, edged basally with yellow from vein M1 to Cu2 more prominently so in cell Cu1-Cu2, then expanding into a larger yellowish-orange area extending to anal edge and gradually fading away towards postbasal line; a series of five black ocelli with white pupils and ringed with rufous in cells M1-M2 to Cu2-1A; submarginal wavy band touching the ocelli situated in cells M3-Cu1, Cu1-Cu2 and Cu2-1A; the area between postmedian and marginal bands lustrous steely gray.

Male genitalia (Fig. 132): As illustrated, not differing noticeably from other subspecies.

Female (Fig. 24): FW length 23 mm (n=1); lighter brown on both dorsal and ventral surface than the male, otherwise similar.

ETYMOLOGY: This subspecies owes its name to the fact that it occurs on both banks of the Río Marañon, thus *transmaraniona*.

REMARKS: *E. porphyria transmaraniona* occurs in the northern part of the highlands of Chachapoyas, in the so-called La Peca unit, and in the province of Zamora-Chinchipe in southern Ecuador on the eastern slopes of the Andes. It is the southernmost subspecies of *E. porphyria*, which is otherwise widely distributed throughout Ecuador, Colombia and Venezuela.

### ***Eretris apuleina* PYRCZ, n. sp.**

(Figs. 25, 26, 133)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas: Molinopampa, Tingo-Ocol, 2400-2500 m, 26.VI.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Abra Pardo Miguel, 2200-2400 m, III.2003, M. Tafur *leg.*,TWP; **Paratypes** (**30** ♂♂): Peru, Amazonas: **2** ♂♂: Molinopampa, Tingo-Ocol, 2400-2500 m,

28.VI.1998, T. Pyrcz & J. Wojtusiak *leg.* ,TWP; **4** ♂♂: same data but 20-30.VII.1998,MUSM; **2** ♂♂: same data but 05.VII.1998 (4 TWP; 2 MZUJ; 1 BMNH); **1** ♂: Molinopampa - Granada, 2650-3250 m, 06.VII.1998, T. Pyrcz & J. Wojtusiak *leg.*, TWP; **2** ♂♂: same data but 2765 m, 29.VIII.1998, TWP; **1** ♂: same data but 2715 m, 29.VI.1998, TWP; **1** ♂: same data but 2715 m, 29.VIII.1998, TWP; **1** ♂: same data but 2815 m, 06.VII.1998, TWP; **1** ♂: same data but 2715 m, 26.VIII.1998, TWP; **1** ♂: same data but 2815 m, 26.VIII.1998, TWP; **2** ♂♂: same data but 3100-3250 m, III.2003, M. Tafur *leg*., TWP; **1** ♂: Rodríguez de Mendoza, Cedro, 2300 m, 29.VIII.1998, TWP; **1** ♂: same data but III.2003, TWP; **4** ♂♂: Pomacochas, Qda. El Chido, 2200-2800 m, 09.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **1** ♂: same data but 2180-2800 m, 18.VII.1998, TWP; **2** ♂♂: same data but 2400-2600 m, III.2003, M. Tafur *leg*., TWP; **3** ♂♂: Abra Pardo Miguel, 2200-2400 m, III.2002, B. Calderón *leg*., MUSM.

DIAGNOSIS: *E. apuleina* most closely resembles *E. mendoza* by its wing shape and size, but differs in that the HWV postmedian line is only gently sinuate, whereas in *E. mendoza* it is sharply indented, particularly from vein M3 to inner margin. HWV submarginal ocelli of *E. apuleina* are very small or absent, whereas in *E. mendoza* and *E. calisto* they are all fully developed. This species shares most characters of the HWV pattern with an unnamed population of *E. apuleja* (PYRCZ in prep.) occurring in south-west Ecuador, which however is much smaller and has a nearly straight HWV postmedian line.

DESCRIPTION: Male (Fig. 25): *Head*: eyes hairy, dark chocolate-brown; palpi twice as long as head, covered with dull brown hair; antennae 1/3 the length of the costa, dorsally chestnut, ventrally orange, terminal segments darker, club slightly thickens. *Thorax*: dorsally blackish-brown, covered with short hair; legs dull brown, tibiae hairy. *Abdomen*: dorsally and laterally blackish-brown, ventrally slightly lighter brown. *Wings*: FW (length: 21-24 mm; mean=22.7 mm; n=23) apex sub-acute, outer margin very slightly incised below apex, straight. HW sub-triangular, outer margins slightly sinuate. FWD blackish-brown, lustrous, slightly lighter towards outer margin. HWD blackish-brown, lustrous, covered with long hair-like scales in the postbasal area; marginal line reddish from vein Cu2 to tornus. FWV dull-brown with a series of faint, dark-brown lines parallel to the outer margin: median, postmedian and submarginal, marginal line rufous; no trace of ocelli. HWV ground colour same as on the FW, with a series of dark rufous oblique lines: median, from costa to vein 1A, postmedian, submarginal and marginal, the latter two lines merge before tornus; postmedian line delicately sinuate, with a slightly more visible notch in cell Cu1-Cu2, bordered basally with light orange from vein M3 to tornus; anal area and the area between postmedian and submarginal line rusty; submarginal ocelli faint or totally absent except in cells Cu1-Cu2 and Cu2-1A, where always present, even if very small.

Male genitalia (Fig. 133): Uncus straight with a sharp tip slightly curved downwards; gnathos very short, vestigial; valvae with a slightly undulating dorsal surface; saccus very short and shallow; aedeagus tubular, approximately of constant width, slightly arched.

Female (Fig. 26): Lighter on both surfaces of the wings, particularly on the underside. HWV pattern of lines and patches blurred, little contrasting; tiny submarginal ocelli apparent in cells Rs-M1 to Cu2-1A.

ETYMOLOGY: *apuleina* - this specific epithet suggests possible closer affinities with *E. apuleja*, occurring in the northern Andes.

REMARKS: This species is distributed along the eastern slopes of the Andes in northern (Amazonas, San Martín, La Libertad) Peru. It is replaced in central Peru (Junín, Pasco) by a closely related undescribed species (PYRCZ in prep.). *E. apuleina* occurs in mid-elevation cloud forests at 2400-2800 m generally.

### *Eretris truncatina* PYRCZ, n. sp.

(Figs. 27, 28, 134)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2650-3250 m, 29.VI.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM. ***Allotype*** ♀: Peru, Amazonas, Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., TWP. ***Paratypes*** (**57** ♂♂ & **2** ♀♀): **4** ♂♂: Peru, Amazonas, Molinopampa - Granada, 2650-3250 m, 29.VI.1998, T. Pyrcz & J. Wojtusiak *leg*., (2 TWP, 1 MZUJ); **5** ♂♂: same data but 06.VII.1998 (3 TWP; 1 BMNH); **2** ♂♂: same data but 2800-3100 m, 20.VIII.1998, TWP; **1** ♂: same data but 2650-3100 m, 04.VII.1998, TWP; **3** ♂♂: same data but 2800-3100 m, 26.VIII.1998, TWP; **3** ♂♂: same data but 3000-3250 m, 01.VII.1998, (2 TWP; 1 BMNH); **1** ♂: same data but 2865 m, 06.VII.1998, TWP; **1** ♂: same data but 3015 m, 26.VIII.1998, TWP; **1** ♂: same data but 3065 m, 26.VIII.1998, TWP; **1** ♂: same data but 3115 m, 03.VII.1998, TWP; **1** ♂: same data but 3015 m, 04.VII.1998, TWP; **1** ♂: same data but 2765 m, 29.VI.1998, TWP; **1** ♂: same data but 2865 m, 03.VII.1998; **1** ♂: same data but 3015 m, 04.VII.1998, TWP; **1** ♂: same data but 2865 m, 29.VIII.1998, TWP; **11** ♂♂ & **1** ♀: Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., (1 GR, 10 TWP); **11** ♂♂: same data but 3100-3250 m, III.2003, M. Tafur *leg*., MUSM; **3** ♂♂: La Sonada, IX-X.2000, B.Calderón *leg*., PB; **1** ♂: Molinopampa, XI.2000, B.Calderón *leg*., PB; **1** ♂: Pomacochas, El Oso, 3000 m, 26.V.2000, B.Calderón *leg*., PB; **1** ♂: same data but 28.V.2000, PB; **1** ♂: same data but 3200 m, 26.V.2000, PB; **1** ♂: same data but 2900 m, 16.V.2000, PB; **1** ♀: Peru, Amazonas, Pomacochas, Qda. El Chido, Peña Blanca, 3000 m, 07.VII.1999, B. Calderón *leg.*, TWP.

DIAGNOSIS: This species is most easily recognised from other congeners by the truncate FW outer margin below apex. HWV pattern with a nearly straight postmedian line and a large yellow suffusion extending from anal margin to mid-wing reminds somewhat *Eretris apuleja ochrea* THIEME occurring in south-east Ecuador.

DESCRIPTION: Male (Fig. 27): *Head*: eyes dark chocolate-brown, hairy; palpi covered with chocolate-brown, long and dense hair; antennae less than 1/3 the length of the costa, orange dorsally and ventrally with darker terminal segments, club very slightly thickens. *Thorax*: dorsally dark-brown, hairy; legs yellowish with hairy tibiae. *Abdomen*: dorsally and laterally dark-brown, ventrally slightly lighter. *Wings*: FW (length: 18-21 mm; mean=20.1 mm; n=28) apex acute, outer margin truncate below apex and slightly convex. HW sub-triangular, outer margins slightly sinuate. FWD uniformly dark-brown. HWD uniformly dark-brown with a minute reddish patch at inner margin near tornus. FWV dull brown crossed by two dark-brown nearly straight lines, median and postmedian; a faint sinuate chocolate submarginal line, running close to the marginal one - barely visible - and outer margin; apex dusted with light magenta. HWV dark-brown; distal half suffused with a variable amount of magenta and yellow; a faint brick red median

line and a much better marked, nearly straight post-median line of the same colour, from costa to tornus where joining the submarginal, sinuate narrow, brick red line; a rich yellow suffusion extending from inner margin basally from postmedian line as a gradually narrowing triangular patch as far as vein M2, in some individuals extending slightly distally from postmedian line in cells M3-Cu1 and Cu1-Cu2; a violet suffusion gradually turning into light magenta towards apex distally from postmedian line; in the same area a series of four small, black ocelli in cells M2-M3, M3-Cu1, Cu1-Cu2 and Cu2-1A.

Male genitalia (Fig. 134): Uncus straight with a sharp tip slightly curved downwards; gnathos well developed, approximately half the length of the uncus; valvae with a slightly irregular dorsal surface; saccus shallow and wide; aedeagus tubular, slightly thinner in median part.

Female (Fig. 28): Larger than the male, with a lighter upperside and paler, less contrasting pattern on the underside.

ETYMOLOGY: *truncatina* - a subjective corruption epithet referring to truncate FW distal margins below apex.

REMARKS: This species also occurs in the Abiseo National Park (San Martín), and was even detected further south, in Carpish (Huánuco). The Carpish individuals are however considerably different and warrant description as a separate subspecies (PYRCZ in prep.). *E. truncatina* occurs in the uppermost cloud forest, generally at or above 2800 m, but does not reach timberline.

## *Steroma* WESTWOOD, 1850

*Steroma* WESTWOOD [1850]: pl. 66, fig. 6. Type species: *Steroma bega* WESTWOOD, by monotypy.

GENERIC INTRODUCTION: The so-called steromine pronophilines are easily associated by roughly similar wing shapes with a FW outer margin produced at vein M2, a HW anal lobe, all brown upperside and cryptic, moss or lichen-like HWV. These characters however can hardly be considered as qualitative synapomorphies. On the other hand, there are several divergent characters in the male sexual structures such as genitalia and androconia, and other morphological features, so that several authors of the pre or early Hennigian period concurred with splitting the oldest entity *Steroma* WESTWOOD (1850) into several genera. THIEME (1907) erected the genus *Steremnia* based on some characters of the wing shape. WEYMER (1912) defined *Pseudosteroma* by further wing shape characters. BROWN (1941) however synonymized *Pseudosteroma* with *Steremnia* and retained the latter as a good genus separated from *Steroma* by different male scent scales and genitalia. ADAMS & BERNARD (1977) raised a monobasic genus *Sierrasteroma* which they identified as intermediate in external morphology between *Steremnia* and *Steroma* recognised from both by distinct male genitalia. There has been no cladistic analysis of the steromines. Taxonomical data have to be based solely on the adult morphology. Larval stages are unknown.

### *Steroma bega andensis* C. & R. Felder, 1867

*Steroma bega* Westwood, [1850]: pl. 66, fig. 6.
*Steroma zibia* Butler, 1870: 23. Synonymy established by Adams & Bernard, 1979: 117.
*Steroma andensis* C. & R. Felder, 1867: 475.
*Steroma bega andensis* C. & R. Felder; Adams, 1986: 315.

Remarks: This species is more widespread than its congener, *S. modesta* Weymer. The nominotypical subspecies is found in the northern Andes of Venezuela (Cordillera de la Costa, Cordillera de Mérida) and Colombia (Eastern Cordillera). In the Colombian Central and Western Cordilleras and the rest of tropical Andes it is replaced by *andensis*, considered by some authors (Forster 1964) a separate species. The two taxa are not differentiated enough as to concur with Forster. The differences affect, as far as the phenotype is concerned, mostly the development of the HWV costal silver patch. In Venezuela and Colombia *S. bega* has a very wide vertical range (Pyrcz & Wojtusiak 2002) and extends almost to the upper forest limit, however in north Peru it is restricted to intermediate elevations, at 2000-2700 m. *S. bega* occurs generally in the understory of dense cloud forests. It is attracted to bait but can be seen more often on mud. It has a very unusual lateral basking posture. Its cryptic, moss-like HWV guarantees a perfect camouflage.

### *Steroma modesta* Weymer, 1912

*Steroma modesta* Weymer, 1912: 241, pl. 51, row g.

Remarks: This species, originally described from Bolivia and long known only from southern and central Peru, has been discovered recently in the highlands of Chachapoyas and in the Cordillera del Cóndor on the Peru-Ecuador border. *S. modesta* occurs in low elevation cloud forests, at 1000-1400 m, and is locally common. Compared to *S. bega* it has no silver scaling of the HWV. It also has a tuft of hair-like androconial scales on the HWD median area, whereas in *S. bega* it is present only on the FWD.

### *"Steroma" superba* Butler, 1868

*Steroma superba* Butler, 1868: 172, pl. 5, fig. 6.

Remarks: Adults of "*S". superba* are much bigger than other species of the *Steroma* complex. Male androconia are in form of a wide patch of darker scales on the FWD, as in *Steremnia*. Male genitalia are greatly transformed as compared to other species of this group of genera and can be recognised by two outstanding synapomorphies. Instead of a simple hooked gnathos of *Steremnia* and *Steroma* similar to *Pedaliodes* and several other satyrine genera, in *"S". superba* there is a quadrilateral (in lateral view) gnathos almost disconnected from uncus. Addition-

ally, there is a heavily sclerotised, gutter-pipe like sub-scaphium. The valves are characterised by a dentate ampulla. Two characters link *"S". superba* to *Steroma*, a long saccus and the lack of hump on the dorsal surface of the valvae. Considering the above, this taxon is out of place in *Steroma* or *Steremnia* and will be placed in a separate genus (PYRCZ in prep.).

"*S". superba* was reported previously from Bolivia, central and south Peru. Its recent discovery in the area of Mendoza and Abra Pardo Miguel extends its range considerably northwards. *S. superba* is a low and mid-elevation cloud forest species, occurring at 1400-2200 m generally. It is usually associated with dense forests and does not penetrate into secondary bushes or open areas.

## *Steremnia* THIEME, 1905

*Steremnia* THIEME, 1905: 137. Type species: *Steroma rugilas* THIEME, by subsequent designation (Brown, 1941: 433).
*Pseudosteroma* WEYMER, 1912: 241. Type species: *Steroma pronophila* C. & R. FELDER, by subsequent designation (HEMMING, 1943: 25). Synonymy established by BROWN, 1941: 432.

GENERIC INTRODUCTION: The genus *Steremnia* is difficult to define because it is not characterised by any obvious morphological novelty. Its male androconia form a patch of specialised scales located in the median area of the FWD, similar to *Pedaliodes*, *Pronophila* and some *Manerebia*, and therefore can be considered primitive, plesiomorphic, compared to highly specialised hair-like androconial scales of *Steroma*. The size of the androconial patch varies a great deal, from very small in *S. agraulis*, medium in *S. pronophila* to large, covering two thirds of the wing in *S. lucillae* n. sp. The HW costa is also variable: completely straight in *S. pronophila* and *S. selva*, slightly produced in *S. monachella* or strongly protruded along humeral vein in *S. lucillae*. Male genitalia of *Steremnia* do not differ consistently from *Steroma*, as rightly pointed out by BROWN (1941). The presence of a humped ampulla in *Steremnia* cannot be taken as a strong character given that it is also apparent in *Steroma polyxo*.

### *Steremnia agraulis agraulina* PYRCZ, n. ssp.

(Figs. 29, 30, 135)

*Pseudosteroma agraulis* WEYMER, 1912: 242, pl. 51, row f.
*Steremnia agraulis* (WEYMER); D'ABRERA, 1988: 803.

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 3000-3300 m, 01.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa - Granada, 3000-3300 m, 06.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; ***Paratypes*** (**54**♂♂ and **3** ♀♀): **4** ♂♂: Peru, Amazonas, Molinopampa - Granada, 3000-3300 m, 01.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., (2 TWP, 1 MZUJ, 1 BMNH); **4** ♂♂: same data but 3000-3300 m, 04.VII.1998, (2 TWP, 1 MZUJ, 1 BMNH); **1** ♂: same data but 2650 m-3100 m, 04.VII.1998, TWP; **5** ♂♂: same data but 3300-3400 m, 05.VII.1998, TWP; **5** ♂♂: same data but 2650-3250 m, 06.VII.1998, MUSM; **5** ♂♂: same data but 2650-3250 m, 29.VI.1998, MUSM; **2** ♂♂: same data

but 2650-3250 m, 27.VI.1998, TWP; **1** ♂: 3250-3400 m, 20.VIII.1998, TWP; **1** ♂: same data but 3250-3400 m, 26.VIII.1998, TWP; **1** ♂: same data but 3115 m, 06.VII.1998, TWP; **2**♂♂: same data but 3065 m, 03.VII.1998, TWP; **2** ♂♂: same data but 3065 m, 01.VII.1998, TWP; **1** ♂: same data but 3065 m, 04.VII.1998, TWP; **1** ♂: same data but 3065 m, 03.VII.1998, TWP; **4** ♂♂: Road Leimebamba - Balsas, 3550-3650 m, 1-15.XII.2001, B. Calderón *leg.*, MBLI; **5** ♂♂: Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón, MBLI; **1** ♂: same data but 3000 m, MBLI; **1** ♂: same data but 3400 m, MBLI; **5** ♂♂: Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., GR; **1** ♂: Molinopampa, 2200 m, I.2003, B. Calderón *leg*., PB; **1** ♂: Molinopampa, XI.2000, B.Calderón *leg*., PB; **1** ♂: same data but 3100-3250 m, III.2003, M. Tafur *leg*., TWP; **1** ♀: Molinopampa - Granada, 3100-3400 m, 03.VII.1998, BMNH; **1** ♀: same data but 2650-3250 m, 29.VI.1998, MZUJ; **1** ♀: Molinopampa, XI.2000, B. Calderón *leg*., PB.

DIAGNOSIS: This subspecies differs from the nominotypical *S. agraulina* from southeast Peru in the darker, less patterned HWV and much smaller size. *Steremnia agraulis* differs from the sympatric *S. umbracina* in dentate hindwings margins and from other *Steremnia* in lighter lustrous grayish-brown upperside. The underside is most similar to *S. monachella* but lighter and has no oval, yellowish anal patch, diagnostic of *S. monachella*.

DESCRIPTION: Male (Fig. 29): *Head*: frons with a tuft of black hair; antennae short, 2/5 the length of the costa, chestnut; eyes black, covered with dense, short setae; palpi covered with black hair. *Thorax*: black sparsely hairy; femora marked with white. *Abdomen*: dorsally gray, ventrally grayish-brown. *Wings*: FW (length: 17-19 mm; mean: 18 mm; n=35) costa slightly convex, outer margin dentate, truncate below apex, produced along vein M2; fringes alternately brown and white. HW round with slightly humped costa at humeral vein, dentate outer margin and anal lobe. Dorsal surface uniformly lustrous grayish-brown, with a minute darker scent patch along outer edge of discal cell. FWV almost uniform, coloured as on the upperside but even more lustrous, except for a dark gray area dusted with whitish scales along costa, apex and outer margin. HWV blackish and gray, with two, little developed whitish costal postbasal and median streaks, sparse whitish scaling, slightly more abundant along postmedian line, and a row of submarginal yellowish dots, parallel to the outer margin.

Male genitalia (Fig. 135): As illustrated, not differing noticeably from the nominotypical subspecies.

Female (Fig. 30): FWD and HWD dull, light brown considerably lighter than in the male, otherwise similar.

ETYMOLOGY: *agraulina*, a subjective corruption of *agraulis*, referring to the small size of this taxon compared to the nominotypical subspecies.

REMARKS: The nominotypical *S. agraulis* occurs in southeast Peru (Cusco). The new subspecies represents the northern population of this species. The biotopes of *S. agraulis agraulina* are primary *jalca* grasslands situated above timberline, at 3200 m or higher. *S. agraulis* is a fast, erratic flier. When alarmed, it seeks refuge among high bunch grasses. It flies alongside *Punapedaliodes flavopunctata*, *Pedaliodes albicilia* n. sp., *Lymanopoda ingasayana* n. sp. and *L. inde* n. sp.

### *Steremnia monachella* (WEYMER, 1911)

*Pseudosteroma monachella* WEYMER, 1911: 241, pl. 52, row a.
*Steremnia monachella* (WEYMER); BROWN, 1941: 434, pl. 1, fig. 1603 (male genit.).

REMARKS: The nominotypical subspecies is found along the eastern slopes of the Andes in Peru and Bolivia. In extreme north Peru (Cajamarca and Piura), Ecuador and Colombia occurs a separate, undescribed subspecies (PYRCZ in prep.). ADAMS (1986) noticed the differences between Colombian and Peruvian individuals of *S. monachella* but did not propose any subspecific status for Colombian populations. The nominotypical subspecies has a darker HWV and can be recognised by slightly different shape of the elements of the ground plan. BROWN (1941) and ADAMS (1986) report that Ecuadorian and Colombian *S. monachella* occur in the lower paramo and generally keep in open places, such as clearings and low secondary growths. However, in the surveyed area in north Peru *S. monachella* occurs in forested areas below timberline. The behaviour is similar to *S. lucillae* and *S. bega*.

### *Steremnia umbracina misella* THIEME, 1905 n. stat.

*Steroma umbracina* BUTLER, 1873: 221.
*Pedaliodes umbracina* (BUTLER); DOGNIN, 1891.
*Pseudosteroma pronophila* var. *umbracina* (BUTLER); WEYMER, 1911: 241.
*Steremnia misella* THIEME, 1905: 138, pl. 3, fig. 43.

REMARKS: *S. umbracina* BUTLER was described from Huasampilla in southern Peru, whereas the type locality of *misella* is Huancabamba. There are two well known Peruvian localities named Huancabamba, one situated in northern Cajamarca, close to the Ecuadorian border, the other in Central Peru (Pasco). Although THIEME (1905, 1907) refers to "northern Peruvian" Huancabamba, he definitely means the locality situated in Pasco (LAMAS, pers. comm.). The populations of *S. umbracina* occurring in Pasco and the surveyed area in Amazonas differ consistently from the nominotypical subspecies found in south-east Peru in darker ground colour, richer HWV markings and more importantly, in much larger FWD scent patch. Therefore they are attributed herein the status of a separate subspecies. The populations of *S. umbracina* found in extreme north Peru and south Ecuador belong to a third, as yet undescribed subspecies (PYRCZ, in prep.). *S. umbracina* occurs in open grasslands, including secondary paramo below timberline. It is worth pointing out that in southern Ecuador *S. umbracina* is the only pronophiline occurring in recently burned paramo, where local vegetation is in an early stage of succession. A population outbreak of *S. umbracina misella* was observed in Ocol (Molinopampa area) by this author, during which swarms of hundreds of individuals were seen flying along the road. This event lasted for three days followed by a sharp decrease in abundance.

### *Steremnia selva* ADAMS, 1986

*Steremnia selva* ADAMS, 1986: 314, figs. 21 (adult), 59 (male genitalia).

REMARKS: *S. selva* is distributed between Colombia (Central Cordillera), Ecuador (eastern slopes) and northern Peru. It is a mid-elevation cloud forest species found generally at 2200-2600 m although ADAMS (1986) reports it from elevations up to 3150 m. It occurs below the lowest reach of *S. lucillae* n. sp. (described below) often in company of *Steroma bega*. It is bigger than other congeners, from which it also differs in the little marked HWV without any white or silver pattern.

### *Steremnia lucillae* PYRCZ, n. sp.

(Figs. 31, 32, 136)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2650-3250 m, 29.VI.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa, XI.2000, B.Calderón *leg*., PB; ***Paratypes*** (**36** ♂♂): **2** ♂♂: Peru, Amazonas, Molinopampa - Granada, 2800-3100 m, 26.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **1** ♂: same data but 2650-3250 m, 29.VI.1998, TWP; **5** ♂♂: same data but 01.VII.1998, 3000-3300 m, MUSM; **3** ♂♂: same data but 2650-3100 m, 04.VII.1998, TWP; **6** ♂♂: same data but 2650-3250 m, 06.VII.1998 (2 TWP, 2 MZUJ, 2 BMNH); **1** ♂: same data but 3065 m, 26.VIII.1998, TWP; **1** ♂: same data but 2865 m, 29.VIII.1998, TWP; **1** ♂: same data but 2800-3100 m, 05.VII.1998, TWP; **1** ♂: same data but no exact date, TWP; **1** ♂: Road Leimebamba - Balsas, 3550-3650 m, 1-15.XII.2001, B. Calderón *leg.*, MBLI; **4** ♂♂: Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón *leg.*, MBLI; **1** ♂: same data but 3100 m, MBLI; **1** ♂: same data but 3000-3200 m, IX.2002, TWP; **1** ♂: 2 km. from Granada, 3400 m, X.2001, B. Calderón *leg.*, MBLI; **2** ♂♂: El Oso, near Laguna de Pomacochas, 3050-3150 m, VI.2000, B. Calderón *leg.*, MBLI; **1** ♂: Molinopampa - Granada, 3100 m, 30.VIII.1998, T. PYRCZ *leg*., PB; **3** ♂♂: Molinopampa, XI.2000, B. Calderón *leg*., PB; **1** ♂: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg*., PB.

DIAGNOSIS: Most similar in shape, dorsal colour and HWV pattern to *Steroma bega*, from which it differs in denser and larger silver markings on the HWV and the absence of the tuft of scent hair-like scales on the FW. Upperside ground colour is darker than in other sympatric *Steremnia*.

DESCRIPTION: Male (Fig. 31): *Head*: frons with a tuft of black hair; palpi whitish covered with black hair; eyes black, covered with dense, short setae; antennae 2/5 the length of the costa, brown, yellowish at segment junctions, club spoon-like. *Thorax*: black, hairy, tibiae and femora alternately black and beige. *Abdomen*: dorsally black, ventrally brown. *Wings*: FW (length: 17-20 mm; mean=19 mm; n=23) costa slightly convex outer margin dentate, truncate below apex, produced along vein M2; fringes alternately blackish-brown and white. HW round, costa humped on humeral vein and at apex, outer margin dentate, anal margins concave before tornus. FWD blackish-brown, lustrous, slightly lighter towards outer margin; scent patch covering 3/4 of the wing. HWD uniformly blackish-brown, lustrous, hairy along anal margin. FWV chocolate brown, darker in median area, lustrous; a small whitish costal subapical patch; outer margin from apex to vein Cu1 black suffused with minute whitish scales. HWV ground colour

black; a large silver patch extending from costa into discal cell, enclosing a triangular, black costal patch with a small silver notch in it; further silver scales in median area, denser towards anal margin; a mosaic of black, gray and light brown streaks slightly dusted with silver in postmedian to submarginal area; marginal area predominantly black.

Form: ***vittanivosa*** (Fig. 32) - Although the naming of infrasubspecific forms has no value in the zoological nomenclature, I cannot refrain from naming an extraordinary rare individual variation of *S. lucillae* in which the snow white pattern on the HWV is shaped as a wide continuous median band extending from costa to anal margin.

Male genitalia (Fig. 129): Uncus as long as tegumen; gnathos more than half the length of uncus, hooked upwards; aedeagus with a dorsal hump; saccus short; aedeagus slightly curved, serrate.

Female (Fig. 203): FWD and HWD lighter than the male, chestnut. HW marginal area suffused with oranges scales, particularly on apex and along vein Cu2. FWV medium brown; marginal area dark-brown. HWV ground colour blackish-brown; faint, white median and postmedian costal streaks enclosing a blackish triangular costal patch; postdiscal reddish brown patches in all cells except M3-Cu1; apex and submarginal area chestnut between veins M3 and Cu1.

ETYMOLOGY: This species is dedicated to Mrs. Lucilla D'ABRERA.

REMARKS: *S. lucillae* was illustrated by D'ABRERA (1988: 802) as *Steroma ?andensis*, because it was curated as such in the BMNH. D'ABRERA correctly suspected that this taxon might represent a separate species, and pointed out that it lacks the androconial hair tuft along lower discal vein, which is the synapomorphy of *Steroma*. *Steroma lucillae* has instead a very large FWD androconial patch covering 3/4 of the wing. *S. lucillae* occurs in the uppermost forest at 2800-3100 m. It is not an endemic species of the highlands of Chachapoyas. Individuals of this species were colelcted in the Abiseo National Park (San Martín). A closely related undescribed species occurs in south-central and southern Ecuador (PYRCZ in prep.).

## *Manerebia* STAUDINGER, 1897

*Manerebia* STAUDINGER, 1897: 139. Type species: *Manerebia cyclopina* STAUDINGER, by subsequent designation (HEMMING, 1943: 24).

*Penrosada* BROWN, 1945: 255. Type species: *Lymanopoda leaena* HEWITSON, by original designation. Synonymy established by PYRCZ *et al.* (in press).

*Posteuptychia* FORSTER, 1964: 137. Type species: *Pronophila mycalesoides* C. & R. FELDER, by monotypy. Synonymy established by PYRCZ *et al.* (in press).

GENERIC INTRODUCTION: *Manerebia* STAUDINGER (1897) and *Penrosada* BROWN (1945) were both considered valid genera by FORSTER (1964), MILLER (1968), ADAMS & BERNARD (1977, 1979, 1981) and ADAMS (1986) among others. PYRCZ *et al.* (in press) consider *Penrosada* a subjective junior synonym of *Manerebia*.

Adults of *Manerebia* are small butterflies with round hindwings characterised by an anal lobe present in most species. Wings colour patterns are simple. Dorsal surface is predominantly uniformly brown, exceptionally dusted with orange especially in the anal area of the hindwing. Ventral surface has a faint pattern of postdiscal and submarginal lines and fully developed submarginal ocelli, the largest of which is invariably in cell Cu1-Cu2, on the FWV, sometimes showing on the upperside as well. A characteristic feature of *Manerebia* is the apparent polymorphism of adults of some species in the expression of the HWV oblique, yellow band. Depending on the morph it can be shortened, discontinuous or even completely absent, in such species as for example *M. ignilineata* (DOGNIN), *M. apiculata* (C. & R. FELDER) or *M. trimaculata* (HEWITSON). Walking legs are yellowish. Male genitalia are characterised by a long, arched uncus, fully developed gnathos, and slender valvae with a strongly dentate ampulla. MILLER (1968) placed *Manerebia* in the tribe Pronophilini. PYRCZ (1995) suggested its closer relationship with north Andean pronophiline genera *Idioneurula* STRAND and *Tamania* PYRCZ. VILORIA (2002) pointed out that all three genera share common characters atypical of Pronophilini, namely naked eyes and the cross-cell vein m1-m2 on the HW either only slightly incurved or not at all, and suggested they should all be removed to the tribe Erebiini or sub-tribe Erebiina.

The species of *Manerebia* inhabit the entire altitudinal range covered by the tribe Pronophilini. *M. mycalesoides* (C. & R. FELDER) is found in premontane forests at 800 m., which is the lowest confirmed altitude for any member of the genus, except for unconfirmed record of *M. staudingeri* FORSTER collected at 400 m in Bolivia (FORSTER 1964). On the other extreme, several species of *Manerebia* occur in the paramo above the upper limit of cloud forests, up to 3800 m, among them *M. ignilineata* (DOGNIN) and *M. levana* (GODMAN). However, the genus is best represented in terms of both species richness and abundance in upper elevation cloud forests, between 2000 and 3000 m. Adults of *Manerebia* are reportedly rather uncommon in the northern Andes but on the other hand, some species can be exceedingly common in the southern part of their range, particularly in Bolivia. Some species also appear seasonal, which may be partly the reason for their relative rarity in the field (ADAMS & BERNARD 1981; PYRCZ *et al.* in press).

The genus is distributed between Venezuela and northern Argentina. FORSTER (1964) surveyed Bolivian *Manerebia* (and *Penrosada*). He omitted some species, whereas HAYWARD (1949) described the sole Argentine taxon belonging to *Manerebia*. PYRCZ *et al.* (in press) monographed all 23 species occurring in Venezuela, Colombia, Ecuador and extreme north Peru. Six taxa were described from Peru, almost all of them from the southern part of the country. Three of them are valid species: *M. lisa* (WEYMER, 1911), *M. rubescens* BROWN (BUTLER 1873) and *M. zoippus* (DRUCE, 1876). *M. keithi* DYAR (1913) is a subspecies of *M. satura* (WEYMER). *M. harknessi* DYAR (1913) is a syn. of *M. cyclopella* STAUDINGER and *varola* SCHAUS (1902) syn. of *M. cyclops* STAUDINGER.

### *Manerebia trirufa* PYRCZ, n. sp.

(Figs. 33, 137)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2815 m, 30.VIII.1998, T. Pyrcz & J. Wojtusiak *leg.*, MUSM; ***Paratypes*** (**9** ♂♂): **1** ♂: Peru, Amazonas, Molinopampa - Granada, I.2001, B. Calderón *leg.*, PB; **1** ♂: Molinopampa - Granada, 2650-3050 m, 29.VI.1998, T. Pyrcz & J. Wojtusiak *leg.*, MZUJ; **1** ♂: same data but 04.VII.1998, TWP; **1** ♂: same data but 2650-3250 m, 06.VII.1998, TWP; **1** ♂: same data but 2915 m, 26.VIII.1998, MZUJ; **1** ♂: 5 km N Molinopampa, 3000 m, 0610/7739, 20.VIII.1998, G. LAMAS *leg.*, MUSM; **1** ♂: Molinopampa – Granada, 3000-3200 m, IX.2002, B. Calderón *leg.*, TWP; **1** ♂: same data but 2900-2950 m, III.2003, M. Tafur *leg.*, MUSM; **1** ♂: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg.*, PB; 1 ♂: Florida-Pomacochas, Chido Valley, 2900 m, 17.X.1999, B. Calderón leg., TWP.

DIAGNOSIS: *M. trirufa* can be immediately recognised from other congeners, except *M. rubescens* (BUTLER), by the wide, orange patch, which spreads over distal 1/3 of the HWD. *M. rubescens* has a wide HWV median, yellow band, whereas *M. trirufa* has no trace of any lighter median band.

DESCRIPTION: Male (Fig. 33): *Head*: eyes dark chocolate-brown, naked; palpi short, covered with short, dark-brown hair; antennae 2/5 the length of costa, dorsally light brown, ventrally beige in basal, orange in distal half, with darker terminal segments and white scales at junctions of segments. *Thorax*: blackish-brown, legs femora and tarsus pale yellow, tibiae gray. *Abdomen*: blackish-brown, ventrally dull light brown. *Wings*: FW (length: 20 mm; mean=20 mm; n=8) triangular with slightly arched costa. HW oval with round outer margin. FWD dark-brown, lustrous; androconial scales cover most of the surface of the wing except at base and along outer margin. HWD dark-brown with a large rich orange patch from postdiscal to submarginal area, and below vein M2, reaching outer margin between vein Cu2 and tornus, extending as a narrow edge along anal margin almost to wing base, and enclosing a series of dark-brown ocelli, two larger in cells M3-Cu1 and Cu1-Cu2, one minute in Cu2-1A, one on the edge of the brown area in M2-M3, plus one within brown area in M1-M2, ringed with orange. FWV dark-brown, with a magenta suffusion along outer margin and with a series of faint, zigzagging submarginal darker lines; a tiny black ocellus with a white pupil in Cu1-Cu2 and a row of minute yellow dots in M1-M2 to M3-Cu1. HWV brown in basal half and chestnut in distal half; a straight faint, dark-brown postmedian line; some diffuse magenta scaling along outer margin; two or three barely visible submarginal ocelli.

Male genitalia (Fig. 130): Uncus short and stout; gnathos short, basally considerably thicker; valvae simple, terminated with a series of "teeth" pointing forward, ampulla smooth; saccus slightly inflated and short; aedeagus straight with a little pronounced shoulder.

Female: Hitherto unknown.

ETYMOLOGY: The epitheth of this species is composed of the prefix *tri* (Lat.) referring to the three brown ocelli on the HWD orange rufous - *rufa* (Lat.) - patch.

REMARKS: The nominotypical *M. trirufa* occurs on the eastern slopes of the Andes in Amazonas and San Martín (Abiseo). The population found in Huánuco

(Carpish) represents a separate subspecies. It is characterised by the reduction of the HWD orange markings to the outer area (PYRCZ in prep.). *M. trirufa* inhabits high elevation cloud forests, above 2600 m and almost reaching timberline at 3200-3300 m. It has always been observed as single individuals.

### *Manerebia diffusa* PYRCZ, n. sp.

(Figs. 34, 139)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Alto Río Nieva, 2000 m, 0541/7747, 20.XI.1996, G. LAMAS *leg.*, MUSM; ***Paratypes*** **2** ♂♂: same data as the holotype, MUSM.

DIAGNOSIS: This species resembles at first sight the sympatric *M. benigni* n. sp. (described below) especially the subspecies *tessmanni*. Both have a faint HWV milky white median band, which is a unique feature among all the congeners in this part of the Andes. *M. benigni* differs immediately form *M. diffusa* by the rusty anal suffusion on the HWD and a large brick overcast of the HWV.

DESCRIPTION: Male (Fig. 34): *Head*: eyes blackish-brown, naked; palpi one and half the length of the head, covered with gray-brown hair, long on the first and second segments, short on the third; antennae 2/5 the length of the costa, dorsally brown, ventrally distal orange. *Thorax*: blackish-brown. *Abdomen*: dark-brown, ventrally dull brown. *Wings*: FW (length: 20-22 mm, mean: 21 mm; n=3) triangular with a blunt apex and straight outer margin. HW outer margin regular, tornal notch barely visible. FWD uniformly medium brown; androconial patch apparent; a faint irregular darker brown submarginal line. HWD medium brown; a faint irregular darker brown submarginal line: a black submarginal dot in cell Cu1-Cu2. FWV medium brown, a shade lighter than on the upperside; an indistinct darker brown, straight postmedian line; a scalloped dark-brown submarginal line reaching outer margin in cell Cu2-1A; a thin, darker brown marginal line; a black submarginal ocellus ringed with orange and with a white pupil in Cu1-Cu2 plus a white dot in M1-M2. HWV ground colour slightly darker than on the FW; a faint straight oblique postmedian line a shade lighter than the ground colour; a sinuate submarginal dark-brown line; a darker brown, thin marginal line; two minute black ocelli in M3-Cu1 and Cu1-Cu2, plus minute white dots in M1-M2, M2-M3 and M3-Cu1.

Male genitalia (Fig. 139): Uncus strongly arched; subunci relatively long; distal tip of the valvae armed with numerous and prominent “tooth” extending anteriorly along dorsal edge, dorsal base of the valvae armed with a single “teeth” projection; aedeagus the length of the valvae, with a row of spines in median part.

Female: Hitherto unknown.

ETYMOLOGY: This species is called after its faint, diffused HWV median band.

REMARKS: The affinities of *M.diffusa* are currently difficult to assess. Its male genitalia are most similar to *M. haywardi* but are not unlike *M. benigni*. It has a large FWD androconial patch similarly to *M. benigni* and *M. satura*. Its wing

shape and HWV underside pattern resembles closely an undescribed species from Ecuador (PYRCZ *et al.* in press). In the highlands of Chachapoyas *M. diffusa* is known exclusively from its type locality, the Abra Pardo Miguel. However, the species is much more widespread. Several specimens not differing noticeably from the types were collected in central Peru (Pasco). They were however not included in the type series. *M. diffusa* appears to be a mid-elevation cloud forest species.

### ***Manerebia benigni* PYRCZ, n. sp.**

(Figs. 35, 138)

TYPE MATERIAL:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, Qda. Llanohuaico, 1600-1800 m, B. Calderón *leg.*, MUSM; ***Paratypes*** (**40** ♂♂): **6** ♂♂: Peru, Rodríguez de Mendoza, Qda. Pirruro, 1600-1800 m, B. Calderón *leg.*, MUSM; **1** ♂: same data but: 06.IX.1998, TWP; **1** ♂: same data but: 20.VIII.1998, TWP; **1** ♂: same data but: 27.VIII.1998, TWP; **1** ♂: same data but: 11.X.1998, TWP; **10** ♂♂: Rodríguez de Mendoza, Qda. Llanohuaico, 1600-1800 m, B. Calderón *leg.*, (9 TWP, 1 BMNH); **2** ♂♂: same data but 07.X.1998, TWP; **2** ♂♂: same data but: 02.X.1998, TWP; **1** ♂: same data but: 13.X.1998, TWP; **1** ♂: same data but: 20.VIII.1998, TWP; **2** ♂♂: same data but 1800-2000 m, 13.X.1998, TWP; **1** ♂: Rodríguez de Mendoza, 2000-2200 m, El Cedro, 20.IX.1998, B. Calderón *leg*., TWP; **1** ♂: same data but 20.XI.1998, TWP; **1** ♂: same data but 03.IX.1998, TWP; **2** ♂♂: same data but 04.XI.1998, TWP; **1** ♂: Rodríguez de Mendoza, Qda. Totomal, 28.VIII.1998, TWP; **2** ♂♂: Alto Río Nieva, 2200-2500 m, VI.2002, B. Calderón *leg*., TWP; **2** ♂♂: same data but 2200-2400 m, III.2002, B. Calderón *leg.*, TWP; **1** ♂: same data but III.2003, TWP; **1** ♂: same data but 2200-2400 m, III.2003, M. Tafur *leg*., TWP.

DIAGNOSIS: This species can be recognised from local congeners by the brick red HWV overcast. It has no HWV yellow median band, except for the ssp. *tessmanni*, which does have a narrow HWV yellowish band. *M. benigni* shares with *M. satura* and *M. diffusa* a large FWD androconial patch situated in the median part of the wing. HWD is brown except for brick red suffusion at tornus, somewhat reminiscent of *M. haywardi*. *M. benigni* is superficially very similar to *M. zoippus* (DRUCE, 1876) described from "Peru" [BM type Rh. 3939, Peru, Druce coll, examined]. *M. zoippus*, which occurs in southern Peru and Bolivia is noticeably smaller (FW length: 18-19 mm, mean: 18.5 mm, n=3), has no red suffusion on the HWD anal area, a smaller FWD androconial patch and different male genitalia.

DESCRIPTION: Male (Figs. 35): *Head*: eyes blackish brown, naked; palpi one and half the length of the head, covered with brown hair, long on the first and second segments, short on the third; antennae 2/5 the length of the costa, dorsally brown, ventrally distal half orange. *Thorax*: dark brown, dorsally hairy. *Abdomen*: dark brown, ventrally dull brown. *Wings*: Forewing (length: 19-22 mm; mean: 21.5 mm, n=40) triangular with a blunt apex and gently concave outer margin. HW outer margin regular, tornal notch barely visible. FWD uniformly brown; a faint dark brown submarginal line; androconial patch covers medial 1/3 of the wing. HWD uniformly brown except for a brick red suffusion at tornus; a dark brown submarginal line. FWV dull brown, slightly lighter than the upperside; a wavy submarginal dark brown line; a minute ocellus in Cu1-Cu2; in some examined individuals a row of four minute submarginal dots in M1-M2 to M3-Cu1.

HWV medium to dark brown; a brick red suffusion extending from tornus towards median area, covering half of the wing, gradually fading out; a straight, pale yellow postmedian band, variable, in some individuals fading and barely noticeable, in one clearly defined; a sinuate submarginal dark brown line; two minute black ocelli in M3-Cu1 and Cu1-Cu2, in some examined individuals a third one in M1-M2.

Male genitalia (Fig. 138): Tegumen stout; uncus very long, thin and gently arched; gnathos short, less than half the length of the uncus, and thin; valvae stout, gently narrowing distally terminated by three or four "teeth" pointing forward with the upper one slightly curved upwards; saccus short; aedeagus arched, long, without any evident shoulder.

Female: Hitherto unknown.

ETYMOLOGY: This species is dedicated to Benigno Calderón NOVOA, a local collector from Mendoza who provided the author with a lot of valuable material from the highlands of Chachapoyas.

REMARKS: *M. benigni* is described based on specimens from the highlands of Chachapoyas. Similar looking specimens from San Martín (Abiseo) and Pasco (Cushi) were examined but were not included in the type series. *M. benigni* was collected only in dense primary cloud forests. Altitude data indicate that it is a low to mid-elevation cloud forest species

### ***Manerebia benigni tessmanni*** **PYRCZ, n. ssp.**

(Fig. 36)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas: Abra Pardo Miguel, 2200-2400 m, III.2002, B. Calderón *leg*., MUSM. ***Allotype*** ♀: Peru, Amazonas, Abra Pardo Miguel, 2200 m, 0542/7748, 19.XI.1996, G. LAMAS *leg*., MUSM. ***Paratypes*** (**7** ♂♂): **4** ♂♂: Peru, Amazonas: Abra Pardo Miguel, 2200-2400 m, III.2002, B. Calderón *leg*., 2 MUSM; 2 TWP; **1** ♂: same data but VI.2002, TWP; **1** ♂: same data but III.2002, M. Tafur *leg*., TWP; **1** ♂: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg.*, MBLI.

DIAGNOSIS: The diagnostic character of *tessmanni* is the HWV lighter median band, usually faint pale yellow and occasionally well marked, whitish, whereas the nominotypical subspecies only has no a trace of it.

DESCRIPTION: Male (Fig. 36): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW length: 19-21 mm, mean: 20 mm, n=6. FWD and HWD same as in the nominotypical subspecies. FWV with tiny submarginal black ocelli with white pupil in cell Cu1-Cu2 in three out of six examined individuals, never showing in the nominotypical. HWV with a series of four small black ocelli with white pupils, in cells Cu1-Cu2 and two in Cu2-1A same as in the nominotypical and additionally in M1-M2; a straight pale yellow postmedian line of variable expression, in some specimens faint, barely visible however always present, in others distinctively marked.

Male genitalia (not illustrated): Tegumen stout; uncus very long, thin and gently arched; gnathos short, less than half the length of the uncus, and thin; valvae stout, gently narrowing distally, terminated by three or four "teeth" point-

ing forward with the upper one slightly curved upwards; saccus short; aedeagus arched, long, without any evident shoulder.

Female (Fig. 204): FW length: 21 mm. As compared to the male it is lighter brown on both dorsal and ventral surface, with all ocelli bigger, particularly the well marked FW Cu1-Cu2 ocellus, and a well marked milky white postmedian line on the HWV.

ETYMOLOGY: This taxon is dedicated to a German naturalist G. TESSMANN, who described several Peruvian butterflies, including *Lasiophila alkaios* occurring in the highlands of Chachapoyas.

REMARKS: This subspecies is apparently restricted to the northern part of the highlands of Chachapoyas. It has been collected in Pomacochas and at the Pardo Miguel pass. *M. benigni tessmanni* occurs at 2200-2400 m.

### ***Manerebia haywardi* PYRCZ, n. sp.**

(Figs. 37, 38, 140)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Pomacochas, Qda. El Chido, 2180-2800 m, 18.VIII.1998, T. Pyrcz & J. Wojtusiak *leg.*, MUSM; ***Allotype*** ♀: Peru, Amazonas, Pomacochas, Qda. El Chido, 2200-2800 m, 09.VII.1998, T. Pyrcz & J. Wojtusiak *leg.*, TWP; ***Paratypes*** (**73** ♂♂ and **7** ♀♀): **2** ♂♂: Peru, Amazonas, Qda. El Chido, 2200-2800 m, 09.VII.1998, T. Pyrcz & J. Wojtusiak *leg.*, TWP; **3** ♂♂: Qda. El Chido, 2180-2800 m, 18.VIII.1998, T. Pyrcz & J. Wojtusiak *leg.*, (2 TWP; 1 MZUJ); **3** ♂♂: Pomacochas, Peña Blanca, 3000 m, 22.IX.1999, B. Calderón *leg.*, TWP; **1** ♂: same data but 2900 m, 14.VII.1999, TWP; **1** ♂: same data but 2800 m, 27.VI.1999, TWP; **1** ♂: same data but 2950 m, 29.IX.1999, MZUJ; **1** ♂: Molinopampa - Granada, 2800-3100 m, 20.VIII.1998, T. Pyrcz & J. Wojtusiak *leg.*, TWP; **5** ♂♂: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg.*, MBLI; **3** ♂♂: El Oso (near Laguna de Pomacochas), 2800-2950 m, VI.2000, B. Calderón *leg.*, MBLI; **1** ♂: Río El Chido, 2500-2900 m, VI.2002, B. Calderón *leg.*, MBLI; **2** ♂♂: same data but 3000 m, MBLI; **1** ♂: Peña Blanca (near Laguna de Pomacochas), 2900-3050 m, VI.2000, B. Calderón *leg.*, MBLI; **7** ♂♂: Molinopampa - Granada, 3000 m, X.2000, B. Calderón *leg.*, MBLI; **6** ♂♂: same data but III.2003, M. Tafur *leg.*, MUSM; **6** ♂♂: same data but 3300 m (altitude data unreliable), MBLI; **4** ♂♂: same data but 3100 m, MBLI; **2** ♂♂: same data but IX.2002, B. Calderón *leg.*, TWP; **2** ♂♂: same data but 2500, MBLI; **2** ♂♂: Molinopampa - Granada, XI.2000, B. Calderón *leg.*, PB; **4** ♂♂: Pomacochas - El Oso, V-VI.2000, B. Calderón *leg.*, PB; **2** ♂♂: Alto Río Nieva, 2100 m, 10.VII.1984, J. Mallet *leg.*, MUSM; **1** ♀: El Oso (near Laguna de Pomacochas), 3000 m, VI.2000, B. Calderón *leg.*, MBLI; **1** ♀: 10km SE Molinopampa, 2200 m, 27.X.1987, J. Mallet *leg.*, MUSM; **5** ♀♀: Molinopampa - Granada, 3150-3250 m (altitude data unreliable), X.2000, B. Calderón *leg.*, MBLI; **1** ♂: Pomacochas, El Oso, 3000 m, 8.V.2000, B. Calderón *leg.*, PB; **1** ♂: same data but 23.VIII.2000, PB; **1** ♂: same data but 19.V.2000, PB; **1** ♂: same data but 2800 m, 22.VI.2000, PB; **2** ♂♂: Molinopampa, XI.2000, B. Calderón *leg.*, PB; **3** ♂♂: Abra Pardo Miguel, 2200-2400 m, III.2003, M. Tafur *leg.*, TWP; **4** ♂♂: same data but B. Calderón *leg.*, MUSM.

DIAGNOSIS: *M. haywardi* superficially resembles *M. inderena* and several other Ecuadorian species characterised by the wide HWV yellow median band, however all of them having markedly different male genitalia. In northern Peru *M. haywardi* is the only *Manerebia* with such a pattern and cannot be confused with any sympatric congener.

DESCRIPTION: Male (Fig. 37): *Head*: eyes dark chocolate brown, naked; palpi short, covered with short, dark-brown hair; antennae 2/5 the length of the costa,

dorsally light brown, ventrally yellowish, with darker terminal segments and white scales at junctions of the segments. *Thorax*: blackish-brown, legs femora and tarsus pale yellow, tibiae gray. *Abdomen*: blackish-brown, ventrally dull brown. *Wings*: FW (length: 18-21 mm; mean= 19.4 mm; n=13) triangular with slightly arched costa. HW oval with round outer margin. FWD dark-brown, lustrous, outer half-lighter; androconial scales covering median one-third of the wing. HWD slightly lighter with an orange anal suffusion, somewhat variable in size. FWV uniformly brown with a barely visible post-discal brown line from costa to vein Cu1 a more consistently marked submarginal brown wavy line and a series of faint yellowish dots in M1-M2, M2-M3 and M3-Cu1. HWV chocolate brown with a slightly wavy darker submarginal line; a series of whitish dots in each cell, those in Cu1-Cu2 and Cu2-1A ringed with black; a wide, rich yellow transverse band of constant width from costa to anal margin where slightly suffused with orange.

Male genitalia (Fig. 140): Uncus long and arched; gnathos long and thin; valvae thickening distally; ampulla with several long "teeth" pointing upwards; saccus inflated; aedeagus short with a prominent shoulder.

Female (Fig. 38): The female is slightly lighter on both dorsal and ventral surface. There are otherwise no other apparent differences in the wing colour pattern.

ETYMOLOGY: This species is named after Kenneth HAYWARD, one of the most prolific lepidopterists working in the Neotropics, who dedicated many of his articles to the Andean satyrines including *Manerebia*.

REMARKS: *M. haywardi* ranges between the highlands of Chachapoyas (Amazonas) and Abiseo (San Martín). Further south, in Carpish (Junín) it is replaced by an undescribed species (PYRCZ in prep.). It occurs in mid-elevation cloud forests at 2200-2800 m approximately. It is a relatively common species.

### *Manerebia satura* (WEYMER)

*Lymanopoda leaena* var. *satura* WEYMER, 1912: 249, pl. 52, row f.
*Penrosada satura* (WEYMER); BROWN, 1944: 258.
*Manerebia satura* (WEYMER); PYRCZ *et al.* (in press)

REMARKS: This species was described from two distant localities - Cusco in southern Peru and Quindíu in Colombia. ADAMS (1986) demonstrated that the description referred in fact to two separate species and described the Colombian populations as *M. inderena*. The nominotypical subspecies of *M. satura* is therefore from southern Peru. Individuals from central Peru (Junín, Pasco) represent possibly an undescribed subspecies (PYRCZ in prep.). *M. satura* occurs also in northern Peru (Cajamarca) where the local subspecies has a milky white HWV median band. Another subspecies of *M. satura* was identified in Ecuador (PYRCZ *et al.* in press). *M. satura* was collected in the eastern part of the surveyed area. Old specimens from "Moyobamba" were examined in ZMHU.

***Manerebia sp.* PYRCZ & WILLMOTT (in press)**

REMARKS: This is a rare species known so far from three individuals, two of which were obtained in the Abiseo National Park in central Peru (San Martín) and one in southern Ecuador. Such a distribution pattern indicates that *M. sp.* occurs in the highlands of Chachapoyas, situated in between the two mentioned localities. Our failure to collect it is due to its inaccessible habitat, relative rarity (PYRCZ *et al.* in press) and little sampling carried out in the paramo of the Central Cordillera.

***Manerebia ignilineata jalca* PYRCZ, n. ssp.**
(Figs. 39, 40, 141)

*Lymanopoda ignilineata* DOGNIN, 1896: 134
*Penrosada ignilineata* (DOGNIN); D'ABRERA, 1988: 824.
*Manerebia ignilineata* (DOGNIN); PYRCZ *et al.* (in press).

TYPE SERIES:
***Holotype*** ♂: Peru, Amazonas: Molinopampa, via Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., MUSM. ***Allotype*** ♀: Peru, Amazonas, Peru, Amazonas: Molinopampa, via Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., TWP. ***Paratypes*** (**4** ♂♂): **1** ♂: Peru, Amazonas: Molinopampa, via Granada, 3250 m, 06.VII.1998, T. Pyrcz *leg*., TWP; **2** ♂♂: same data but I.2001, PB; **1** ♂: same data but XI.2000, PB.

DIAGNOSIS: This subspecies is smaller than the nominotypical and has no violet lustrous sheen along the outer margin of the FWV and HWV. FWV and HWV submarginal lines are irregular, zigzagging compared to regular, roughly parallel to outer margins lines of other subspecies.

DESCRIPTION: Male (Fig. 39): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW length: 20.5-21.5 mm, mean: 21 mm, n=2. FWD uniformly medium brown, lustrous; two minute submarginal lighter dots in cells M3-Cu1 and Cu1-Cu2. HWD uniformly medium brown. FWV brown, darker in basal, lighter in distal half; a faint postdiscal dark brown line from vein R5 to tornus, between veins M2 and Cu2 barely visible; two submarginal minute whitish dots in cells M3-Cu1 and Cu1-Cu2; an irregular submarginal dark brown line distally edged with yellow; apical area dusted with magenta scales; a thin marginal line parallel to outer margin. HWV chocolate brown; a straight median yellow band, continuous or broken into a series of rectangular patches; an irregular submarginal dark brown line distally edged with yellow; a thin marginal line parallel to outer margin.

Male genitalia (Fig. 141): As illustrated, not differing noticeably from the nominotypical subspecies.

Female (Fig. 40): FW length: 22 mm. Similar to the male but slightly lighter brown and paler on the upperside and considerably lighter, light brown, on the underside.

ETYMOLOGY: This taxon owes its name to its habitat, *jalca*, as locally are called grassland and shurbs above timberline in northern Peru.

REMARKS: This species is easily recognised from other congeners found in the highlands of Chachapoyas by the smaller size, round wings and underside colour pattern, characterised by a magenta suffusion. Its distribution in Peru extends from Abiseo National Park (San Martín) to Barro Negro (Amazonas) in the Central Cordillera and the highlands of Molinopampa (Amazonas) in the Eastern Cordillera of the Andes. *M. ignilineata* is also widespread in central and southern Ecuador, where the western slopes population belongs to a separate subspecies, *neglecta* Brown. *M. ignilineata* occurs slightly above timberline. It is rather uncommon.

## *Apexacuta* PYRCZ, 2004

Type species: *Pronophila orsedice* HEWITSON, 1878: 227, by original designation.

GENERIC INTRODUCTION: As compared to other Pronophilini, the adults of this genus are characterised by robust, moderately short antennae and particularly long labial palpi (6 mm), an acute forewing apex tapered to a point along vein R4 and oval hindwings with a regular outer margin. Wing colour pattern of the upperside consists of black stripes along veins, a black outer margin and black postmedian spots upon brick red ground colour. Colour pattern of the underside is simple, reddish with black submarginal ocelli on the FW and nearly uniformly pinkish red on the HW. Male genitalia are characterised by stout gnathos of the same thickness or thicker than uncus, uncus longer than tegumen, slender valvae, thin in distal half, devoid of secondary processes, moderately long saccus, approximately 2/3 the length of the gnathos and aedeagus slightly curved upwards at distal end. Female genitalia of *Apexacuta* bear a striking resemblance to the genus *Lymanopoda* WESTWOOD. They both have knag-like protrusions on the side of the anal papillae and a bilobed "glue gland". In contrast to the genitalia of *Lymanopoda*, *Lasiophila* and *Mygona*, in *Apexacuta* the utriculus is small without a long duct at the end. At the bottom of the genital chamber *Apexacuta* lack the cuticular protrusion, which in some species of *Lymanopoda* and also *Lasiophila* is situated just between the opening to the bursa and the concave anterior wall of the chamber. The signum in the bursa in *Apexacuta* is much shorter than in *Lymanopoda* and *Mygona*, where it appears as a very long and thin row of tiny cuticular teeth positioned parallel to the long axis of the bursa (PYRCZ 2004).

Immature stages and food plants of *Apexacuta* are unknown. However, we may speculate that their larvae feed on *Chusquea* bamboo (Poaceae) as do other genera of Pronophilini (SCHULTZE 1929; DEVRIES 1987). Adults of *Apexacuta* are rather seldom encountered, particularly in the northern Andes. KRÜGER (1924) and ADAMS (1986) report that the Colombian *A. orsedice colombiana* is rare and mostly local. This is also the case in Ecuador. In northern Peru however, both species of *Apexacuta* are quite common in their biotope. The relative scarcity of *Apexacuta* in the northern Andes is perhaps due to the fact that the uppermost cloud forest and elfin forests in Colombia were most severely affected by burning

and grazing. In northern Peru *A. superior* occurs within a narrow altitude band between 3050-3250 m. In Ecuador and Colombia *A. orsedice* is found from approximately 3100 down to 2700-2800 m (ADAMS 1986). FORSTER (1964) reports *A. astoreth* in Bolivia at 2800 m. Data on specimens in the MUSM (Lima) collected in the Central Peruvian provinces of Huánuco and San Martín also refer to similar elevations. ADAMS (1986) suggests that *A. orsedice* is involved in parapatric distribution (competitive?) relations with *Mygona propylea* (HEWITSON), which as he states, replaces it at lower elevations. This is very unlikely to be the case since *A. improvisa* occurs at similar elevations as *M. pomarancia* n. sp. in north Peru. On the other hand, the elevational sampling carried out by this author in Peru shows that *A. improvisa* and *A. superior* indeed replace each other along an altitudinal gradient.

KRÜGER (1924) was the only author to comment on the behaviour of *Apexacuta*, reporting that when at rest *A. orsedice* folds its forewings right back behind the costae of its hindwings. The author observed frequently in north Peru both *A. superior* and *A. astoreth*. They behave in a very similar way. Males patrol and occasionally perch in the subcanopy. They are not particularly fast or energetic flyers. They generate an intermediate flight speed between slow motion flapping *Lasiophila* and extremely fast moving *Corades*. No territorial contests were observed, nor indeed interactions with other butterflies. Males are readily attracted to the ground and suspended traps baited with faeces, particularly of human and carnivores. When the sun is overcast they become motionless and are particularly reluctant to take to the wing, even when touched and disturbed. This is quite understandable given that their underside colour pattern is highly cryptic and provides them with perfect camouflage.

### *Apexacuta improvisa* PYRCZ, n. sp.

(Figs. 43, 44, 142)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2800-3100 m, 06.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Upper Río El Chido Valley, Peña Blanca, 3000 m, 03.VII.1999, *leg.* B. Calderón, MZUJ; ***Paratypes*** (**98**♂♂): **10** ♂♂: Peru, Amazonas, Molinopampa - Granada, 2800-3100 m, 06.VII.1998, T. Pyrcz & J. Wojtusiak *leg*.; **2** ♂♂: same data but 20.VIII.1998; **1** ♂: same data but 3015 m, 05.VII.1998; **2** ♂♂: same data but 3025 m, 01.VII.1998; **1** ♂: same data but 2715 m, 27.VII.1998; **2** ♂♂: same data but 27.VI.1998; **3** ♂♂: same data but 3015 m, 04.VII.1998; **4** ♂♂: same data but 29.VI.1998; **1** ♂: same data but 2965 m, 29.VIII.1998; **1** ♂: same data but 1.VII.1998; **3** ♂♂: same data but 26.VIII.1998; **1** ♂: same data but 20.VIII.1998; **1** ♂: same data but 3065 m, 30.VIII.1998; **33** ♂♂: Peru, Amazonas, Pomacochas, Upper Río El Chido Valley, Peña Blanca, 3000 m; **1** ♂: same data but 27.VI.1999; **5** ♂♂: same data but 02.VII.1999; **2** ♂♂: same data but 28.VI.1999; **1** ♂: same data but 26.IX.1999; **2** ♂♂: same data but 03.VII.1999; **1** ♂: same data but 25.VI.1999; **3** ♂♂: same data but 30.VI.1999; **1** ♂: same data but 21.VI.1999; **2** ♂♂: same data but 23.VI.1999; **1** ♂: same data but 29.VI.1999; **1** ♂: same data but 22.VI.1999; **1** ♂: same data but 20.VI.1999; **1** ♂: same data but 05.VII.1999; *leg.* B. Calderón; **1** ♂: same data but 3150 m, 26.IX.1999; **1** ♂: same data but 3150, 16.IX.1999; **2** ♂♂: same data but 3100 m, 29.IX.1999; **1** ♂: same data but 2950 m, 20.VI.1999; **1** ♂: same data but 2950 m, 21.VI.1999; **1** ♂: same data but 2950 m, 28.VI.1999; **1** ♂: same data but 2950 m, 30.VI.1999; **1** ♂: same data but 2900 m, 03.VII.1999; **1** ♂: same data but 2900 m, 25.VI.1999; **1** ♂: same data but 2900 m, 05.VII.1999 (25 MZUJ, 35 TWP, 35 MUSM, 2 BMNH, 1 PB).

DIAGNOSIS: This species can be separated from other congeners by the heavy black overcast of the upperside, which covers all the red markings on the FW, except in the basal area, and also considerably obscures the HW. The wing shape is similar to *A. superior*, with less falcate apex compared to other species and an undulating HW margin.

DESCRIPTION: Male (Fig. 43): *Head*: eyes blackish-brown covered with dense, short setae; frons hairy, brown; palpi 6 mm long, third segment naked, as long as second, the latter covered with short, rufous hair; antennae 12 mm long, rufous red dorsally, orange ventrally, club thickening gradually, slightly darker. *Thorax*: black dorsally covered with short, brown hair. Legs brick red. *Abdomen*: black. *Wings*: FW apex is slightly falcate and the HW margin is undulating. Ground colour of the forewing upperside black, except for faint submarginal intravenous red stripes and a basal dark brick red area. On the HW the basal half is dark brick red. Faint, dark brick red markings in the postmedian to submarginal area. FWV almost uniformly dark brick red, except for a pinkish apical suffusion and brown red along costa and outer margin. Submarginal black spots are small or faint. HWV ground colour lustrous, dark pinkish red with a slightly lighter postmedian band and a series of faint, yellowish submarginal spots.

Male genitalia (Fig. 142): Gnathos thinner than in other species, shoulder of tegumen smooth, valvae shorter than in *A. superior* and *A. astoreth*.

Female (Fig. 44): Sexual dimorphism slight. Brown markings on the upperside lighter. Underside colour pattern lighter and duller.

ETYMOLOGY: *improvisa* (adj., Latin) – unexpected.

REMARKS: *A. improvisa* differs from its southern allopatric ally, *A. astoreth* (THIEME) in that the ground colour of the FWD is black instead of dull brown, except for faint submarginal intravenous red stripes and a basal dark brick red area. The basal half of the HW is dark brick red, not brown. There are additional differences in the wing shape. Sexual dimorphism is slight. Brown markings on the upperside are lighter, and the underside colour pattern is lighter and duller. The forewing apex is less falcate and the HW margin is more undulating. *A. improvisa* occurs generally below *A. superior*, however occasionally individuals were observed as high as 3100 m. Contrary to *A. superior*, this species is frequently collected in the area of Pomacochas, in the northern part of the surveyed area. For further information on the ecology and behaviour of *A. improvisa* see the generic introduction.

### *Apexacuta superior* PYRCZ, n. sp.

(Figs. 41, 42, 143)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 3065 m, 05.VII.1998, T. Pyrcz & J. Wojtusiak *leg.*, MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa – Granada, 3165 m, 04.VII.1998, T. Pyrcz & J. Wojtusiak *leg.*, MZUJ; ***Paratypes*** (**20** ♂♂), **2** ♂♂: Peru, Amazonas, Molinopampa – Granada, 3065 m, 03.VII.1998, T. Pyrcz & J. Wojtusiak *leg.*, TWP; **1** ♂: same data but 3265 m, 20.VIII.1998; **1** ♂: same data but 05.VII.1998; **5** ♂♂: same data but 3065 m, 01.VII.1998; **1** ♂: same data but 3165 m, 29.VI.1998; **1**

♂: same data but 27.VI.1998; **2** ♂♂: same data but 3265 m, 26.VIII.1998; **1** ♂: same data but 06.VIII.1998; **3** ♂♂: same data but 20.VIII.1998; **1** ♂: same data but 3065 m, 04.VII.1998; **1** ♂: same data but 3065 m, 30.VIII.1998; **1** ♂: same data but 3065 m, 05.VII.1998 (1 MZUJ, 10 TWP, 8 MUSM, 1 BMNH).

DIAGNOSIS: Markings of the upperside as in *A. orsedice violacea*. FW apex less falcate and HW outer margin slightly more undulated. The wing shape is the same as in *A. improvisa* but the latter species is much darker on the upperside with a black overcast on most of the FW.

DESCRIPTION: Male (Fig. 41): *Head*: eyes blackish-brown covered with dense, short setae; frons hairy, brown; palpi 6 mm long, third segment naked, as long as second, the latter covered with short, rufous hair; antennae 13 mm long, rufous red dorsally, orange ventrally, club thickening gradually, slightly darker. *Thorax*: black dorsally covered with short, brown hair. Legs brick red. *Abdomen*: black. *Wings*: FW apex acute. HWD oval with slightly undulating outer margins. FWD ground colour dark brick red; venal stripes black, narrow, merging with a black marginal area, a straight line of submarginal, intravenous black round patches of about the same size, vestigial or lacking in cell M2-M3. HWD ground colour same as on the FW, black venal stripes slightly narrower than on the FW, particularly on the discal veins, submarginal black round patches also slightly larger than on the FW, anal area overcast with brown. FWV almost uniformly brick red, except for a whitish postdiscal costal streak and a pinkish apical suffusion; submarginal black spots smaller than on the upperside. HWV ground colour lustrous pinkish brown with a slightly lighter postmedian band and a series of faint, yellowish submarginal spots.

Male genitalia (Fig. 143): Gnathos shorter than in other species, half the length of the uncus, shoulder of tegumen smooth, valve stout, larger than in *improvisa* and *orsedice*, about the same size as in *astoreth*, with a little differentiated apical part.

Female (Fig. 42): Sexual dimorphism slight. Brown markings on the upperside lighter. Underside colour pattern lighter and duller.

ETYMOLOGY: *superior* (adj., Latin) – superior – in relation to *A. improvisa*, which occurs at lower elevations.

REMARKS: This species has a wider distribution than originally thought as it was recently discovered by this author in central Peru (Junín). *A. superior* occurs in the uppermost cloud forest above 3100 m and as high as 3400 m, wherever forests extend up to that elevation.

## *Corades* DOUBLEDAY, 1849

*Corades* HEWITSON, [1849]: 115. Type species: *Corades enyo* HEWITSON, by monotypy.
*Panarche* THIEME, 1907: 228. Type species: *Corades tricordatus* HEWITSON, by original designation, **n. syn.**

GENERIC INTRODUCTION: *Corades* are perhaps the most familiar cloud forest butterflies, easily recognised in the field by every lepidopterist by their elegant

tailed hindwings and fast flight. HEWITSON, BUTLER and STAUDINGER described most species in the XIX century. THIEME (1907) published a good generic monograph and added several new taxa, mostly at the subspecific level. WEYMER (1912) in Seitz published an illustrated catalogue, which became for long the primary reference for quick identification of species. D'ABRERA's (1988) catalogue is superior in quality but quite unreliable because of numerous identification errors.

The most manifest character of *Corades*, and surprisingly enough its only apparent synapomorphy (adult, male), is the outer margin of the HW produced at vein Cu2 into a sharp tail-like extension. This "tail" is short in some species, less than 5 mm in *C. medeba*, intermediate in *C. cistene* or long, 10-15 mm in *C. iduna* or *C. enyo*. There are no other obvious morphological or colour pattern characters which would allow to recognise the genus immediately. The male genitalia, generally very useful in characterising the genera of Pronophilini, are extremely variable. The shape of some sclerits is similar to the genera *Pronophila*, *Lasiophila*, *Arhuaco*, and *Pseudomaniola*. However, there are no characters which would allow to identify unequivocally the sister genus of *Corades*.

The genus *Corades* is exclusively South American and contrary to other Pronophilini (*Pedaliodes*, *Pronophila*, *Oxeoschistus*, *Eretris* etc.) it has no representatives in the Central America. The peripheral ranges of Santa Marta, Turimiquire, Perijá and the Cordillera de la Costa have an impoverished fauna of 1-4 species of *Corades*. Most of the Andes harbour local faunas comprising 8-10 species. All *Corades* are associated with montane cloud and elfin forest habitats. There are however noticeable differences in the ecological preferences between the various species. *C. enyo* occurs in lower montane forests and contrary to its congeners tolerates disturbed habitats and relatively dry areas. *C. medeba* is an inhabitant of the mid-elevation cloud forest where it keeps in the understory in the proximity of watercourses. *C. cistene* and *C. trimaculata* behave in the same way but occur at higher elevations, usually in the forest-paramo ecotone. *C. iduna* and *C. pannonia* are evenly distributed throughout cloud forests, wherever bamboo grows. *Corades* occur from about 1400 m to around 3500 m but the genus is most diverse at 2400-2800 m. Some species can be fairly common in the right biotope and sometimes gather in large number on mud or bait. Others are solitary and unpredictable and some are exceedingly rare. Even though the early students sustain that the females of *Corades* are particularly rare in the field (THIEME 1907), this is related to their slightly different habitat preferences and the fact that they are not attracted to baits. The males of *Corades* are powerful flyers. Some species are territorial. They establish their territories in light gaps in the forest subcanopy where they perch during sunshine hours and chase away other congeners as well as other passing butterflies. Some species of *Corades* are involved in apparently parapatric duos or trios of species replacing each other along an altitudinal gradient (ADAMS 1985; PYRCZ & WOJTUSIAK 1999, 2002).

The hosts of allied genera of Pronophilini (SCHULTZE 1929; DEVRIES 1980; PELZ 1997) are montane bamboo of the genus *Chusquea* (Poaceae). Field observa-

tions indicate that this is also the case of *Corades*. I have observed ovipositions of *C. chirone* and *C. dymantis* in Ecuador on *Chusquea*. Unfortunately, the immature stages remain undescribed.

A comparison of male genitalia indicates that the type species of the genus *Panarche* THIEME (1907), *C. tricordatus* HEWITSON, and another species placed originally in *Panarche*, *C. callipolis* HEWITSON, are closely related to *C. ulema* HEWITSON. The third species associated with this genus by THIEME, *C. anfortas* is closely related to *C. cistene*. *C. ulema* and *C. cistene* belong in a different lineage within the genus *Corades*, therefore *Panarche* is clearly paraphyletic and invalid. It is synonymized herein with *Corades*.

### *Corades enyo almo* THIEME, 1907

*Corades enyo* HEWITSON, [1849]: 117.
*Corades enyo* HEWITSON var. *almo* THIEME, 1907: 222.
*Corades enyo* HEWITSON *almo* THIEME; ADAMS & BERNARD, 1977: 268.

REMARKS: This is the most widespread, nearly Panandean species of *Corades*. The nominotypical subspecies occurs in northern Venezuela (Cordillera de la Costa, Turimiquire). The populations known in Venezuela (Cordillera de Mérida), Colombia, Ecuador (except the upper valley of Zamora and southwest provinces of El Oro and Loja), Peru (except northern Piura) and Bolivia are referable to the subspecies *almo*. *C. enyo* occurs in mid-elevation and lower cloud forests. It is fairly common throughout its wide range.

### *Corades iduna peruviana* BUTLER, 1873

*Corades iduna* HEWITSON, 1850: 437.
*Corades iduna* HEWITSON form *peruviana* BUTLER, 1873: 224.

REMARKS: Several authors (ADAMS 1986, D'ABRERA 1988) consider this taxon as specifically separate from *C. iduna*. However, given the fact that *peruviana* and *iduna* are vicariant, differ little in colour patterns and are indistinguishable in male genitalia, they are considered herein as conspecific, following LAMAS, VILORIA & PYRCZ (2004). *C. iduna peruviana* is the northernmost subspecies occurring along the eastern slopes of the Andes throughout Ecuador (and most probably also in south-east Colombia), central and northern Peru (San Martín, La Libertad, Amazonas, Cajamarca and Loreto). The nominotypical *C. iduna* occurs in Bolivia, *procellaria* THIEME in northern Argentina and *marginalis* BUTLER in south-east Peru (Cusco). There are further two undescribed south and south central Peruvian subspecies (PYRCZ in prep.).

*C. iduna peruviana* is a common butterfly in mid-elevation cloud forests, above 2400 m and as high as 3100 m. It is microsympatric in the area of Molinopampa with *C. cistene*. Both species are particularly abundant in light

gaps, clearings and along forest trails. They perch and patrol in the subcanopy but descent readily to the ground to feed on carrion and dung. Being large butterflies they have problems to heat up their body to sufficient temperatures to fly. Therefore, when the sun is overcast they become motionless and are very easily captured with hands. The males of *C. iduna* can be territorial in some circumstances and have been occasionally seen to engage in aerial combats with other pronophilines.

### *Corades ulema mirianae* LAMAS, 1997

(Figs. 45, 46)

*Corades ulema* HEWITSON, 1850: 438, pl. 10, fig. 3.
*Corades ulema mirianae* LAMAS, [1997]: 51.

REMARKS: The nominotypical *C. ulema* occurs in southern Peru and Bolivia. The population occurring in central and northern Peru (San Martín, La Libertad, Amazonas and Cajamarca), and throughout east Ecuador (and almost certainly in southern Colombia) was attributed recently by LAMAS [1997] the status of a separate subspecies - *mirianae*. In *C. ulema mirianae* the HWV median yellow band, which crosses discal cell, follows along vein Cu2 as a narrow venal stripe, whereas in the nominotypical it is about the same width from costal margin to near tornus. Moreover, in *mirianae* HWV postmedian black dots are smaller and tend to fade away. Among the characters not specified by LAMAS (*op. cit.*) it should be pointed out that *mirianae* has a noticeable olive sheen on the FWD, not apparent in *ulema ulema*, and the yellow HWV postmedian band is overcast with golden olive along its distal half. *C. ulema* is an inhabitant of mid to high elevation cloud forests. It usually occurs in primary areas and is strongly associated with water-courses. In Bolivia (FORSTER 1964; PYRCZ unpubl.) it seems to be one of the commonest species of *Corades* and it is also locally abundant in the northern part of the highlands of Chachapoyas, especially in the Abra Pardo Miguel area.

NOTE: Two individuals of *C. ulema*, a male collected along the Molinopampa - Granada trail and a female from Pomacochas differ from other specimens of *mirianae* in that the FWD postmedian band is well differentiated from the ground colour, lighter and suffused below vein M2 with rusty orange, which becomes progressively dominant towards its distal edge. It also differs from both *mirianae* and the nominotypical in that the FW scent patch covers distal two thirds of discal cell, whereas in other known individuals basal half of the cell is free of scent scales. The underside colour pattern does not differ from other individuals of *mirianae*. The above characters have not been found in any other examined specimen of *C. ulema* throughout its range. The reddish HWD band is a striking feature. The only other taxon of *Corades* with such an unusual character is *C. tripunctata tripunctata*, which occurs in the Highlands of Chachapoyas.

### *Corades medeba medeba* Hewitson, 1850

*Corades medeba* Hewitson, 1850: 439, pl. 10, fig. 4.

Remarks: *C. medeba* is one of the three most widespread species of *Corades*. It ranges from the Cordillera de la Costa in Venezuela to the Yungas in Bolivia. One subspecies, apart from the nominotypical, was described - *columbina* Staudinger - and another one, endemic to the Venezuelan Cordillera de La Costa, was identified (Pyrcz in prep.). *C. medeba columbina* is distinguished from the nominotypical by smaller FWV orange markings. There is a gradual increase in the amount of the FWV orange from the north - Venezuelan Cordillera de Mérida individuals have only faint traces of orange - to the south - Bolivian specimens have large postmedian orange patches and a discal stripe. The phenotype of north Peruvian populations matches more closely the nominotypical subspecies. *C. medeba* inhabits low and mid-elevation cloud forests at 2000-2400 m. It is usually common, contrary to what was stated by Adams & Bernard (1981). In the Cordillera de Mérida occasional aggregations of a dozen or more individuals can be observed on water seepages or dung (Pyrcz & Wojtusiak 2002). *C. medeba* prefers to stay in the understory and close to watercourses.

### *Corades cybele semiplena* Thieme, 1907

*Corades cybele* Butler, 1866: 40, pl. 3, fig. 2.
*Corades cybele* var. *semiplena* Thieme, 1907: 214.

Remarks: This subspecies was described from “Rioja” a locality situated in San Martín at 1200 m, too low for *C. cybele* to occur. Therefore, its exact type locality should be looked for much further up the east slopes of the Eastern Cordillera, probably along the old trail from Rodríguez de Mendoza to Rioja. *C. cybele semiplena* occurs in southern (Cusco, Urubamba valley), central (Pasco, Junín, Huánuco) and northern (Amazonas, San Martín) Peru. *C. cybele cybele* is found in northernmost Peru (Cajamarca) and throughout northern Andes of Ecuador and Colombia. Most authors (Thieme 1907; Weymer 1912; Adams 1986; d’Abrera 1988) consider *C. cybele* specifically distinct from *C. sareba*, whereas Lamas (pers. comm.) is inclined to treat them as conspecific. Although they have similar colour patterns, there are considerable genital differences indicating that they should be considered specifically distinct. *C. cybele semiplena* occurs in small populations but locally, around Abra Pardo Miguel or in Oxapampa (Pasco), can be very abundant.

### *Corades pannonia condorita* Lamas, 1997

*Corades pannonia* Hewitson, 1850: 438, pl. 10, figs 1, 2.
*Corades pannonia condorita* Lamas, [1997]: 52.

REMARKS: The nominotypical *C. pannonia* occurs in the Venezuelan Cordillera de la Costa, *C. p. ploas* THIEME in the Venezuelan Cordillera de Mérida and Colombia, *C. p. condorita* LAMAS in in Ecuador, north and central Peru, whereas *C. p. albomaculata* STAUDINGER in south-east Peru and Bolivia. The three Andean subspecies of *C. pannonia* differ in the extent of white FWD subapical patches. These are absent in *ploas*, faint and suffused with gray in *condorita* and well differentiated and without darker overcast in *albomaculata*. There are also some differences in the HWV ground colour, which has respectively a gray, olive or light brown shade. An undescribed subspecies was recognised in western Ecuador (PYRCZ in prep.). *C. pannonia* is an inhabitant of low and mid-elevation cloud forests, at approximately 1600-2400 m.

### *Corades cistene generosa* THIEME, 1907

*Corades cistene* HEWITSON, 1863: 72, figs. 4, 5.
*Corades cistene* var. *generosa* THIEME, 1907: 219.

REMARKS: *Corades cistene* has been considered until recently as conspecific with *C. dymantis* THIEME (ADAMS 1986). However, their ranges locally overlap in southern Ecuador (PYRCZ in prep.). Moreover, there are important genital differences between the two. Hence, they are herein considered specifically distinct. *C. cistene* occurs in three recognised subspecies - the nominotypical in Bolivia and southern Peru, *generosa* in central and northern Peru and a third, undescribed one in southeast Ecuador (PYRCZ in prep.). In the surveyed area of northern Peru *C. cistene* was found to be very common. Individuals patrol along wider forest trails and feed from urine, dung and other organic matter found on the soil. They keep on feeding even after the sun is obscured by clouds but then their body temperature falls radically, which makes them rather difficult to take on the wing. Individuals of *C. cistene* trampled by passing people and mules are common sights. This species is an upper elevation cloud forest inhabitant found at 2600-3100 m.

### *Corades tripunctata tripunctata* WEYMER, 1890
(Fig. 47)

*Corades tripunctata* WEYMER, 1890: 72, 111, pl. 1, fig. 2.
*Corades ulema* HEWITSON var. *tripunctata* WEYMER; DOGNIN, 1891: 34.
*Corades tripunctata* WEYMER; LAMAS, [1997]: 51.

REMARKS: *C. tripunctata* occurs in northern (San Martín, La Libertad and Amazonas) and central (Junín, Pasco) Peru as a separate, undescribed subspecies (PYRCZ, in prep.). The nominotypical subspecies found in the central part of the highlands of Chachapoyas has very strict ecological preferences. It inhabits uppermost, primary cloud forests and is found only in very humid places near mountain streams. In the area of Molinopampa it was observed within a narrow altitude range at 3050 – 3150 m. Males are locally common. They perch and patrol, and occasionally engage in aerial flights with other congeners.

### *Corades tripunctata necrufa* Pyrcz, n. ssp.

(Figs. 48, 144)

Type series:

***Holotype*** ♂: Peru, Amazonas, Qda. El Chido, 3 km east of Pomacochas, 2400 m, 18.VIII.1998, T. Pyrcz *leg.*, MUSM; ***Allotype*** ♀: Peru, Amazonas, Peña Blanca, Laguna de Pomacochas, 2900-3050 m, VI.2000, B. Calderón *leg.*, MBLI; ***Paratypes*** (**32** ♂♂): **1**: ♂ Peru, Amazonas, Peña Blanca, Río Chido, 3000 m, 06.VII.1999, B. Calderón *leg*., TWP; **1** ♂: same data but 22.VI.1999, TWP; **1** ♂: same data but 30.VI.1999, TWP; **1** ♂: same data but 03.VII.1999, TWP; **6** ♂♂: Amazonas, Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg.*, MBLI; **1** ♂: El Oso, near Laguna de Pomacochas, 3000 m, VI.2000, B. Calderón *leg.*, MBLI; **1** ♂: Pomacochas, Qda. El Chido, 2180-2800 m, 18.VIII.1998, T. Pyrcz *leg*., TWP; **1** ♂: El Oso, near Laguna de Pomacochas, 2800-2950 m, VI.2000, B. Calderón *leg.*, MBLI; **1** ♂: same data but 3000 m, MBLI; **7** ♂♂: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg*., MBLI; **1** ♂: Peña Blanca, Laguna de Pomacochas, 2900-3050 m, VI.2000, B. Calderón *leg*., MBLI; **10** ♂: Abra Pardo Miguel, III.2003, M. Tafur *leg*., 5 MUSM; 5 TWP.

Diagnosis: This subspecies differs from the nominotypical in that the HWD median band is yellow dusted with brown instead of rusty red.

Description: Male (Fig. 48): *Head*, *thorax* and *abdomen*: same as in the nominotypical. *Wings*: (FW length: 37-38 mm, mean: 37.4 mm, n=13). FWD glossy dark brown, slightly lighter on the hindwings; a series of faint, triangular submarginal, yellowish patches heavily dusted with brown, parallel to the outer margin, somewhat variable but in most examined specimens the two submarginal patches are barely visible, the remainder are better defined and interconnected; a faint postdiscal costal spot of the same colour. HWD glossy dark brown; a postmedian-submarginal straight yellowish band heavily dusted with brown with some orange scaling along its basal edge, extending from costa, gradually narrowing towards tornus without reaching it, with a series of three black spots in it. FWV and HWV colour pattern as in the nominotypical.

Male genitalia (Fig. 144): As illustrated, not differing noticeably from the nominotypical subspecies.

Female (not illustrated): Similar to the male but with lighter, more prominent pale yellow pattern.

Etymology: The subspecific epithet is derived from Latin, *necrufa*, meaning - not red, referring to the nominotypical subspecies, which has a conspicuous red band across HWD.

Remarks: This subspecies occurs in the northern part of the highlands of Chachapoyas, referred to by Lamas (1982) as the La Peca faunal unit. It is found at lower elevations than the nominotypical subspecies.

### *Daedalma* Hewitson, 1858

*Daedalma* Hewitson, 1858: 85 Type species: *Daedalma dinias* Hewitson, by subsequent designation, Butler, 1867: 268.

Generic introduction: The adults of *Daedalma* are immediately recognised from other pronophilines by “two-tailed” hindwings. They share with the genus

*Junea* a strongly protruded hindwing costa along humeral vein and an acute FW apex with prominent notch on the outer margin at vein M1. Most species, including *D. dinias* HEWITSON, *D. boliviana* STAUDINGER and *D. parvomaculata* KRÜGER, have an oblong FWD postmedian, orange patch. In *D. palacio* DOGNIN the FW patch is elongate and milky white, in *D. drusilla* HEWITSON the FW is all brown. HWV patterns are rather complicated mosaics of dark-brown, beige and silvery yellow bands, stripes and patches. Head frons bears a tuft of brown hair. Eyes are covered with dense, short hair-like setae. Labial palpi are moderately long (averaging 3.5 mm) covered with rather short hair. Antennae are short, less than half the length of the costa with slightly thicker club, formed gradually and concave. The differences in most sclerits of male genitalia between *D. dinias* and *D. parvomaculata* are much more prominent than between *D. dinias* and the species of *Junea*. Larvae feed on *Chusquea* bamboo and are gregarious (PYRCZ & GREENEY in press.).

The genus is exclusively Andean and contrary to most pronophilines does not penetrate into the Venezuelan Cordillera de Mérida or the Sierra de Perijá. The species of *Daedalma* occur in middle to high elevation cloud forests, and usually are associated with primary habitat. They are scarce in the collections, which is due to their inaccessible habitat rather than to low population density. For example in Tambito (Colombia), the endemic Chocoan *D. parvomaculata* was among the commonest species of pronophilines in quantitative sampling along an elevational gradient (PYRCZ & WOJTUSIAK 1999). Adults are territorial and hilltop alongside *Junea* pronophilines and *Catasticta* pierids.

### ***Daedalma boliviana peruviana*** **PYRCZ, n. stat., n. ssp.**

(Figs. 51, 52, 146)

*Daedalma dinias* HEWITSON var. *boliviana* STAUDINGER, 1897: 139.
*Daedalma dinias* HEWITSON form *rhomboidea* WEYMER, 1912: 266, pl. 56, row f, **n. syn.**

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, El Cedro, 2200 m, 09.VIII.1994, B. Calderón *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Rodríguez de Mendoza, El Cedro, 2200 m, B. Calderón *leg*., TWP; ***Paratypes*** (**5** ♂♂): **1** ♂: Peru, Amazonas, Rodríguez de Mendoza, El Cedro, 2200 m, 29.IX.1995, TWP; **1** ♂: same data but 25.IX.1998, TWP; **1** ♂: same data but 2000-2200 m, IX.2002, B. Calderón *leg*., MUSM; **2** ♂: Pasco, via Huancabamba, Palacamayo, 2100-2200 m, V.2003, J. Böttger *leg*., TWP.

DIAGNOSIS: FWD orange patch a shade lighter than in the nominotypical, slightly smaller and oval instead of squarish or rhomboid, entering deeper inside discal cell.

DESCRIPTION: Male (Fig. 51): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW length: 25-26 mm, mean: 25.5 mm, n=5. FWD blackish brown; a large oval orange patch extending from subcosta to vein Cu2 entering distal one third of discal cell. HWD uniformly blackish brown. FWV blackish brown; the orange patch shaped as on the upperside, a shade lighter; subapical and apical areas dusted with magenta scales; two apical blackish brown

dots in cells R4-R5 and R5-M1, the latter displaced basally in relation to the former. HWV pattern same as in the nominotypical but darker.

Male genitalia (Fig. 146): As illustrated.

Female (Fig. 52): FW length: 30 mm. Differs in the same respect from nominotypical as the male, and additionally the HWD postdiscal orange band reaches from costa to vein M2 whereas in the nominotypical subspecies it extends as far as vein Cu1.

ETYMOLOGY: The epithet of this subspecies refers to the country of origin.

REMARKS: *D. boliviana* is specifically distinct from *D. dinias* HEWITSON described from the Colombian Eastern Cordillera. Differences in the male genitalia are very pronounced, qualitative and affect the most important sclerits, such as uncus, valvae and aedeagus (PYRCZ & GREENEY in prep.). In *D. boliviana* the FWD orange patch enters discal cell contrary to *D. dinias*. Both species are polytypic. They are widely sympatric in Eastern Ecuador. *D. boliviana* also closely resembles *D. fraudata* n. sp., the two are sympatric in the highlands of Chachapoyas. The differences between the two are quoted in the diagnostic part for the new species. *D. boliviana* is also not unlike *D. vertex* n. sp., which is however much bigger and occurs at higher elevations. Currently, the *Daedalma dinias* complex is being revised by PYRCZ & GREENEY (in prep.). *D. boliviana* occurs in mid-elevation cloud forests.

### *Daedalma fraudata* PYRCZ, n. sp.

(Figs. 53, 54, 147)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Alto Río Nieva, 2200-2500 m, VI.2002, B. Calderón *leg*., MUSM. ***Allotype*** ♀: Peru, Amazonas, Alto Río Nieva, Abra Pardo Miguel, 2200-2300 m, M. Tafur *leg*., TWP. ***Paratypes*** (**7** ♂♂): **2** ♂♂: Peru, Amazonas, Alto Río Nieva, Abra Pardo Miguel, 2200-2300 m, M. Tafur *leg*., TWP; **5** ♂♂: Dept. Amazonas, 1889, M. de Mathan *leg*., BMNH.

DIAGNOSIS: This species closely resembles *D. boliviana* except that the FWD orange patch is smaller and dark orange – brick red instead of light orange. Ventral surface pattern is noticeably darker than in *D. boliviana* with the predominant colour of the HW dark brown instead of chestnut and beige.

DESCRIPTION: Male (Fig. 53): *Head*: eyes chocolate brown; palpi twice the length of the head, covered with light brown hair; antennae to 2/5 the length of the costa, slender, club only slightly thicker, dorsally dark brown, ventrally light brown with darker brown terminal segments. *Thorax*: dorsally and ventrally blackish brown; legs medium brown. *Abdomen*: dorsally and laterally blackish brown, ventrally medium brown. *Wings*: FW (length: 25-26 mm, mean: 25.5 mm, n=3) apex subacute, outer margin produced along vein M1. HW outer margin forming two „tails" along veins Cu1 and Cu2. FWD blackish brown; a large postdiscal dark orange oval patch extending from distal corner of discal cell to median part of cell Cu1-Cu2. HWD uniformly blackish brown. FWV blackish brown; postdiscal orange patch reflected from the upperside but slightly smaller

and with diffused edges; subapical area along costa dusted with magenta and gray scales; two black apical dots in R5-M1 and M1-M2, the latter displaced basally in relation to the former; apical area and outer margin to vein M3 dusted with chocolate brown and yellow scales. HWV predominant colour chocolate brown with an extremely complex mosaic of black, brown and beige with traces of magenta, and three elongate milky white submarginal patches in cells M2-M3, M3-Cu1 and Cu1-Cu2.

Male genitalia (Fig. 147): Uncus long and slightly arched, slightly stouter than in *D.boliviana*; valvae elongate with a small apical tip, more slender than in *D. boliviana* and *D. vertex* n. sp.; saccus long and thin; aedeagus very gently curved before tip.

Female (Fig. 54): FW length: 29.5 mm. FWD dark brown; postdiscal orange patch as in male. HWD dark brown; an elongate apical orange patch with diffused edges enclosing three dark brown spots. FWV colour pattern as in male except that dark brown ground colour slightly lighter. HWV colour pattern as in male except that slightly lighter with more conspicuous milky white pattern especially in the postmedian area.

ETYMOLOGY: The subspecific epithet *fraudata* – treacherous (Lat.) - refers to the fact that this taxon can be easily confused with other congeners.

REMARKS: Even though admittedly this taxon is very closely related to *D. boliviana*, especially in the colour pattern, it was attributed a specific status based on both genital morphology and distributional data. *D. fraudata* occurs on the outer eastern slopes of the Andes, and not only in the Chachapoyas area but throughout its range extending farther north, in Ecuador (as a separate subspecies), it is replaced at slightly higher elevations and at the same time slightly westerly by *D. boliviana*. Such a distribution pattern is not unique among the pronophilines as it is repeated in several species of *Pedaliodes* and *Eretris*.

### ***Daedalma vertex* PYRCZ n. sp.**

(Figs. 55, 56, 148)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 3065 m, 03.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa – Granada, 3100-3250 m, III.2003, M. Tafur *leg*., TWP; ***Paratypes*** (**33** ♂♂ & **8** ♀♀): **1** ♂: Peru, Amazonas, Molinopampa - Granada, 2915 m, 29.VIII.1998, T. Pyrcz & J. Wojtusiak, TWP; **1** ♂: same data but 2800-3100 m, 20.VIII.1998, TWP; **1** ♂: same data but 3000-3050 m, B. Calderón *leg*.; **17** ♂♂: same data but 3100-3250 m, M. Tafur *leg*., 10 TWP; 7 MUSM; **1** ♂: Peña Blanca, Río Chido, 2800 m, 29.VI.1999, B. Calderón *leg.*, TWP; **3** ♂♂: Road Leimebamba - Balsas, 3550-3650 m, 1-15.XII.2001, B. Calderón *leg*., MBLI; **1** ♂: Molinopampa - Granada trail, 2500 m, X.2000, B. Calderón *leg*., MBLI; **1** ♂: same data but 3050 m, MBLI; **4** ♂♂: same data but 3150-3250, MBLI; **1** ♂: same data but 3400 m, MBLI; **1** ♂: Molinopampa 2900-3000 m, IX.2000, B.Calderón *leg*., PB; **1** ♂: Pomacochas, La Sonada, IX-X.2000, B.Calderón *leg*., PB; **1** ♀: Molinopampa – Granada, 3100-3250 m, III.2003, M. Tafur *leg*., TWP; **1** ♀: Peña Blanca, Río Chido, 2500-2900 m, VI.2002, B. Calderón *leg*., TWP; **1** ♀: Peña Blanca, Laguna de Pomacochas, 2900-3050 m, VI.2000, B. Calderón *leg*., MBLI; **1** ♀: Pueblo Maria, Luya, 3200 m, XI.1998, B. Calderón *leg*., MBLI; **1** ♀: Molinopampa - Granada trail, 3150-3250 m, X.2000 m, B. Calderón, MBLI; **1** ♀: same data, PB; **1** ♀: Molinopampa, 2900-3100 m, I.2001, B.Calderón *leg*., PB; **1** ♀: Pomacochas, 3200 m, 13.VI.2000, B.Calderón *leg*., PB.

DIAGNOSIS: Upperside pattern shows some similarity to *D. dinias* but the orange patch on the FW is more elongate. *D. vertex* is larger than other congeners except the females of *D. dinias* and *D. inconspicua*.

DESCRIPTION: Male (Fig. 55): *Head*: frons with a tuft of brown hair; eyes dark chocolate-brown covered with short setae; palpi 3.5 mm long, dorsally brown, laterally light beige covered with brown hair; antennae to 2/5 the length of the costa (approx. 1,2 cm), orange, with sparse white scales at the base of each segment, club slightly flattened, darker. *Thorax*: dorsally blackish-brown, hairy, ventrally covered with lighter brown hair; legs light beige, with hairy tibiae. *Abdomen*: dark-brown dorsally and laterally, light brown ventrally. *Wings*: FW (length: 28-29 mm, mean: 28.6 n=15) with slightly arched costa, acute apex and outer margin produced at vein M1. HW costa slightly protruded along humeral vein and apex; "tails" at vein Cu1 and Cu2 of similar length, about 5-5.5 mm. FWD dark chocolate-brown, lustrous; transverse oblong, median patch extending from near costa, across discal cell to mid-cell Cu1-Cu2, with a triangular incision at base of vein Cu1 and a dot enclosed within the orange patch in cell Cu1-Cu2; faint, barely visible postdiscal orange line from vein M1 to M3; fringes brown and yellowish in the interspaces. HWD uniformly dark chocolate-brown, lustrous, except for a pale orange costal lightening before apex; fringes brown and yellowish in the apical one-third. FWV dark chocolate-brown; orange elements reflected from the upperside, but post-discal line slightly better marked; distally, apical brown area lighter and suffused with magenta and a fine brown submarginal line; two brown faint ocelli in cells R5-M1 and M1-M2. HWV pattern is an extremely complex mosaic of black, brown and beige with traces of magenta and a series of triangular, shining yellow submarginal patches (similar to *D. boliviana* except that two submarginal shining yellow triangular patches are less elongate and slightly larger); postmedian line edged basally with black; ocellus is Cu1-Cu2 black, without white pupil.

Male genitalia (Fig. 148): As illustrated.

Female (Fig. 56): Fringes distinctly marked in the interspaces white. FWD patch light orange. HWD orange patches extending from the costa towards vein Cu2 in the postmedian to submarginal area, gradually darkening, becoming rusty orange, and fading away.

ETYMOLOGY: *vertex* - summit, for the hill-topping behaviour of this species.

REMARKS: This species has a wider distribution. It is also found in central Peru in the provinces of Huánuco (Carpish) and Pasco (Oxapampa) as a separate subspecies (PYRCZ in prep.). *D. vertex* occurs at higher elevataions than its congeners, usually around 3000 m.

## *Junea* HEMMING, 1964

*Polymastus* THIEME, 1907: 138, preoccupied (CLAPAREDE, 1864). Type species: *Daedalma doraete* HEWITSON, by original designation.

*Polymastor* [sic] THIEME; GAEDE, 1931: 510, misspelling.

*Junea* HEMMING, 1964: 137. Replacement name for *Polymastus* THIEME.

GENERIC INTRODUCTION: The adults of *Junea* are exquisite butterflies. They are arguably among the most striking satyrines worldwide. They are large for the standards of the sub-family, averaging eight centimetres of wingspan. FW is produced and dentate between apex and outer margin at vein M1. HW costa has two prominent lobes along humeral vein and near costa and its outer margin is dentate. Upperside colour patterns consist of one or two rows of small yellowish patches parallel to outer margin on a brown ground colour. Upperside pattern is reflected on the FWV, except for a greenish olive apical area with three fully developed ocelli in cells R4-R5, R5-M1 and M1-M2. HWV pattern is a fairy mosaic of green, olive and beige halftones with distinctive median, postmedian and submarginal black lines and a series of postmedian ocelli. Basal one-third of HWV is densely hairy. Male genitalia are rather simple and differ little between taxa. Valvae are slender and devoid of any secondary process.

The genus is strictly Andean and similarly to *Daedalma* does not penetrate into the Venezuelan Cordillera de Mérida. The El Tamá range on the border between Colombia and Venezuela is its northern distribution limit. The genus *Junea* comprises of only two widespread, polytypic species. Slight morphological differences between allopatric taxa do not justify considering them as specifically distinct (THIEME 1907; D'ABRERA 1988). *J. doraete* and *J. dorinda* are sympatric in most localities and are unlikely parapatric along an altitude gradient as suggested by KRÜGER (1925) and ADAMS (1986) who based their opinion on a very limited material bearing precise altitude data.

SCHULTZE (1929) described the early stages of *Junea doraete*. Its larvae feed on *Chusquea* bamboo. They are greenish, cryptically coloured. Their head capsule, strongly elongate and ending in a sharp single process, is a diagnostic feature which can be used to recognise *Junea* from the larvae of *Daedalma*, *Pedaliodes* or *Lymanopoda*. The behaviour of adult *Junea* differs from most pronophilines, except *Ps. dryadina* SCHAUS (DEVRIES 1987), and is reminiscent of true nymphalids. They are very fast flying butterflies, alternately active patrollers and territorial perchers. While perching, wings invariably closed, they fold their hindwings behind the forewings, showing their cryptic underside pattern, which gives them a perfect camouflage against dark green leaves, lichens and tree barks background. HW costal protrusions are exposed reinforcing the camouflage. Males of *Junea* hilltop alongside *Daedalma* pronophilines, *Catasticta* whites, *Rhamma* and *Thecloxurina* blues and *Dione* heliconids. In a particularly attractive hilltop site at 3000 m on the Molinopampa - Granada trail occasionally as many as five individuals of *Junea* could be observed turning around and engaging into violent aerial combats. Other passing butterflies did not attract their attention. There seemed to be a temporal exclusion between the two species of *Junea*. Males of *J. doraete* were usually arriving first at around 10AM, whereas *J. dorinda* started appearing one or two hours later in the day. Usual baits consisting of rotten fruits, dung and carrion, when not exposed near any hill-topping site, readily attract both species of *Junea*.

### *Junea dorinda quasinegra* Pyrcz, n. ssp.

(Figs. 49, 50, 145)

*Daedalma dorinda* C. & R. Felder, 1862: 427.
*Daedalma emilia* Butler, 1866: 40, pl. 3, fig. 3. Synonymy established by Adams, 1986: 260.
*Polymastus dorinda* (C. & R. Felder); Thieme, 1907: 145 (*Polymastor* [sic]).
*Junea dorinda* (C. & R. Felder); Hemming, 1964: 137.

Type series:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2800-3100 m, 26.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa, 0610/7739, G. Lamas *leg.*, MUSM; ***Paratypes*** (**13** ♂♂ & **1** ♀): **2** ♂♂: Peru, Amazonas, Molinopampa - Granada, 2800-3100 m, 26.VIII.1998, T. Pyrcz & J. Wojtusiak leg. TWP; **1** ♂: same data but 2650-3100 m, 06.VII.1998, TWP; **1** ♂: same data but 2715 m, 27.VIII.1998, TWP; **1** ♂: Pomacochas, Qda. El Chido, 2180-2800 m, 18.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **2** ♂♂: El Oso, near Laguna de Pomacochas, 3000 m, VI.2000, B. Calderón *leg*., MBLI; **1** ♂: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg*., MBLI; **2** ♂♂: Molinopampa - Granada trail, 3100 m, X.2000, B. Calderón *leg*., MUSM; **1** ♂: Alto Río Nieva, 2000-2200 m, I.2003, B.Calderón *leg*., PB; **1** ♂: same data but 2300 m, II.2003, PB; **1** ♂: Molinopampa, XI.2000, B.Calderón *leg*., PB; **1** ♀: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg*., MBLI.

Diagnosis: *J. dorinda quasinegra* is characterised by the darker ground colour of the upperside than other subspecies. Upperside postmedian spots are larger than in the nominotypical but much smaller than in *whitleyi*, milky white like in the southern subspecies, not yellowish as in the nominotypical or orange-yellow as in the west Ecuadorian undescribed subspecies (except for the female).

Description: Male (Fig. 49): *Head*, *thorax* and *abdomen*: as in other subspecies. *Wings*: FW length: 36-39 mm, mean: 37.8 mm, n=5; fringes milky white. HWD fringes milky white, longer black hair-like scales at tornus and at the veins Cu1 and Cu2 and light gray along anal margin. FWD dark brown with an olive sheen; four subapical spots and a row of four submarginal milky white spots. HWD dark brown with an olive sheen; a milky white costal streak; a row of three faint postdiscal and a row of seven, better marked submarginal milky white dots. FWV dark brown with a heavy violet overcast; discal cell vein marked with milky white; two subapical and four larger submarginal milky white patches; three subapical olive green ocelli with milky white pupils in cells R4-R5, R5-M1 and M1-M2; apical area olive green with a zigzagging darker line. HWD not differing noticeably from other subspecies.

Male genitalia (Fig. 145): Not differing noticeably from the nominotypical subspecies.

Female (Fig. 50): FWD and HWD ground colour brown. FWD with prominent yellow, oval postmedian spots from R4-R5 to Cu2-1A, plus two additional subapical spots in R5-M1. HWD with lunulous postmedian yellow spots in Rs-M1 to Cu2-1A plus faint, golden yellow median spots in M2-M3, M3-Cu1 and Cu1-Cu2. FWV and HWV pattern as in the male but slightly lighter and duller.

Etymology: *quasi* (Lat.) almost - *negra* (Lat.) black.

REMARKS: *Junea dorinda* can be divided into four subspecies distributed as follows. The nominotypical (synonym *emilia* BUTLER) occurs throughout Colombia, in El Tamá range in southwest Venezuela, in eastern Ecuador and extreme northern Peru (northern Cajamarca and Piura). An undescribed subspecies (PYRCZ in prep.) is found in western Ecuador. *J. dorinda whitleyi* DRUCE ranges between central Peru (Junín) and Bolivia (Yungas). *J. dorinda quasinegra* is the north Peruvian subspecies. *J. dorinda* and *J. doraete* are sympatric throughout their vast geographic range except in the Colombian Eastern Cordillera, where the only representative of the genus is *J. dorinda*.

### *Junea doraete antissa* (THIEME, 1907) n. stat.

*Daedalma doraete* HEWITSON, 1858: 85, figs 4, 5.
*Polymastor* [sic] *doraete* (HEWITSON); THIEME, 1907: 141.
*Junea doraete* (HEWITSON); HEMMING, 1964: 137.
*Polymastus gideon* THIEME var. *antissa* THIEME, 1907: 141.

REMARKS: The distribution of the subspecies of *Junea doraete* does not match exactly the pattern of *J. dorinda*. The nominotypical subspecies occurs in Colombia and northeastern Ecuador. Two undescribed subspecies were identified in Ecuador, one in the south-east, the other in the west. The latter penetrates into extreme northern Peru (PYRCZ in prep). *J. doraete antissa* THIEME is found in northern and central Peru, *gideon* THIEME in southeastern Peru and *enipeus* THIEME in Bolivia. Throughout Ecuador *J. doraete* is much more common than its congener but in all the sampled localities in northern and central Peru the situation is reversed.

### *Lasiophila* C. & R. FELDER, 1859

*Lasiophila* C. & R. FELDER, 1859: 325. Type species: *Pronophila cirta* C. & R. FELDER, by subsequent designation, SCUDDER, 1875: 202.

GENERIC INTRODUCTION: PYRCZ (2000) surveyed the genus *Lasiophila* in Ecuador and specified main characters of the generic morphology. Accordingly, their adults are medium to large sized butterflies, for satyrine standards, with a wingspan of 5-9cm, triangular FW with a subacute to acute apex and a straight outer margin, and oval HW with a strongly scalloped outer margin, a protruded apex and a tail-like extension, spatulate in some species, at vein Cu1. Upperside colours are predominantly rufous or brick red with black elements predominant towards outer margins and conspicuous orange or white FW submarginal markings, and exceptionally a white HW median patch. Venation is typical of the tribe Pronophilini (MILLER 1968; ADAMS 1986), characterised by the HW cross-vein M1-M2 curved inside the cell and the FW veins Rs and M1 arising slightly apart. Antennae are short, about 2/5 the length of the costa, chestnut or orange with a black slender club. Palpi are moderately long to very long (4-6 mm). Eyes are

covered with sparse but long setae. Male genitalia are rather simple, characterised by a long and narrow uncus, rather short gnathos of 1/3 the length of the uncus, valvae with a dentate ampulla devoid of any prominent secondary process, and a very long saccus.

The genus is strictly South American and almost entirely Andean being distributed from northern Argentina (Tucumán) to northern Colombia (Sierra Nevada de Santa Marta) and Venezuela (Cordillera de la Costa). THIEME (1907) recognised 18, whereas D'ABRERA (1988) identified 16 species. The genus can be divided into three groups identified on zoogeographical, ecological and morphological grounds. The *L. zapatoza* group is the most widespread, occurring at lowest altitudes and its members are the smallest. This group is represented in Peru by *L. orbifera* (HEWITSON). The *L. prosymna* group is the most restricted geographically, inhabiting intermediate elevations and medium sized. This group is represented in north Peru by two species *L. phalaesia* (HEWITSON) and *L. alkaios* TESSMANN. The *L. circe* group occurs at highest altitudes, in the uppermost forest up to timberline, and its members are the biggest. This group is represented in northern Peru by *L. cirta* C. & R. FELDER. The early stages of *Lasiophila* are undescribed and the biology remains unexplored, however their larvae feed almost certainly on montane *Chusquea* bamboo (Poaceae).

### *Lasiophila alkaios gita* SMART, 1975, n. stat.

*Lasiophila alkaios* TESSMANN, 1928: 123, pl. 5, fig. 4.
*Lasiophila gita* SMART, 1975: 249, 275, fig. 46. Synonymy established by LAMAS, [1997]: 52.

REMARKS: *L. alkaios* was described from central Peru based on a male (type) from an indefinite locality in the Chanchamayo valley (Junín), and a female from the Bellavista - Pozuzo road (Pasco). SMART (1975), obviously unaware of the TESSMANN article, went on describing once again this species under the name *L. gita* based on a male from "Río Huallaga", a vague locality, which apparently refers to the highlands west or north of Juanjuy. LAMAS (1997) synonymized the two taxa. However, the population found in the highlands of Chachapoyas differs, slightly but consistently, from the central Peruvian race. Differences are mostly in the ground colour of the upperside, brick red in the nominotypical, crimson red in *gita*, and in the amount of black. Characteristically, in the Pasco typical specimens the HWD marginal area is all black, whereas in the Chachapoyan it is red at least between vein M2 and tornus. The original illustration in SMART (1975) shows such a specimen, hence I consider the Chachapoyas population as valid subspecies - *L. alkaios gita* n. stat.

*L. alkaios* is closely related to *L. parthyene* (HEWITSON), which occurs exclusively in the upper valley of the Río Chinchipe (and its tributaries) in extreme northern Peru (Cajamarca) and southern Ecuador (Zamora-Chinchipe). Given their close similarity of colour patterns, wing shapes and genital structures the two taxa could possibly be treated as conspecific. In the highlands of Chachapoyas

*L. alkaios* seems to be relatively uncommon as compared to other congeners. *L. alkaios* occurs in mid-elevation cloud forests at 2300-2700 m.

### *Lasiophila cirta cirta* C. & R. Felder, 1859

(Figs. 57, 58)

*Lasiophila cirta* C. & R. Felder, 1859: 326, pl. 6, fig. 1.
*Pronophila cirta* (C. & R. Felder); Hewitson, 1862: 15.
*Lasiophila cirta* var. *diducta* Thieme, 1907: 115, **n. syn.**

Remarks: The population found in the area of Molinopampa belongs to the nominotypical subspecies, which ranges southwards to central Peru (Huánuco, Junín and Pasco). *Lasiophila cirta* var. *diducta* Thieme n. syn. is an individual form of the nominotypical subspecies, common in Molinopampa, in which submarginal crimson-red intravenous elongate patches are connected to the median crimson-red area. *L. cirta* species inhabits upper cloud forests, almost to timberline at 2500-3200 m. It is particularly fond of sunshine gaps, clearings and wider trails. *L. cirta* has a very particular, slow flapping flight. It can be often seen sunning in the subcanopy, wings wide open exposing shining white HWD patches.

### *Lasiophila cirta atropurpurea* Pyrcz, n. ssp.

(Figs. 59, 60, 149)

Type series:

***Holotype*** ♂: Peru, Amazonas, Pomacochas, Qda. El Chido, 2200-2800 m, 08.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Pomacochas, Peña Blanca, 3000 m, 26.VI.1999, B. Calderón *leg*., TWP; ***Paratypes*** (**90**♂♂): **4** ♂♂: Peru, Amazonas, Pomacochas, Qda. El Chido, 2200-2800 m, 08.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **8** ♂♂: same data but 09.VII.1998, (4 TWP, 2 MZUJ, 2 BMNH); **1** ♂: same data but 18VIII.1998, T. Pyrcz & J. Wojtusiak leg., TWP; **2** ♂: same data but 10.VII.1998, TWP; **1** ♂: same data but 09.VIII.1998, TWP; **13** ♂♂: El Oso, near Laguna de Pomacochas, 3000 m, VI.2000, B. Calderón *leg.*, MBLI; **7** ♂♂: same data but 3050-3150 m, MBLI; **8** ♂♂: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, C. Calderón *leg*., MBLI; **7** ♂♂: Peña Blanca, Laguna de Pomacochas, 2900-3050 m, VI.2000, B. Calderón *leg.*, MBLI; **5** ♂♂: Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., GR; **2** ♂♂: Pomacochas, 2700 m, 10.VII.1998, T. Pyrcz *leg*., PB; **1** ♂: Pomacochas, El Oso, 3050 m, 5.VI.2000, B. Calderón *leg*., PB; **1** ♂: same data but 3100 m, 6.VII.2000, PB; **1** ♂: Pomacochas, 3000 m, 9.V.2000, B. Calderón *leg*., PB, 28♂♂: same locality, III.2002, B. Calderón leg., (18 MUSM; 10 TWP).

Diagnosis: FWD consistently darker than the nominotypical, dark crimson red with a black overcast.

Description: Male (Fig. 59): *Head*, *thorax* and *abdomen*: same as in the nominotypical. *Wings*: FW length 36-41 mm, mean: 38.2 mm, n=18. FWD dark crimson red with a black overcast, progressively heavier towards distal half; a row of black submarginal spots pareallel to outer margin enclosed in elongate dark crismson red patches, one in each cell; marginal area black. HWD with a large silvery white, lustrous patch extending from base to postdiscal area; submarginal area dark crismon red with a row of lunular black patches; marginal area black.

FWV brick red; a row of oval lighter submarginal patches enclosing a black spot, one in each cell; subapical and apical area suffused with whitish and violet scales. HWV brown with a violet overcast; a wide darker median band; a row of six to eight milky white submarginal spots in each cell, the spots closer to apex occasionally not apparent, two spots in cell Cu2-1A.

Male genitalia (Fig. 149): As illustrated, not differing from the nominotypical subspecies.

Female (Fig. 60): Similar to the male but considerably lighter and paler on both the upper and underside.

ETYMOLOGY: *atra* (Lat., adj.) dark; *purpurea* (Lat., adj.) dark crimson-red.

REMARKS: *L. cirta atropurpurea* occurs in the northern part of the highlands of Chachapoyas, near Pomacochas and in the upper valley of the Río Nieva where it replaces the nominotypical *cirta*. This subspecies contrary to the nominotypical *cirta* enjoys deep shadow of the forest understory. It avoids straying into open areas. I observed it at lower elevations than *L. cirta cirta*, to 2200 m, but most often at around 2600-2700 m.

NOTE: The female syntype of *P. praeneste* HEWITSON (examined BMNH) represents this subspecies. *P. praeneste* was synonymized with *circe* C. & R. FELDER by ADAMS (1986) who also designated a Colombian specimen as the lectotype.

### *Lasiophila orbifera intercepta* THIEME, 1907

*Lasiophila orbifera* BUTLER, 1868: 182, pl. 5, fig. 6.
*Lasiophila orbifera* var. *intercepta* THIEME, 1907: 130.

REMARKS: LAMAS (1996) considered *L. zapatoza* (WESTWOOD) and *L. orbifera* as one widespread polytypic species. Male genitalia of *L. zapatoza* are however quite different from *L. orbifera*, namely the valves are much slenderer in the latter species and bear a distinctive crest on the ampulla, and the saccus is considerably longer than in two other species of this group. Based on genital morphology PYRCZ (1999) reinstated *L. orbifera* as a separate species. The nominotypical *L. orbifera* occurs in southern Peru and Bolivia. The subspecies *pura* THIEME is restricted to Argentina, while *intercepta* THIEME inhabits the eastern slopes of the Andes from central Peru to southeastern Colombia, with a slight clinal variation apparent in the increase of black suffusion in the median area of the FWD from north to south. *L. orbifera* occurs at lower elevations than other congeners in the area of Chachapoyas, always below 2600 m, occasionally down to 1800 m, and is most abundant at 2000-2400 m.

### *Lasiophila phalaesia phalaesia* (HEWITSON, 1868)

*Pronophila phalaesia* HEWITSON, 1868, figs 13, 14.
*Lasiophila phalaesia* (HEWITSON); BUTLER, 1868: 182.

REMARKS: The nominotypical *L. phalaesia* occurs on the western slopes of the Andes in southern Ecuador (El Oro, Loja) and northern Peru (Piura, Cajamarca) and on the eastern slopes in the highlands of Chachapoyas (Amazonas). Individuals from the western and eastern slopes do not differ in the wing colour pattern and genitalia structure. On the other hand, the populations found in Ecuador farther north form three well-differentiated subspecies (*kroli* PYRCZ, *confusa* THIEME and *alce* PYRCZ). In Bolivia *L. phalaesia* is replaced by *L. regia* STAUDINGER, externally very similar but differing considerably in the male genital structures (FORSTER 1964). No records of either species are known from central Peru. *L. phalaesia* is one of the commonest pronophilines in mid-elevation cloud forests. It tolerates heavily disturbed habitats and persists even far away from large patches of forest in isolated stands of bamboo.

NOTE: The holotype of *Lasiophila phalaesia kroli* PYRCZ (1999) is a female, contrary to the captions of the original illustrations and the descriptive text.

## *Mygona* THIEME, 1907

*Mygona* THIEME, 1907: 162. Type species: *Pronophila prochyta* HEWITSON, by original designation.

GENERIC INTRODUCTION: The adults of *Mygona* are rather large butterflies for satyrine standards (6-10 cm wingspan) with the FW outer margin produced below apex, an undulated HW margin without "tails", long labial palpi (averaging 4 mm) and slender antennae. Male genitalia are simple and reminiscent of *Lasiophila*, with slender valvae devoid of any secondary process and a long saccus. The genus *Mygona* is closely related to *Lasiophila* C. & R. FELDER with which it shares several plausible synapomorphies of the adult morphology in the head parts morphology, wing shape and colour pattern (PYRCZ 1999). Basically, only the wing shape can be defined as a qualitative synapomorphy of *Mygona* compared to *Lasiophila* - FW outer margin produced below apex, scalloped HW outer margins produced at vein Cu1.

D'ABRERA (1988) lists seven species in the genus *Mygona*. Two of them are placed herein in separate genera (*Apexacuta* and *Proboscis*) whereas the remaining are considered, according to LAMAS, VILORIA & PYRCZ (2004) as belonging in only three species. One of them - *M. irmina* (DOUBLEDAY) - is monotypic and occurs in Venezuela, Colombia and east Ecuador (north of Pastaza), whereas two are polytypic - *M. poeania* (HEWITSON) and *M. prochyta* (HEWITSON). *M. prochyta prochyta* occurs in Bolivia, *M. p. chyprota* GROSE-SMITH in southeast Peru, and *M. p. thammi* STAUDINGER in central Peru. *M. poeania* is found in northeast Peru and southeast Ecuador. The biology of *Mygona* is unknown.

### *Mygona poeania magalyae* PYRCZ n. ssp.

(Figs. 61, 62, 150)

*Pronophila poeania* HEWITSON, 1870: 158; 1872: pl. 6, fig. 37.
*Mygona poeania* (HEWITSON); THIEME, 1907: 166.

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, Pirruro - Cedro, 1800-2200 m, 25.VIII.1998, T. Pyrcz *leg*., MUSM. ***Allotype*** ♀: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 1800-2200 m, III.2003, B. Calderón *leg.*, TWP. ***Paratypes*** (**34** ♂♂ and **2** ♀♀): **5** ♂♂: Peru, Amazonas, Rodríguez de Mendoza, Pirruro - Cedro, 1800-2200 m, 25.VIII.1998, T. PYRCZ *leg*., (1 TWP, 1 MZUJ, 1 BMNH, 1 MUSM); **3** ♂♂: Rodríguez de Mendoza, Qda. Llanohuaico, 1800-2200 m, VII-VIII.1998, T. PYRCZ *leg*., MUSM; **1** ♂: Rodríguez de Mendoza, Hingilpata, 11.IX.1998, B. Calderón *leg*., TWP; **1** ♂: Rodríguez de Mendoza, Llanohuaico, 13.X.1998, B. Calderón *leg*., TWP; **1** ♂: Rodríguez de Mendoza, Cedro, 02.X.1998, B. Calderón *leg*., TWP; **8** ♂♂: Abra Pardo Miguel, 2000-2400 m, III.2003, M. Tafur *leg.*, TWP; **1** ♂: Chachapoyas, La María, 05.IX.1998, B. Calderón *leg*., TWP; **1** ♂: Huamanpata, Rodríguez de Mendoza, 2500 m, XI.2000, B. Calderón *leg*., MBLI; **1** ♂: Cedro, Rodríguez de Mendoza, MBLI; **2** ♂♂: Rodríguez de Mendoza, 1500-3000 m, VI.2002, B. Calderón *leg*., PB; **1** ♂: Qda. Pirruro, Rodríguez de Mendoza, 2000 m, IV.2002, B. Calderón *leg*., PB; **9** ♂♂: Alto Río Nieva, 2200 m, VI.2002, B. Calderón *leg*., PB; **2** ♀♀: Rodríguez de Mendoza, III.2003, B. Calderón *leg*., TWP.

DIAGNOSIS: This species differs from the nominotypical mostly in the slightly lighter, dark amaranth instead of dark brick red HWD distal half. Red patches apparent also on the FW, contrary to all brown FW of the nominotypical subspecies.

DESCRIPTION: Male (Fig. 61): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FWD dark brown with a consipcuous lighter sheen; three sumbarginal amaranth red patches in cells M3-Cu1, Cu1-Cu2 and Cu2-1A, irregular and variable in size, in some examined individuals faint. HWD dark brown with a lighter sheen in median half; distally amaranth red; in some individuals faint dark brown subapical dots in cells M3-Cu1 and Cu1-Cu2; outer margin dark brown from apex to vein M3, then continuing as an irregular submarginal dark brown line, in some individuals fading in cell Cu1-Cu2, in others extending to anal margin at tornus. FWV dark brown, lustrous and slightly lighter in basal area; three submarginal red patches in cells M3-Cu1, Cu1-Cu2, and Cu2-1A shaped as on the upperside; subapical, apical and marginal areas to vein Cu1 crimson red; apical area dusted with magenta scales. HWV red brown; a wide darker median band; postdiscal to submarginal areas lighter, suffused with magenta, especially in apical area; two lunular submarginal milky white patches in cells M3-Cu1 and Cu1-Cu2.

Male genitalia (Fig. 150): As illustrated, not differing from the nominotypical subspecies.

Female (Fig. 62): The female is slightly lighter brown on the upperside. HWD markings are pale orange instead of red amaranth. The HWV is brightly coloured with a wide marginal yellow band.

ETYMOLOGY: This subspecies is dedicated to Miss Magaly LÓPEZ from Rodríguez de Mendoza.

REMARKS: The nominotypical *M. poeania* occurs in southeast Ecuador (Morona-Santiago, Zamora-Chinchipe). Males of *M. poeania* fly in the subcanopy of dense primary cloud forest and rarely venture into open areas.

## *Oxeoschistus* BUTLER, 1867

*Oxeoschistus* BUTLER, 1867: 268. Type species: *Pronophila puerta* WESTWOOD, by original designation.

*Dioriste* THIEME, 1907: 171. Type species: *Pronophila tauropolis* WESTWOOD, by original designation. Synonymy established by LAMAS, VILORIA & PYRCZ (2004).

GENERIC INTRODUCTION: The adults of *Oxeoschistus* are medium to large butterflies by the standards of the subfamily Satyrinae (wingspan 6-8cm). Females are slightly larger than the males but otherwise sexual dimorphism is slight. An outstanding element of the wing colour pattern of most species of *Oxeoschistus* is a wide postmedian - submarginal orange or rufous band on the wings dorsal surface showing through on the underside, punctured with a row of brown ocelli. Large size and these conspicuous markings distinguish *Oxeoschistus* butterflies from most small and dull coloured forest satyrines.

*Oxeoschistus* are associated with montane habitats like other genera of Pronophilini. They occur however in the lower section of the altitude band occupied by the tribe, usually at 800-1800 m and only exceptionally above 2000 m. Both sexes are readily attracted to decomposing organic matter. Males perch and patrol in the subcanopy, usually along watercourses. They rarely venture into open areas and usually keep in forest light gaps. The flight is slow motion flapping with occasional gliding. Their complete life histories are unknown yet, however DEVRIES (1987) reported oviposition on *Chusquea* montane bamboo (Poaceae) and described the egg of *O. submaculatus* BUTLER. The genus comprises 11 taxa that represent, depending on taxonomic viewpoint, between six (LAMAS, VILORIA & PYRCZ 2004) and nine (THIEME, 1907) species distributed from southern Mexico (*O. hilarus* BATES) to Bolivia (*O. pronax* HEWITSON, *O. duplex* GODMAN).

### *Oxeoschistus iphigenia* PYRCZ, n. sp.

(Figs. 63, 64, 151)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, Pirruro - Cedro, 1800-2000 m, 25.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM. ***Allotype*** ♀: Peru, Amazonas, Pomacochas, La Sonada, 1500-3000 m, IX-X.2000, B. Calderón *leg*., PB. ***Paratypes*** (**100** ♂♂ and **1** ♀): **1** ♂: Peru, Amazonas, Rodríguez de Mendoza, no date, B. Calderón *leg.*, TWP; **1** ♂: same data, JFLC; **26** ♂♂: Rodríguez de Mendoza, Pirruro - Cedro, 1800-2000 m, 25.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., (15 TWP; 5 MZUJ; 3 BMNH; 3 MUSM); **6** ♂♂: same data but 1998, TWP; **14** ♂♂: same data but VII-VIII.1998, MUSM**; 1** ♂: same data but 26.VIII.1998, B. Calderón *leg*., TWP; **1** ♂: same data but 03.XI.1998, TWP; **1** ♂: same data but 04.IX.1998, TWP; **1** ♂: same data but 25.IX.1998, TWP; **2** ♂♂: same data but 28.IX.1998, TWP; **3** ♂♂: same data but 05.X.1998, TWP; **2** ♂♂: same data but 12.X.1998, TWP; **11** ♂♂: same data but 13.X.1998, TWP; **1** ♂: same data but 02.VIII.1998, TWP; **1** ♂: same data but 05.XII.1998, TWP; **1** ♂: same data but 12.XII.1998; **1** ♂: same data but 20.XII.1998, TWP; **2** ♂♂: same data but Hingilpata, 02.IX.1998, TWP; **1** ♂: same data but 08.IX.1998, TWP; **1** ♂: same data but 25.IX.1998. TWP; **1** ♂: same data but Llanohuaico, 15.IX.1998, TWP; **1** ♂: same data but 06.IX.1998, TWP; **1** ♂: same data but 07.IX.1998, TWP; **1** ♂: same data but 09.IX.1998, TWP; **1** ♂: same data but 14.X.1998, TWP; **3** ♂♂: same data but 16.X.1998, TWP; **1** ♂: same data but 17.X.1998, TWP; **1** ♂: same data but 10XII.1998, TWP; **1** ♂: same data but Totomal, 28.VIII.1998, TWP; **3** ♂: near Rodríguez de Mendoza, 1700-2000 m, B. Calderón *leg.*, MBLI; **1** ♂: near Rodríguez de Mendoza, 2300-2500 m, X-XI.1999, B. Calderón *leg.*, MBLI; **1** ♂: Qda.

Pirruro, Rodríguez de Mendoza, 2200 m, VI.1999, B. Calderón *leg.*, MBLI; **1** ♂: Rodríguez de Mendoza, Qda. Llanohuayco, 2200-2300 m, 15.IX.1998, T. PYRCZ *leg*., PB; **1** ♂: same data but B.Calderón *leg*., PB; **3** ♂♂: Rodríguez de Mendoza, 1999-2000?, B. Calderón *leg*., PB; **1** ♂: Abra Pardo Miguel, 2200-2400 m, III.2002, B. Calderón leg., TWP; **1** ♀: Alto Nieva, XII.2003, M. Tafur *leg*., PB.

DIAGNOSIS: This species is unlike any other South American representative of the genus because instead of a wide FW orange postmedian band it has a series of patches. In this respect *O. iphigenia* somewhat resembles only *O. euryphile* BUTLER from Costa Rica and Panama. However, the HWV of *O. iphigenia*, in particular the large, black ocelli with white pupils (except in cell M2-M3), and the colour of its postmedian band are more reminiscent of *O. duplex* GODMAN from central and southern Peru, and Bolivia.

DESCRIPTION: Male (Fig. 63): *Head*: eyes hairy, dark-brown; palpi laterally pale yellow, ventrally covered with dark-brown hair; antennae 2/5 the length of the costa, brown with blackish-brown terminal segments. *Thorax*: dorsally hairy, dark-brown; legs blackish-brown, femora covered ventrally with pale yellow hair. *Abdomen*: dorsally dark-brown, ventrally brown. *Wings*: FW (length: 27-33 mm; mean: 30.1 mm, n=90) apex blunt, outer margin scalloped; fringes alternately white and dark-brown. HW oval, outer margins scalloped; fringes white except at vein ends, where brown. FWD dark-brown, lustrous; a row of submarginal patches gradually increasing in size from cell M1-M2 to tornus, the M1-M2 patch barely visible, M2-M3, M3-Cu1 and Cu1-Cu2 patches with brown pupils; fringes very short (less than 0.5 mm), dark-brown with one white patch in each interspace. HWD ground colour slightly lighter than on the FW; fringes dark-brown with white interspatial patches slightly longer (0.5 mm); the area between postmedian and submarginal line yellow-orange from costa to anal margin, forming a wide band with a wavy inner margin, outcurved in cells M1-M2, M2-M3 and M3-Cu1, and a strongly incurved distal margin in cells Rs-M1, M1-M2 and M2-M3, then lightly curved in cell M3-Cu1 and straight in Cu1-Cu2; a marginal band of the same yellow-orange extending from tornus to M3, bordered basally by a narrow brown band parallel to outer margin from M3-Cu2; dark-brown ocelli in cells Rs-M1, M1-M2, Cu1-Cu2 and Cu2-1A. FWV brown; a short triangular yellow postdiscal costal streak and a larger rhomboidal subapical costal patch of the same colour; a white subapical dot in cell R5-M1; a black ocellus in the centre of M1-M2 with a white pupil and ringed with chestnut; an inverted orange triangular patch in cell M2-M3; postmedian orange patches from M3 to the tornus, larger than on the upperside, forming a continuous band, distally incurved along the veins; brown spots in cells Cu1-Cu2 and Cu2-1A. HWV chocolate brown; a faint submedian pale yellow line from costa to vein 1A; the area between postmedian and submarginal lines, whose shape mirrors that of the upperside, lustrous milky-white; a row of postmedian black ocelli ringed with yellow then chestnut and with white pupils, the largest in cells Rs-M1, M1-M2 and Cu1-Cu2, the ocellus in M2-M3 devoid of black and white; marginal area from tornus to vein M3 yellow-orange with chestnut on the veins, and a narrow submarginal chestnut border isolating it from the white postmedian band.

Male genitalia (Fig. 151): Uncus longer than tegumen, stout, apex curved downwards; gnathos 3/4 the length of the uncus, stout; valvae slender, slightly shorter than tegumen+uncus, dorsal surface serrate; saccus long, tubular; aedeagus straight and slender, the length of tegumen+uncus.

Female (Fig. 64): Does not differ noticeably from the male, except that it is slightly larger, and marginally paler on the FWD and HWD.

ETYMOLOGY: This exquisite species is named after Iphigenia, the daughter of Agamemnon, leader of the Greek forces at Troy. Agamemnon offended Artemis, the virgin goddess of the hunt. The prophet Calchas divined that the daughter of Agamemnon would have to be sacrificed to atone for the offence. Agamemnon then summoned Iphigenia from home under the ruse that she was to be married to Achilles. When the sacrifice was about to be made, however, Iphigenia was miraculously transported to Taurus, a city on the Black Sea, and an animal sent in her place.

REMARKS: *O. iphigenia* is a large, extremely conspicuous species and does not seem to be closely related to any known congener. It is locally common and has not been reported from anywhere else than the highlands of Chachapoyas. It definitely does not occur in southern Ecuador, one of the best known areas of the Andes as far as the tribe Pronophilini is concerned (PYRCZ in prep.), and it would hardly pass unnoticed in the quite well sampled Chanchamayo valley in Central Peru, where three species of *Oxeoschistus* are found: *O. pronax* (HEWITSON), *O. duplex* BUTLER and *O. leucospilos* STAUDINGER. *O. iphigenia* occurs at higher elevations than most congeners. However, in the area of Rodríguez de Mendoza it flies alongside *O. pronax*, which is at the topmost of its altitudinal range there at 2300 m.

### *Oxeoschistus leucospilos leucospilos* STAUDINGER, 1875

*Oxeoschistus leucospilos* STAUDINGER, 1875: 108; 1888: 234, pl. 8.
*Dioriste leucospilos* (STAUDINGER); THIEME, 1907: 173.

REMARKS: *O. leucospilos* was not collected during this study in the highlands of Chachapoyas but its presence in this part of the Andes is nearly a certainty given its geographic distribution. It is a very widespread species found from northern Colombia (Antioquia) to Bolivia. *O. leucospilos leucospilos* is known to occur just north and south of Chachapoyas, in the valley of Tabaconas (Cajamarca) and in the Boquerón del Padre Abad (Huánuco), as well as in many localities in Pasco and Junín. *O. l. pugil* (THIEME) occurs in southern Peru (Puno) and Bolivia. *O. leucospilos* is most abundant at 1800-2200 m. Similarly to other congeners, is a shy inhabitant of dense cloud forests. It usually patrols and perches in the subcanopy but occasionally strays into forest clearings to feed on urine or other organic matter found in mud. *O. leucospilos* can be immediately recognised from other congeners by its dorsal colour pattern: all brown FW and brown HW with a large white median patch.

### *Oxeoschistus pronax* (HEWITSON, 1859)

*Pronophila pronax* HEWITSON, 1860: pl. 2, figs. 10, 11.
*Oxeoschistus pronax* (HEWITSON); BUTLER, 1867: 268.

REMARKS: *O. pronax* occurs south of the Huancabamba deflection (Peru, Bolivia) whereas north of it (eastern slopes of the Andes in extreme northern Peru and Ecuador) it is replaced by the closely related *O. protogenia* (HEWITSON). *O. pronax* is common in the lower cloud forest belt. It locally flies alongside *O. iphigenia* at 1800-2000 m but generally occurs at lower elevations down to 1000 m. Its behaviour is typically *Oxeoschistus*-like, as discussed shortly in the generic introduction. *O.pronax* has a typical dorsal colour pattern of the genus *Oxeoschistus* characterized by a wide median FW and HW orange bands.

### *Proboscis* THIEME, 1907 gen. reinst.

*Proboscis* THIEME, 1907: 168. Type species: *Pronophila propylea* HEWITSON, by original designation.

GENERIC INTRODUCTION: The genus *Proboscis* was raised by THIEME for a single species, *P. propylea* because of its unusual wing shape. ADAMS (1986) synonymized *Proboscis* with *Mygona* based on the similarities of the underside pattern and male genitalia. Whereas I agree that the underside pattern and wing shape of *Proboscis* is strongly reminiscent of *Mygona*, its male genitalia more closely resemble *Lasiophila*. Moreover, the adults of this genus are recognised from related Pronophilini by one salient synapomorphy in the venation pattern: the vein M2 of the HW arises closer to M3 (as compared to other genera) and the two diverge towards outer margin. The genus *Proboscis* is reinstated because a preliminary cladistic study by PYRCZ (in prep.) did not come up with any convincing synapomorphy which would favour associating it with either *Mygona* or *Lasiophila*, its two closest allies. According to the same study *Lasiophila*, *Apexacuta*, *Mygona* and *Proboscis* form a monophyletic group.

The morphology of *Proboscis* is shortly revised herein. Antennae are slightly over 1/3 the length of the costa with a slender chestnut club, darker towards terminal segments. Eyes are lustrous, chestnut covered with short, dense setae. Palpi are long (4 mm) with the third segment half the length of second, covered with short chestnut hair. FW apex is strongly falcate and produced along vein R5. HW is triangular with dentate outer margins, producing a short tail at vein Cu1. FW venation as in *Apexacuta* and *Lasiophila*. HW venation is characterised by the cross vein M1-M2 well incurved into discal cell, the root of M2 situated twice closer to M3 than to M1, veins M2 and M3 not parallel but broadly diverging towards outer margin. The female is similar to the male but slightly lighter coloured. Male genitalia are characterised by a tegumen with a shoulder curved basally; uncus twice as long as gnathos; the latter slender, curved upwards; valvae

of approximately the same width from base to distal margin with a slightly sculptured ampulla bearing a small distal tooth; saccus medium long; aedeagus straight, about as long as the valvae. Female genitalia were not examined.

Two allopatric species of *Proboscis* are separated by the Río Marañon valley. *P. propylea* occurs as far north as the Colombian Eastern Cordillera. *P. pomarancia* is found in northern and central Peru. Its southern distribution limit is unknown.

### ***Proboscis pomarancia* PYRCZ, n. sp.**

(Figs. 65, 66, 152)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2965 m, 26.VIII.1998, T. PYRCZ *leg*., MUSM; ***Allotype*** ♀: Peru, Huánuco, Carpish, 2700-3000 m, 25-27.VII.2002, T. & C. Pyrcz, TWP; ***Paratypes***: (**12** ♂♂): **1** ♂: Peru, Amazonas, Molinopampa – Granada, 2865 m, 30.VIII.1998, T. Pyrcz *leg*., TWP; **1** ♂: same data but no exact altitude, TWP; **1** ♂: Molinopampa - Ocol, 2400 m, VI.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **2** ♂♂: Molinopampa - Granada trail, 3150-3250 m, X.2000, B. Calderón *leg.*, MBLI; **1** ♂: Pomacochas, Peña Blanca, 2800 m, 20.VI.2000, B. Calderón *leg*., PB; **1** ♂: Molinopampa, 3000-3500 m, V.2003, B. Calderón *leg*., PB; **5** ♂♂: Pasco, Oxapampa, La Antena, 2800 m, V.2003, J. Böttger leg., (3 MUSM; 2 TWP).

DIAGNOSIS: *P. pomarancia* differs from *P. propylea* (HEWITSON) by the colour of the HWD submarginal and anal area, orange instead of brick red.

DESCRIPTION: Male (Fig. 65): *Head*: eyes brown, covered with sparse setae.; palpi long, 5-6 mm, covered with short hair, dorsally brown, ventrally chestnut; antennae 1/3 the length of the costa, slender, chestnut with white scales at the base of each segment, club barely thickened, darker. *Thorax*: dorsally brown, ventrally chestnut. *Abdomen*: dorsally brown, laterally and ventrally chestnut. *Wings*: FW (length: 36-27 mm, mean: 36.8 mm, n=12) apex strongly falcate, produced along vein R5. HW scalloped and forming a tail-like extension along vein Cu1. FWD uniformly brown, glossy. HWD basal half brown, slightly lighter than on the FW, with a delicate orange sheen in discal-cell; a series of elongate rich orange patches in each cell extending from postmedian to submarginal area, with roughly straight inner and oval outer margins, becoming progressively bigger towards tornus, each orange patch encloses a brown dot in the middle, round in Rs-M1 and M1-M2, moon-shaped in M2-M3, M3-Cu1 and Cu1-Cu2 and a barely visible dot in Cu2-1A; marginal area marked with orange, progressively widening towards tornus. FWV basal half chestnut, distally dark-brown except for a lighter brown apical area suffused with pinkish scales separated by a sharp sinuate line; three postmedian, roughly round orange patches in cells M3-Cu1, Cu1-Cu2 and Cu2-1A, the latter being the biggest of all. HWV chestnut with a slightly darker median band; two lunulous yellowish postmedian spots in M2-M3 and M3-Cu1, occasionally a third, minute one in Cu1-Cu2.

Male genitalia (Fig. 152): Uncus long and thin, slightly curving downwards; gnathos hooked upwards, half the length of the uncus; valvae stout with a slightly irregular apical part of dorsal surface; saccus of intermediate depth; aedaegus straight, the length of tegumen+uncus.

Female (Fig. 66): Similar to the male but slightly lighter on the upperside.

ETYMOLOGY: The epithet of this species *pomarancia*, orange in Latin, refers to the characteristic colour of the HWD.

REMARKS: *Proboscis pomarancia* occurs in northern (Amazonas, San Martín) and central Peru (Huánuco, Pasco). Data indicate that its vertical range extends from 2450 – 3050 m, which corresponds with the upper cloud forest. Similarly to its allopatric Ecuadorian ally, *P. propylea*, *P. pomarancia* is replaced at lower elevations by the members of the allied genus *Mygona*, in the area of Chachapoyas by *M. poeania* (HEWITSON), which occurs at 2100-2400 m. Early stages and food plants, though certainly *Chusquea* bamboo, were not reported. I observed it several times flying, or rather gliding slowly in the subcanopy. Males are attracted to baited traps and faeces on the ground.

## *Pronophila* DOUBLEDAY, 1849

*Pronophila* DOUBLEDAY, [1849]: pl. 60, figs 4, 5. Type species: *Pronophila thelebe* DOUBLEDAY, by subsequent designation (BUTLER, 1867: 266).

GENERIC INTRODUCTION: The genus *Pronophila* DOUBLEDAY comprises 16 species (PYRCZ in prep.) distributed between Costa Rica (*P. timanthes* SALVIN) and northern Argentina (*P. unifasciata australis* HAYWARD). They are large butterflies by satyrine standards with a wingspan of approximately 8 cm and exceptionally homogenous wing colour patterns and shapes. They all have round HW with regular or slightly scalloped outer margins without „tails", dark-brown upperside, generally with a series of subapical white or orange patches extending along the veins, and a series of large postmedian black ocelli with blue pupils on the FWV. The species and subspecies of *Pronophila* differ basically in the colour and shape of the FWD subapical patches, the number, size, colour and arrangement of FWV ocelli, and the shape of the HWV bands, particularly the median one. There are only subtle differences in the male genitalia structure.

The genus inhabits montane forests at 1000-3000 m, with peak species richness at approximately 2000-2300 m, slightly below the average species richness reported for the tribe Pronophilini (ADAMS 1985; PYRCZ & WOJTUSIAK 1999). *Pronophila* do not tolerate heavily disturbed forests and never fly into open grassland, contrary to some other pronophilines such as *Pedaliodes* BUTLER or *Corades* HEWITSON. Adults perch and patrol in the subcanopy (DEVRIES 1987) but can be readily attracted by decomposing organic matter to feed on the ground. Nothing is known about their early stages. *Bambusa* was reported as the host plant of *P. unifasciata brennus* in Colombia (reference data lacking). THIEME's (1907) monograph remains the only comprehensive systematic survey of the genus but additional information is found in HAYWARD (1962, 1973), FORSTER (1964), ADAMS & BERNARD (1977, 1979, 1981), ADAMS (1986), DEVRIES (1987), D'ABRERA (1988) and PYRCZ & WOJTUSIAK (1999). PYRCZ (2000) monographed the Ecuadorian fauna.

### *Pronophila colocasia* THIEME, 1907

*Pronophila colocasia* THIEME, 1907: 206, pl. 3, fig. 25.

REMARKS: *P. colocasia colocasia* occurs in northern (Amazonas, San Martín, La Libertad) and central (Huánuco, Pasco, Junín) Peru. *P. colocasia* demonstrate considerable individual variation in the underside markings. This variation affects especially the HW dark median band, which can be broken in cell Cu2-1A in some individuals. The row of five FWV postmedian ocelli can be arched basally or straight. Ocelli are usually edged basally with red but in some individuals this is not apparent. Diagnostic elements are a whitish postmedian area and a brown marginal area of the HWV, reminiscent of some populations of *P. epidipnis* THIEME. *P. colocasia* is the sole representative of the genus occurring above 2600 m in the surveyed area. Individuals of this species were observed as high as 3100 m approximately. This is a common butterfly wherever it occurs.

### *Pronophila tremocrata* PYRCZ, n. sp.

(Figs. 67, 153)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, Pirruro - Cedro, 1800-2200 m, T. PYRCZ *leg.*, 25.VIII.1998, MUSM; ***Paratypes*** (**32** ♂♂): **1** ♂: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 2300-2400 m, 20.IX.1998, B. Calderón *leg.*, TWP; **1** ♂: same data but 10.VIII.1998, TWP; **1** ♂: same data but 15.VIII.1994, BMNH; **1** ♂: same data but 10.IX.1998, TWP; **1** ♂: same data but 24.IX.1998, TWP; **1** ♂: same data but no date, TWP; **1** ♂: Rodríguez de Mendoza, Pirruro - Cedro, 1800-2200 m, T. Pyrcz *leg.*, 25.VIII.1998, MZUJ; **1** ♂: Molinopampa, Tingo - Ocol, 2400-2500 m, 20-30.VI.1998, T. Pyrcz & J. Wojtusiak *leg.*, TWP; **1** ♂: Nord Peru, Limón, IV.1998, ex coll. Lehmann, TWP; **1** ♂: Huambo, 1300-1500 m, II.1997, MBLI; **1** ♂: Rodríguez de Mendoza, 1600-1800 m, MBLI; **1** ♂: Huamanpata, near Rodríguez de Mendoza, 2500 m, XI.2000, B. Calderón *leg.*, MBLI; **3** ♂♂: Rodríguez de Mendoza, 1600-1800 m, B. Calderón, MBLI; **2** ♂♂: Alto Río Nieva, 2000-2200 m, I.2003, B. Calderón *leg.*, PB; **1** ♂: Alto Río Nieva, 2300 m, II.2003, B. Calderón *leg.*, PB; **2** ♂♂: Cedro de Pirruro, 2000 m, IV.2002, B. Calderón *leg.*, PB; **1** ♂: Rodríguez de Mendoza, 1500-3000 m, III.2003, B. Calderón *leg.*, PB; **1** ♂: Pedro Ruíz Gallo, II.2002, B. Calderón *leg.*, PB; **2** ♂♂: Alto Río Nieva, 2300 m, II.2003, A. Tafur *leg.*, PB; **8**♂♂: same data, (4 MUSM; 4 TWP).

DIAGNOSIS: This species is smaller than other sympatric *Pronophila*. It can be also recognised by its FW shape, concave outer margin and acute apex, and by the ifaint HWV pattern, barely apparent on a steely gray ground colour.

DESCRIPTION: Male (Fig. 67): *Head*: eyes chocolate brown, lustrous; palpi white, covered ventrally with gray hair; antennae 2/5 the length of the costa, dorsally blackish-brown, ventrally chocolate brown, club only slightly thicker than shaft, formed gradually. *Thorax*: dorsally blackish-brown, ventrally gray, legs light gray. *Abdomen*: dorsally blackish-brown, laterally brown, ventrally gray. *Wings*: FW (length: 34-37 mm, 35.2 mm, n=9) outer margin slightly concave, which makes the apex distinctly produced and sub-acute. FWD blackish-brown, lustrous; three subapical light gray-blue patches always distinct and rather sharply edged, as compared to diffused, overcast with black scales or barely

noticeable as grayish lightening in other subspecies, two of them rectangular, third, in M3-Cu1 triangular, pointing distally; androconial patch covering median two thirds of the FWD. HWD uniformly blackish-brown, lustrous. FWV blackish-brown, silver-gray on apex and along inner margin. A series of four black ocelli in M1-M2, M2-M3, M3-Cu1 and Cu1-Cu2 with violet pupils and that in M3-Cu1 faintly marked basally with orange, all of them edged distally with white patches shaped as on the upperside, plus an additional whitish costal patch. HWV steely gray lustrous, with slightly darker, faint median band and a series of postmedian ocelli with light blue pupils.

Male genitalia (Fig. 153): As illustrated.

Female: Hitherto unknown.

ETYMOLOGY: *tremocratus* (Lat. Noun) – terrorist. The area where this species occurs was in the past a stronghold of Maoist terrorists.

REMARKS: *P. tremocrata* was first considered a subspecies of *P. epidipnis*. Surprisingly, a local subspecies of *P. epidipnis* was discovered to be sympatric with *P. tremocrata* in the area north of Mendoza, a fact that ruled out the first hypothesis. *P. tremocrata* is also sympatric with *P. unifasciata* and *P. orcus* but it occurs also at slightly higher elevations, within the lower range limit of *P. colocasia,* the fourth local congener. The highest reported locality for *P. tremocrata*, Ocol, is at 2400 m, the lowest, Llanouaico, at 2000 m. *P. tremocrata* is not endemic to the highlands of Chachapoyas as it was detected in central (Huánuco, Pasco, Junín) and even south-central (Apurimac) Peru as separate subspecies (PYRCZ in prep.).

### ***Pronophila epidipnis perplexa*** PYRCZ**, n. ssp.**

(Figs. 68, 154)

*Pronophila epidipnis* THIEME, 1907: 204.

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 2000-2300 m, 22.IX.1998, B. Calderón *leg.*, MUSM; ***Paratypes*** (**12** ♂♂): **5** ♂: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 2000-2300 m, 22.IX.1998, B. Calderón *leg.*, 3 MUSM; 2 TWP; **1** ♂: Nord Peru, Limón, IV.1998, ex coll. Lehmann, TWP; **1** ♂: Amazonas, El Oso, near Laguna de Pomacochas, 2800-2950 m, VI.2000, B. Calderón *leg.*, MBLI; **1** ♂: Molinopampa, 2950 m, V.2003, B. Calderón *leg.*, PB; **2** ♂♂: Alto Río Nieva, 2300 m, II.2003, A. Tafur *leg.*, PB; **1** ♂: Pedro Ruiz Gallo, 1500-2500 m, X.2002, B. Calderón *leg.*, PB; **1** ♂: Jorge Chavez, 1450-2100 m, XII.2003, M. Tafur *leg.*, PB.

DIAGNOSIS: This is the only subspecies of *P. epidipnis* with clearly visible white subapical patches on the FWD, in other geographical races reduced to a faint gray sheen or completely absent.

DESCRIPTION: Male (Fig. 68): *Head*, *thorax* and *abdomen* same as in other subspecies. *Wings*: FW (length: 38 mm, mean: 38 mm, n=3) triangular, costa slightly arched, apex blunt, outer margin slightly convex; HW round, outer margin lightly scalloped; fringes short, white. FWD blackish-brown, lustrous; a series of white subapical patches, a faint irregular one in R5-M1, and two rectangular ones

in M1-M2 and M2-M3 displaced distally in relation to the former, plus a minute white dot in M3-Cu1; androconial patch covering median two thirds of the FWD. HWD uniformly blackish-brown, lustrous. FWV blackish-brown, slightly lighter in apical area; a series of white patches as on the upperside; a slightly arched basally row of large, black ocelli with pale violet pupils basal to white patches in R5-M1, M1-M2, M2-M3 and M3-Cu1. HWV ground colour steely brown suffused with lighter grayish-brown scales basally in relation to a straight median line, and distally to a postmedian line and along the outer margin; a row of dark-brown postmedian-submarginal ocelli in each cell, two in Cu2-1A, ringed with lighter scales and with minute light violet pupils; an irregular dark-brown submarginal line.

Male genitalia (Fig. 154): As illustrated.

Female: Hitherto unknown.

ETYMOLOGY: *perplexa* (*adj. fem.*) - perplexing, confusing.

REMARKS: *P. epidipnis* is extremely widespread and is found between the Venezuelan Cordillera de Mérida and the Bolivian Yungas (PYRCZ in prep.). The nominotypical subspecies occurs in Mérida. *P. e. perplexa* is replaced north of the Río Marañon valley by *P. e. orchewistoni* ADAMS & BERNARD. Its southern range limit has not been established.

### *Pronophila orcus orcus* (LATREILLE, 1813)

*Satyrus orcus* LATREILLE, 1813: 72, pl. 35, figs. 1, 2.
*Satyrus orchamus* GODART, 1824: 486 (Synonymy given by THIEME, 1907: 202).
*Taygetis orcus* (LATREILLE); WESTWOOD, 1851: 357.
*Pronophila porsenna* HEWITSON, 1862: 12, pl. 5, fig. 34 (Synonymy given by THIEME, 1907: 202).
*Pronophila orcus* (LATREILLE); THIEME, 1907: 202.

REMARKS: *P. orcus* is a widespread, nearly Pantropical Andean species. The nominotypical subspecies occurs in the northern Andes of Colombia, Ecuador and northern Peru, including the region of Chachapoyas. *P. orcus nepete* THIEME is known in southeast Peru, and *P. orcus locuples* WEYMER in Bolivia. Almost certainly a more complex subspecific pattern could be identified, however such an action would require a thorough revision of this species. The differences between various populations affect basically the least conspicuous elements of the colour pattern, such as the shape of the HW bands and lines, discrete differences between shades of gray and black and the amount and position of silver scaling on the hindwings underside. *P. orcus* inhabits lower elevation cloud forests, below 2000 m (PYRCZ & WOJTUSIAK 1999). It is restricted to primary or little intervened areas. It apparently has a disjunctive distribution, as it has not been reported from several well-sampled localities at appropriate altitudes in Ecuador and Colombia.

### *Pronophila bernardi* PYRCZ, n. sp.

(Figs. 69, 70, 155)

[*Pronophila ?* sp.; D'ABRERA, 1988: 807]

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Pomacochas, G. LAMAS *leg.*, MUSM; ***Allotype*** ♀: Peru, Amazonas, Pomacochas, Qda. El Chido, Peña Blanca, 2500 m, 28.VI.1999, B. Calderón *leg*., TWP; ***Paratypes*** (**6** ♂♂ and **1** ♀): **1** ♂: Peru, Amazonas, Chachapoyas, BMNH; **1** ♂: Amazonas, Peña Blanca, Qda. El Chido, 2950 m, 15.IX.1999, B. Calderón *leg*., TWP; **1** ♂: same data but 2400 m, 21.VI.1999, TWP; **1** ♂: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg.*, MBLI; **1** ♂: Pomacochas, Rodríguez de Mendoza, 1500-3000 m, VI.2002, B. Calderón *leg*., PB; **1** ♂: Pomacochas, 3200 m, 26.V.2000, B. Calderón *leg*., PB; **1** ♀: Pomacochas, Qda. El Chido, 2500-2900 m, VI.2002, B. Calderón *leg*., TWP.

DIAGNOSIS: This species is similar to *P. rosenbergi* except that the FWD and FWV subapical markings are pale orange instead of white.

DESCRIPTION: Male (Fig. 69): *Head*: eyes large, with long brush-like, black setae; palpi long, first segment short, second segment about five times longer than the first and third segments, slightly "s" curved, third segment short, pointing forward; dorsally first segment covered with long white scales and the second and third segments with brown scales; dorsally all three segments with long white scales shortening towards the tip of the palpus, and additionally with some brown scales on the dorsal side of the third segment; ventrally all three segments covered with white, brush-like scales on ventral side and white with addition of some brown scales on dorsal side; frons with brown brush-like scales sticking forward; antennae 13 mm long, dorsally brown, ventrally light brown, club formed gradually. *Wings*: FW (length: 38-39 mm, mean: 38.5 mm, n=2) apex blunt, outer margin slightly undulated. HW outer margin scalloped. FWD dark-brown, lustrous and slightly lighter in basal one third; an oblique subapical pale orange band from costa to outer margin near tornus, broken into separate patches in cells M3-Cu1, Cu1-Cu2 and Cu2-1A. HWD dark-brown, lustrous and slightly lighter in median half; a row of faint or barely noticeable postdiscal darker spots, occasionally ringed with pink. FWV dark-brown, pale; orange subapical markings reflected from the upperside but paler; four postdical blackish-brown ocelli with sky blue pupils from M2-M3 to Cu2-1A, the latter faint; apex dusted with light beige. HWV medium brown with light beige overcast especially basally and distally to darker brown median band; a row of eight postdiscal dark-brown ocelli suffused with orange from cell Rs-M1 near apex to Cu2-1A at tornus; a sinuate dark-brown submarginal line; marginal area suffused with chestnut.

Male genitalia (Fig. 155): As illustrated.

Female (Fig. 70): Similar to the male but lighter on both the upper and underside. FWD subapical patches pale orange. HWD postmedian ocelli more conspicuous and faintly ringed with red.

ETYMOLOGY: This species is dedicated to Bernard D'ABRERA who drew the attention on this taxon by illustrating in his album (1988) a specimen and pointing out its doubtful status.

REMARKS: This species was originally considered a subspecies of *P. rosenbergi puyango*, from which it differs mostly in the colour of the FW subapical patches. The two species appeared however to be locally sympatric in the area of Pomacochas. Their ultimate status has to be studied rigorously in the field in order

to find out whether they are exclusive in time or are adapted to different niches. *P. bernardi* is seemingly an endemic species of the area comprised between the valleys of the rivers Utcubamba and Chiriaco. It is rare in the field and apparently seasonal.

### *Pronophila rosenbergi puyango* PYRCZ, 2000

(Fig. 156)

*Pronophila rosenbergi* LATHY, 1906: 77.
*Pronophila assarrhaddon* THIEME, 1907: 196, pl. 3, fig. 26 (synonymy established by PYRCZ, 2000: 83).
*Pronophila rosenbergi puyango* PYRCZ, 2000: 84, 85, figs. 7, 8.

REMARKS: PYRCZ (2000) discussed and confirmed the synonymy of *P. assarhaddon* THIEME with *P. rosenbergi*. The nominotypical subspecies occurs in west and northwest Ecuador. *P. r. puyango* PYRCZ replaces it further south in the Western Cordillera reaching well into northwest Peru (confirmed records exist from La Florida, east of Chiclayo, Cajamarca department). However, *P. rosenbergi* also occurs on the eastern slopes of the Andes. A population morphologically indistinguishable from *puyango* was discovered in the valley of the Río Marañon and on the western slopes of the valley of the Río Utcubamba. Male genitalia as illustrated (Fig. 156).

### *Pronophila attali* PYRCZ, 2000

*Pronophila attali* PYRCZ, 2000:75, figs. 9, 10 (adults), 14 (male genitalia).

REMARKS: *P. attali* described from extreme north Peru was hitherto considered an endemic species of the upper valley of Tabaconas. It has been however recently collected in the area of Pomacochas. It is a mid-elevation species.

NOTE: The captions in the original description (PYRCZ 2000) under the male and the female were reversed.

### *Pronophila unifasciata unifasciata* LATHY, 1906

*Pronophila unifasciata* LATHY, 1906(39): 77.

REMARKS: The status of *P. deverra* THIEME and *P. unifasciata* Lathy and the identity of the nominotypical subspecies were discussed by PYRCZ (2000). The nominotypical *P. unifasciata* agrees with the populations found in central-eastern and southeast Ecuador, in the upper valleys of the Pastaza (Tungurahua and Pastaza), Upano (Morona-Santiago), Zamora and its tributaries (Zamora-Chinchipe), and northern Peru (northern Cajamarca and Amazonas). *P. unifasciata deverra* occurs in the Cordillera de Huacamayos (Napo). An undescribed population was found on the western slopes of the Andes in southern Ecuador (El Oro) and northern Peru (Piura) (PYRCZ in press).

### *Pronophila intercidona intercidona* THIEME, 1907

*Pronophila intercidona* THIEME, 1907: 194.

REMARKS: *P. intercidona* is distinguished from other congeners by perfectly round hindwings with smooth outer margins devoid of any undulation. The nominotypical subspecies characterised byelongate orange FW subapical patches occurs along the eastern slopes of the Andes in Ecuador, where it was reported so far only from several localities, from the Cordillera de Huacamayos in the north to the highlands of Chachapoyas in the south. *P. intercidona thelebina* THIEME is found in southern Peru (Cusco, Puno) and Bolivia (Yungas). This species occurs at lower elevations than other *Pronophila*, 1000-1400 m.

### *Pseudomaniola* RÖBER, 1889

*Pseudomaniola* RÖBER, 1889: 222. Type species: *Daedalma pholoe* STAUDINGER, by subsequent designation (HEMMING, 1943: 23).

*Catargynnis* RÖBER, 1892: 284. Type species: *Daedalma pholoe* STAUDINGER [unnecessary replacement name].

GENERIC INTRODUCTION: *Pseudomaniola* is a bucket genus which includes all the species that cannot be properly assigned to closely related taxa such as *Thiemeia*, *Daedalma*, *Oxeoschistus* or *Junea*. Its monophyly is doubtful. Typologically, *Pseudomaniola* are large butterflies with a uniformly brown upperside, except for the Central American *Ps. gigas* GODMAN & SALVIN. Their HWV patterns vary considerably between species. For example, *Ps. clethra* is practically uniformly brown while *Ps. rogersi* GODMAN & SALVIN is densely mottled. FW are shaped either as in *Junea* or *Daedalma* with a strongly produced outer margin below apex or nearly straight as in *Pronophila*. HW costa is straight in some, slightly protruded in other species. Antennae are moderately long to very long in *Ps. asuba* which has the longest antennae among all the pronophilines in relation to the length of the costa, and based on this character it is to be placed in a separate genus (PYRCZ, in prep.). Male genitalia are variable but always very large relatively to wing span compared to other genera of approximately the same size *(Mygona*, *Junea*, *Pronophila*).

All the species of *Pseudomaniola* share one feature - they are seldom collected. FORSTER (1964), ADAMS (1986), DEVRIES (1987) and PYRCZ & WOJTUSIAK (1999) underline their relative rarity in the field. The genus is widespread with representatives in Central America and southern Brazil (however the Brazilian species *Ps. shreineri* (FOETTERLE) is considered as belonging to a separate genus by VILORIA (in press). The centre of diversity of the genus is Bolivia and southern Peru where five sympatric or parapatric species can be found. The genus is also rather well represented in Central America where 3 species are found. Most of the species inhabit low to mid-elevation cloud forests at 1800-2400 m. Interestingly,

they usually occur within the same elevational band with no apparent altitudinal partitionning. Some of the species were known hitherto from types only, mostly collected in Bolivia. *Ps. asuba*, *Ps. mirabilis* and *Ps. clethra* are now reported for the first time from northern Peru. Larval stages are unknown but DEVRIES (1987) reports oviposition on *Chusquea* and describes the egg of *Ps. rogersi* in Costa Rica. He also reports on the behaviour of Central American species.

### *Pseudomaniola clethra* (THIEME, 1907)

(Fig. 157)

*Catargynnis clethra* THIEME, 1907: 159, pl. 3, fig. 25.

REMARKS: This spececies was hitherto known only from a couple of specimens from the type locality in southeast Peru. During this study numerous individuals have been obtained in Huambo and El Cedro near Rodríguez de Mendoza, in the valleys of Zamora and Chinchipe in Ecuador and in the valley of Chanchamayo in central Peru. *Ps. clethra* occurs in dense mid-elevation cloud forest at 1800-2400 m generally.

### *Pseudomaniola mirabilis extrema* PYRCZ, n. ssp.

(Fig. 71, 72, 158)

*Oxeoschistus mirabilis* BUTLER, 1873: 222.
*Catargynnis mirabilis* (BUTLER); THIEME, 1907: 154.
*Pseudomaniola mirabilis* (BUTLER); D'ABRERA, 841, fig. (misidentified).

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa – Granada trail, 2665 m, 26.VIII.1998, T. Pyrcz *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Abra Pardo Miguel, 2200-2300 m, III.2003, M. Tafur *leg*., TWP. ***Paratypes*** (**6** ♂♂ **and 1** ♀): **2** ♂♂: Peru, Amazonas, Abra Pardo Miguel, 2200-2400 m, III.2003, M. Tafur *leg*., MUSM; **4** ♂♂: same data but III.2002, B. Calderón *leg*. (3 TWP, 1 PB); **1** ♀: Amazonas, Peña Blanca, Qda. El Chido, 3250 m (unreliable), 17.IX.1999, B. Calderón *leg*., TWP.

DIAGNOSIS: This subspecies, as compared to the nominotypical differs in the conspicuous subapical FWV snow white patch with diffused edges, whereas in the nominotypical this part of the wing is suffused with sparse whitish scales. It is also smaller than the nominotypical *Ps. mirabilis*.

DESCRIPTION: Male (Fig. 71): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW length: 29-32 mm, mean: 30.1 mm, n=6; fringes milky white. HW outer margin scalloped; fringes alternately dark brown and milky white. FWD uniformly dark brown. HWD uniformly dark brown. FWV dark brown, slightly lighter than on the uppeside, lustrous; a snow white subapical patch somewhat variable in size, extending from costa to vein M1 or M2; an irregular dark brown apical line from costa to vein M2; outer margin from apex to cell M3-Cu1 suffused with whitish scales. HWV dark brown suffused with white scales on the whole surface; a darker brown wide median band; a row of eight dark

brown submarginal ocelli with white pupils one in each cell, except for two ocelli in cell Cu2-1A; an irregular dark brown submarginal line.

Male genitalia (Fig. 158): Differ from the nominotypical subspecies in the thicker uncus in median part, thinner and longer gnathos hooked upward and slightly shallower saccus.

Female (Fig. 72): As compared to the nominotypical it lack the FWV postmedian reddish markings.

ETYMOLOGY: The subspecific epithet, *extrema*, refers to the geographical position of this race at the northern extremity of the species range of *Ps. mirabilis*.

REMARKS: *Ps. mirabilis* was described from Huasampilla (Cusco). *P. mirabilis* (BUTLER) is closely allied to *Ps. gerlinda* (THIEME) and the two species are locally sympatric in southern Peru. *Ps. mirabilis extrema* is the northernmost population of its species. It occurs in mid-elevation forest. A single specimen was obtained in Molinopampa in a trap at 2600 m in a disturbed forest. Most known individuals were collected in the upper valley of the Río Nieva in the northern part of the highlands of Chachapoyas at 2200-2400 m. One specimen found in Oxapampa (Pasco) in central Peru, not differing from specimens collected in Chachapoyas (but not included in the type series) indicates that this subspecies has a wider geographical range.

*Pseudomaniola helche* (THIEME, 1907) described from Bolivia (San Antonio and Cillutincara) is conspecific with *Ps. mirabilis* but it has not been established, due to the lack of comparison material from Bolivia, whether it is identical to the nominotypical or warrants retaining as a separate subspecies.

### *Pseudomaniola asuba* (THIEME, 1907)

(Fig. 159)

*Catargynnis asuba* THIEME, 1907: 157, pl. 1, fig. 3.

REMARKS: All four species of *Pseudomaniola* found in the highlands of Chachapoyas are rare in the field, and it does not seem to be an artefact of a particular method of collecting, or stressing on a particular elevation range. *Ps. asuba* is found in primary cloud forests around 2000 m in southern Ecuador and in Peru. The female, previously unknown, is larger than the male and has more conspicuous red markings on the underside and lighter shades apparent on the upperside, uniformly brown in the male.

### *Pseudomaniola phaselis macasica* STRAND, 1912 n. stat.

(Fig. 160)

*Pronophila phaselis* HEWITSON, 1862: 14, pl. 6, fig. 7.
*Daedalma phaselis* (HEWITSON); BUTLER, 1868: 184.
*Catargynnis phaselis* (HEWITSON); THIEME, 1907: 15.
*Pseudomaniola phaselis* (HEWITSON); ADAMS, 1986: 311.
*Catargynnis macasica* STRAND, 1912: 144.

REMARKS: *Ps. phaselis* is one of the most widespread species of Pronophilini. It ranges from Costa Rica and Venezuela in the north to Bolivia in the south. Five subspecies can be recognised. The nominotypical occurs in the Venezuelan Cordillera de la Costa, Perijá, Cordillera de Mérida, Santa Marta and Tamáranges, possibly in the Colombian Eastern Cordillera as well, *rogersi* (GODMAN & SALVIN) is found in Costa Rica and Panama, *pholoe* (STAUDINGER) in the Chocó and the valley of Cauca in western Colombia, *macasica* in eastern Ecuador and northern and central Peru, and *argyritis* THIEME in southern Peru and Bolivia. The most obvious differences between all the geographical races consist in the presence or absence and the extent of FWD subapical orange elongate patches. The nominotypical subspecies has none in either sex.

*Ps. phaselis macasica* described as a species, from Macas in eastern Ecuador (type in BMNH, examined) is about the same size as the nominotypical but with slightly less produced apical area, and is smaller than *argyritis*. As in these two subspecies the male FWD and HWD is uniformly blackish-brown. FWV is dull dark-brown with chocolate brown markings suffused with yellow scales in apical area. HWV ground colour is chestnut brown, compared to chocolate brown in other subspecies. A few small silver patches are restricted to median and submarginal area in cells M2-M3 and M3-Cu1. Veins are distinctively marked with black.The female of *macasica* has a row of seven elongate conspicuous light orange FWD submarginal patches from cell R4-R5 to Cu2-1A, as in *rogersi* but not as wide. In *pholoe* FWD apical markings are reddish. Additionally in *macasica*, there are red lunular submarginal patches on the HWD. Distal margin from M3 to tornus is red.

*Ps. phaselis macasica* is uncommon and occurs at 1200-1600 m in association with dense lower elevation cloud forest. It is generally found alongside *L. acraeida*, *E. oculata* and *P. phrasiclea.*

## *Thiemeia* WEYMER, [1912]

*Thiemeia* WEYMER, [1912]: 267. Type species: *Pronophila phoronea* DOUBLEDAY, by monotypy.

GENERIC INTRODUCTION: The genus *Thiemeia* is monobasic. It is seemingly a relict, as indicated by some primitive characters of its morphology, mostly found in the HWV pattern, that possibly emerged prior to the radiation of related *Pseudomaniola* and *Daedalma*. It is distributed from northern Venezuela (Cordillera de la Costa) to Bolivia (Yungas).

### *Thiemeia phoronea ortruda* (DOUBLEDAY, 1849)

(Fig. 160)

*Pronophila phoronea* DOUBLEDAY, [1849]: 358, pl. 60, fig. 1.
*Daedalma phoronea* (DOUBLEDAY); BUTLER, 1868: 183.
*Catargynnis phoronea* (DOUBLEDAY); THIEME, 1907: 157, pl. 1, fig. 3.

*Thiemeia phoronea* (THIEME); WEYMER, 1912: 267.
*Catargynnis ortruda* THIEME, 1907: 151, pl. 2, fig. 11.
*Thiemeia ortruda* (THIEME); WEYMER, 1912: 267.
*Thiemeia phoronea ortruda* (THIEME); D'ABRERA, 1988: 842 (fig.), 843.

REMARKS: The nominotypical *T. phoronea* is known to occur in the Venezuelan Cordillera de La Costa (RAYMOND 1982), the Colombian Western Cordillera (KRÜGER 1924; ADAMS 1986; PYRCZ & WOJTUSIAK 1999) and northwestern Ecuador. The variation *obscurata* KRÜGER (1924) is its synonym and the female syntype examined in the MIIZ Warsaw, contrary to the opinion of ADAMS (1986), is identical with the females from Venezuela. *T. ortruda* (THIEME) was considered by D'ABRERA (1988) as possibly a subspecies or a female morph of the nominotypical *T. phoronea*. In fact, the males of the two subspecies differ marginally, whereas the females are conspicuously distinct. The female of *ortruda* has a FWD wide oblique pale orange FW band, while the nominotypical has an all brown FWD. *T. phoronea ortruda* is known to occur in eastern Ecuador (Napo, Morona-Santiago), northern (Amazonas) and central (Pasco) Peru, and Bolivia (Yungas de La Paz). *T. phoronea* is very uncommon in the field and occurs in dense cloud forest habitats generally at 1600-2200 m (PYRCZ & WOJTUSIAK 1999). Males are readily attracted to baited traps. I observed a male in Venezuela perching for three consecutive days in the same spot, and patrolling a small sunny gap chasing away other satyrines such as *Lasiophila* and *Pedaliodes*. This territorial behaviour was strongly reminiscent of *Daedalma*.

### *Pedaliodes* BUTLER, 1867

*Pedaliodes* BUTLER, 1867: 267. Type species: *Pronophila poesia* HEWITSON, by original designation.

GENERIC INTRODUCTION: FORSTER (1964) divided the speciose genus *Pedaliodes* BUTLER into several smaller entities based on male genital morphology and colour pattern. This action was sustained with some modifications by ADAMS & BERNARD (1977, 1979 and 1981), ADAMS (1986) and PYRCZ & VILORIA (1999). VILORIA (Ph.D.) confirmed in a cladistic analysis based on the adult morphology that several genera raised by Forster are monophyletic but did not demonstrate convincingly that any of them is a sister-genus of *Pedaliodes*, nor did he prove the monophyly of *Pedaliodes sensu stricto*.

According to VILORIA (Pd.D) *Pedaliodes* are butterflies of medium size, some species with females slightly dimorphic. Androconial patches are always present on FW discal area. Ocellar elements are very reduced or absent; when present, only on underside postdiscal area, notably on HW. Species could be unmarked or conspicuously marked with postdiscal coloured bands or spots (white, yellow, orange), sometimes metallic colours appear on first half upperside hindwing (brown or blue); ventral pattern can be either banded or very commonly wedge-shaped on hindwing anal region. Male genitalia are characterised by robust and

well developed uncus generally as long as tegumen or slightly shorter, subunci (gnathos) variable in length but always present, small saccus, exceptionally semitubular, but never as long as in *Parapedaliodes* or *Physcopedaliodes*. The aedeagus is generally thick and strongly contorted very asymmetrical, length and general size very variable. Valvae are variable (subrectangular, semifusiform, claw-like), generally with small dorsal process, ampullar process present and variable, but could be absent in a minority of cases as well.

The species of *Pedaliodes* occur in cloud forests and paramo habitats. They are particularly well represented in the central Andes of Colombia, Ecuador, Peru and Bolivia (ADAMS 1985; PYRCZ & VILORIA 1999; PYRCZ & WOJTUSIAK 1999), whereas only a handful of species are known to occur in the Brazilian coastal range, the Guyana Shield highlands and the cordilleras of Central America.

The biology, host plants, and postembryonic development of *Pedaliodes* and related genera are mostly ignored, except for *Pedaliodes phoenissa* (HEWITSON) described by SCHULZE (1929) and *Pedaliodes zingora* HEREDIA et VILORIA, 2004. Numerous field observations indicate however that most species use *Chusquea* cloud forest bamboo as primary host plants (ADAMS 1986, PYRCZ & WOJTUSIAK 1999; PYRCZ & GREENEY in prep.) and breed occasionally on secondary gramines and other Poaceae (MILLER 1985). The adults are predominantly brown and cryptic but some bear bright markings, orange or red bands and/or large white patches. These brightly coloured species constitute between 8 and 20% of the *Pedaliodes* community (in abundance and species richness) (PYRCZ & WOJTUSIAK 1999). At particularly species-rich elevations comprised between 2500-3000 m numerous extremely similar looking *Pedaliodes* coexist in microsympatry or partly overlap their altitudinal distribution. Therefore, the taxonomy of this genus is very demanding and relies heavily on less obvious characters of the wing colour pattern, genital morphology and exact ecological data (PYRCZ & WOJTUSIAK 1999).

### *Pedaliodes phrasiclea* GROSE-SMITH, 1900

*Pedaliodes phrasiclea* GROSE-SMITH, 1900: 17-18, pl. 5, fig. 2.
*Pedaliodes prosa* STAUDINGER form *phrasiclea* GROSE-SMITH; WEYMER, 1912: 253.

REMARKS: *P. phrasiclea* is a taxonomically and zoogeographically complex species distributed throughout the tropical Andes. It could well be considered conspecific with its allopatric replacement in the Venezuelan Cordillera de la Costa, *P. pisonia* (HEWITSON). The two are morphologically very similar (VILORIA *et al.* 2001), except that *P. pisonia* has no red scaling on the HWV anal area and differs slightly in the male genitalia. *P. phrasiclea*, although no subspecies have been described as yet, can also be divided into a number of geographical races, distinguished by several features of the genitalia, the shape of the FWD male scent patch or HWV colour pattern. Typical, large individuals occur in Bolivia. Those found in northern Peru are smaller and duller and closely resemble Ecuadorian specimens. The west Andean Ecuadorian and Colombian population has its own

particular features, such as particularly big HWV black submarginal spots in Cu1-Cu2 and Cu2-1A (PYRCZ & VILORIA 1999). *P. phrasiclea* closely resembles *P. balnearia* and *P. exanima* in that both have no red scaling. Other similar species are *P. manis* and *P. montagna*. ADAMS (1986) points out correctly that *P. pisonia* (referring to *P. phrasiclea*) is larger than either and the white submarginal dot in the cell Cu1-Cu2 on the underside HW is ringed with dark-brown. Moreover, *P. phrasiclea* occurs at lower elevations than the other mentioned species. It is found down to 1000 m (and occasionally below) and nowhere occurs above 1600 m (KRÜGER 1924).

### *Pedaliodes manis* (C. & R. FELDER, 1867)

[*Pronophila pisonia* HEWITSON var.; HEWITSON, 1862: 7, pl. 3, fig. 20].
*Pronophila manis* C. & R. FELDER, 1867: 469.
*Pedaliodes manis* (C. & R. FELDER); BUTLER, 1868: 174.

REMARKS: *P. manis*, *P. drymaea* (HEWITSON), *P. palaepolis* (HEWITSON) and *P. parepa* (HEWITSON) are among the few pedaliodines associated with non-forested secondary habitats below the tree line. Of all three, *P. manis* has the widest range, being found in Central America and throughout the Andes, from northern Venezuela to Bolivia. There are apparently some geographical races that could be identified, especially in Bolivia and the Venezuelan Cordillera de la Costa but to date no subspecies have been described. *P. manis* is the commonest pronophiline in many Colombian and Venezuelan localities (ADAMS 1986) but in northern Peru it is mostly rare and is found as single individuals flying, usually within secondary cloud forest and rarely in pastures, contrary to *P. drymaea* and *P. perepa*. *P. manis* is difficult to separate from *P. montagna*. The two differ most of all in the shape of the forewing, acute apex and straight outer margin in *P. montagna* and blunt apex and slightly convex margin in *P. manis*, and also in the shape of the forewing scent brand, extending further distally along veins M3 and Cu1 in *P. montagna*. *P. montagna* is generally slightly darker on the upperside, but this can be appreciated only by comparing large series.

### *Pedaliodes montagna* ADAMS & BERNARD, 1981

*Pedaliodes montagna* ADAMS & BERNARD, 1981: 345, 361-362, figs. 8 (male genitalia), 21.

REMARKS: *P. montagna* is a widespread species, occurring from the Venezuelan Cordillera de Mérida to Bolivia. It is confused in most consulted collections with *P. manis* (for the identification key see under *P. manis*). The two species also differ on ecological grounds. *P. montagna* is restricted to dense cloud forests, while *P. manis* prefers disturbed forests and open habitats. PYRCZ & WOJTUSIAK (2002) discussed this issue in detail.

### *Pedaliodes cledonia molesta* Pyrcz, n. ssp.

(Figs. 73, 74, 161, 185)

*Pedaliodes cledonia* Thieme, 1905: 108, 109, pl. 2, fig. 14.
*Pedaliodes cledoina* [*sic*] Thieme; Weymer, 1912: 259, pl. 55, row b [figure erroneous].
*Pedaliodes cledonia* Thieme; d'Abrera, 1988: 858, 859, fig.

Type series:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 2200-2400 m, 28.IX.1998, B. Calderón *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 10.IX.1998, 2200-2400 m, B. Calderón *leg*., TWP; ***Paratypes*** (**33** ♂♂ and **1** ♀): **1** ♂: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 2200-2400 m, 27.IX.1998, TWP; **3** ♂♂: same data but Cedro, 2000-2300 m, VII-VIII.1998, T. Pyrcz *leg*., (2 MZUJ, 1 BMNH); **1** ♂: same data but 2200-2400 m, 24.X.1998, B. Calderón *leg*., **1** ♂: same data but 02.VIII.1998, TWP; **1** ♂: same data but 2.IX.1998, TWP; **1** ♂: same data but 02.VIII.1998, TWP; **3** ♂♂: same data but no date, TWP; **1** ♂: same data but 26.IX.1998, TWP; **2** ♂♂: same data but 31.VIII.1998, TWP; **3** ♂♂: same data but III.2003, MUSM; **1** ♂: same data but 29.VIII.1998, T. Pyrcz *leg.*, TWP; **2** ♂♂: same data but 25.VIII.1998, TWP; **1** ♂: Amazonas, Rodríguez de Mendoza, Qda. Pirruro, 1600-1800 m, VII-VIII.1998, T. Pyrcz leg., TWP; **1** ♂: same data but 1600-1800 m, 02.IX.1998, B. Calderón *leg*., TWP; **1** ♂: same data but III.2003, TWP; **4** ♂♂: Cedro, Rodríguez de Mendoza, 2300-2400 m, XI.1998, MBLI; **2** ♂♂: Molinopampa 2900-3100 m, I.2001, B. Calderón *leg*., PB (data unreliable); **1** ♂: same data but IX.2002, PB; **1** ♂: Pomacochas, La Sonada, 1500-3000 m, IX-X.2000, B. Calderón *leg*., PB; **1** ♂: Abra Pardo Miguel, 2200-2400 m, III.2002, B. Calderón *leg*., TWP; **1** ♂: Abra Pardo Miguel, 2200-2400 m, III.2002, B. Calderón *leg*., TWP; **1** ♀: Rodríguez de Mendoza, El Cedro, 2000-2300 m, VI-VIII.1998, T. Pyrcz *leg*., TWP.

Diagnosis: *P. cledonia cledonia* Thieme found in southern Peru (Cusco) differs in a more acute FW apex and lighter yellow HWV markings. In the highlands of Chachapoyas *P. cledonia molesta* can also be confused with the sympatric *P. petri*, in which however the HWV orange markings are restricted to the anal area. Superficially *P. cledonia molesta* is also similar to the nominotypical subspecies of *P. polla* (Hewitson) from Colombia.

Description: Male (Fig. 73): *Head*, *thorax* and a*bdomen*: same as in the nominotypical subspecies. *Wings*: FW (length: 25-27 mm; mean: 26.3 mm; n=22) apex subacute, outer margin slightly concave; outer margin wavy. FWD and HWD uniformly dark-brown, glossy; fringes brown; androconial patch as illustrated (Fig. 185). FWV uniformly medium brown, dull. HWV medium brown with faint ripple-like pattern on the entire surface, suffused with brick red and orange gradually more intense towards anal margin; a faint anal wedge made of sparse yellow scales gradually narrowing and fading away and reaching into cell M2-M3, with dentate basal margins in cells Cu1-Cu2, M3-Cu1 and M2-M3 and diffuse outer margins; a single, yellow submarginal dot in Cu1-Cu2.

Male genitalia (Fig. 161): As illustrated, not differing noticeably from the nominotypical subspecies.

Female (Fig. 74): Similar to the male but lighter on both the dorsal and ventral surface; brick and orange suffusion fainter and restricted to the anal area.

Etymology: This subspecies owes its epithet, *molesta* - troublesome, to its difficult taxonomy and problematic systematic status.

REMARKS: *P. cledonia molesta* occurs in mid-elevation cloud forests slightly above 2000 m generally, which is below the altitude band occupied by the nominotypical southern Peruvian subspecies which is commonly found at 2700-2800 m. *P. cledonia molesta* is not restricted to the highlands of Chachapoyas as it is also found in central Peruvian provinces of Huánuco, Junín and Pasco.

### ***Pedaliodes petri maasseni*** PYRCZ, n. ssp.

(Figs. 75, 76, 162, 188)

*Pedaliodes petri* PYRCZ & VILORIA, 1999: 133, figs. 11 (adult), 13 (male genit.).

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 2000-2200, 25. VIII.1998, T. PYRCZ *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Rodríguez de Mendoza, Qda. Llanohuaico, 1600-1800 m, B. Calderón *leg.*, TWP; ***Paratypes*** (**19** ♂♂ and **2** ♀♀): **3** ♂♂: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 2000-2200, VII-VIII.1998, T. PYRCZ *leg*., MUSM; **3** ♂♂: same data but 25.VIII.1998, TWP; **1** ♂: same data but 23.IX.1998, B. Calderón *leg*., TWP; **1** ♂: same data but 21.XI.1998, TWP; **2** ♂♂: same data but 31.VIII.1998, TWP; **1** ♂: same data but III.2003, TWP; **1** ♂: Amazonas, Abra Pardo Miguel, 2200-2500 m, VI.2002, B. Calderón *leg.*, TWP; **1** ♂: same data but III.2003, M. Tafur *leg*., TWP; **3** ♂♂: Amazonas, Pomacochas, Qda. El Chido, 04.VII.1999, B. Calderón *leg*., TWP; **1** ♂: same data but 11.IX.1999, TWP; **1** ♂: same data but 20.IX.1999, TWP; **1** ♂: same data but 08.VII.1998, T. PYRCZ *leg*., TWP; **2** ♀♀: Rodríguez de Mendoza, Qda. Pirruro, 1800-2000 m, B. Calderón *leg*., TWP.

DIAGNOSIS: *P. petri maasseni* is smaller than the nominotypical (FW length: 27-29 mm, mean: 27.4 mm). Its androconial patch is also smaller. The HWV ripple pattern, so characteristic of the nominotypical, is faint or barely noticeable. Instead, the rufous or brick red anal part is better developed and usually extends as an undulated line to vein M3. *P. petri maasseni* is also similar to *P. ferratilis*, which is bigger, with slightly more elongate FW and faint (or absent) ripple like pattern on the HWV. The two species can be recognised by comparing their androconia and male genitalia.

DESCRIPTION: Male (Fig. 75): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW (length: 25-26 mm, 25.7 mm, n=20); apex obtuse, outer margin straight, slightly incurved between apex and vein M1. HW round, outer margin gently undulated. FWD uniform, varying between blackish brown (in freshly emerged specimens) and dark brown; fringes alternately yellow and brown; androconial patch as illustrated (Fig. 188). HWD uniformly blackish to dark brown. FWV dull dark brown, slightly lighter in outer 1/3; some chocolate brown, and rufous scales suffused on apex and along outer margin from apex to vein M3. HWV ground colour varying between blackish brown and dark brown, liberally speckled with fine ripple-like pattern made up of darker brown and rufous scales, variable; anal and outer 1/3 suffused with brick red and orange gradually denser towards anal margin, in some examined individuals forming a faint wedge with an undulated inner and diffused outer edge extending in most cases to vein Cu1 and occasionally as far as vein M2; a tiny yellow submarginal dot in cell Cu1-Cu2.

Male genitalia (Fig. 162): As illustrated, not differing noticeably from the nominotypical.

Female (Fig. 76): Lighter brown than the male on the FW and HWD, otherwise similar. FW length: 24-28 mm, mean: 26.6 mm, n=3.

ETYMOLOGY: This subspecies is dedicated to J. P. MAASSEN, who co-authored with G. WEYMER the chronicle of entomological journey across South America of Alphons STÜBEL.

REMARKS: *Pedaliodes petri* was described recently from eastern Ecuador (PYRCZ & VILORIA 1999). As it appears now it has a much wider geographic range and occurs on both sides of the Huancabamba deflection. Individuals similar to the types of *P. petri massseni* were found in central Peru, in Carpish (Junín) and Yanachaga (Pasco).

### *Pedaliodes transmontana* PYRCZ & VILORIA, 1999

(Figs. 77, 191)

*Pedaliodes transmontana* PYRCZ & VILORIA, 1999: 174, figs. 2 (male genitalia), 10 (adult).

REMARKS: This species described originally from the Chocó slopes of the Andes in Colombia was later found to be fairly widespread. It occurs on the eastern slopes of the Andes in Ecuador, from the Colombian border in Sucumbíos to the extreme south in Zamora-Chinchipe. In northern Peru it is found on the left bank of the Río Marańon in Cajamarca, and on the west bank, in Amazonas. In the sampled area it is apparently restricted to the area situated east of Pomacochas. It is particularly common at the Abra Pardo Miguel pass. The southern distribution limit of *P. transmontana* is unknown but it extends at least to southern Peru (Cusco) where individuals were found by the senior author in the Kosñipata valley. *P. transmontana* is quite variable and no stable subspecies could be identified thus far. The upperside is blackish-brown. Its characteristic features are the FW costal margin incised below apex, a series of white submarginal dots of on the HWV, and a chestnut costal outer margin. The androconial patch as illustrated (Fig. 191).

### *Pedaliodes simplissima* PYRCZ, n. sp.

(Figs. 78, 163, 192)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Abra Pardo Miguell, 2000-2200 m, III.2002, B. Calderón *leg*., MUSM; ***Paratpes*** (**9** ♂♂): same data as the holotype (4 MUSM, 4 TWP, 1 MZUJ).

DIAGNOSIS: A small nearly unmarked species, smaller than other sympatric congeners. It resembles *P. transmontana* which has a distinct wing shape with a truncate outer margin below apex and a better marked underside with a FW white costal streak. The most similar species is however the Ecuadorian *P. simpla*

THIEME which is of about the same size and has very similar HWD markings with a straight postdiscal line slightly lighter than the background. *P. simplissima* has a much larger FWD androconial patch than the two mentioned species.

DESCRIPTION: Male (Figs. 77): *Head*: Frons with a tuft of brown hair; eyes dark brown, lustrous; palpi covered with dark brown hair; antennae 2/5 the length of the costa, dorsally brown, ventrally rufous with darker brown terminal segments. *Thorax*: dorsally and ventrally blackish brown, legs gray-brown. *Abdomen*: dorsally and laterally blackish brown, ventrally dull brown. *Wings*: FW (length: 25-26 mm, mean: 25.4 mm, n=5) apex blunt, outer margin straigth, slightly incurved towards apex. HW round, outer margin slightly undulate. FWD uniformly blackish brown; androconial patch large, over 1/4 the size of the wing, extending from inside discal cell to anal margin (Fig. 192). HWD uniformly blackish brown; fringes dark brown and yellow between the veins. FWD dark brown, lustrous, slightly lighter in distal 1/3; apex suffused with faint whitish scales; outer margin from apex to vein M2 chocolate brown. HWV: the only noticeable pattern is the postmedian line separating a darker basal and slightly lighter distal area suffused with sparse whitish scales, sharply bent in cell M1-M2 and nearly straight between vein M1 and 1A, and the slightly undulated submarginal line separating a darker marginal area; a tiny whitish submarginal dot in cell Cu1-Cu2; in one examined specimen faint red scaling is apparent along the anal margin towards tornus.

Male genitalia (Fig. 163): Tegumen stout; uncus short and stout; gnathos over half the length of the uncus; valvae with a prominent pointed dorsal process longer than the apical one; aedeagus contorted and flattened with a serrate apex.

Female: Hitherto unknown.

ETYMOLOGY: The specific epithet of this taxon refers to its resemblance to *P. simpla*.

REMARKS: This species is known so far to occur only in the Abra Pardo Miguel area in mid-elevation cloud forests (2000-2200 m). Given its small size and inconspicuous pattern it might have passed unnoticed in other Peruvian localities. *P. simplissima* flies alongside an apparently much more common *P. transmontana*.

### *Pedaliodes poesia* (HEWITSON, 1862)

*Pronophila poesia* HEWITSON, 1862: 6, pl. 3, fig. 19.
*Pedaliodes poesia* (HEWITSON); BUTLER, 1867: 267.
*Pronophila phanaraea* HEWITSON, [1868]: pl. 36, fig. 15 (synonymy established by THIEME, 1905: 52, 53).

REMARKS: *P. poesia* occurs in central and northern Peru, throughout Ecuador, Colombia and in the El Tamá range in southwestern Venezuela. It is replaced north and southwards by several closely related allopatric species (*P. piletha* (HEWITSON), *P. japhleta* BUTLER, and *P. hewitsoni* STAUDINGER). *P. poesia*, as most widespread pedaliodines, can be divided into several geographical races recog-

nisable most of all by the extent of white speckling on the HWV (ADAMS 1986). The individuals found in the highlands of Chachapoyas are particularly dark and little marked as compared to other populations. *P. poesia* is a low to mid-elevation cloud forest species, most abundant at 2000-2200 m.

### *Pedaliodes ferratilis* BUTLER, 1873

(Figs. 79, 80, 165, 186)

*Pedaliodes ferratilis* BUTLER, 1873: 221.

REMARKS: *P. ferratilis* described from southeastern Peru (Cusco, Huasampilla) was confused notoriously in the past with several other, sympatric or not, species of *Pedaliodes*. ADAMS & BERNARD (1981) implied that it occurs in the Venezuelan Cordillera de Mérida, whereas they referred in fact to an unrelated undescribed species (PYRCZ & WOJTUSIAK, 2002). HUGHES (1962), as correctly pointed out by LAMAS (2003) confused it with *P. proerna* (HEWITSON), which however does not occur in Peru (but in Venezuela, Colombia and Ecuador). *P. proerna* is an allopatric, closely related replacement of *P. ferratilis*. In the area of Mendoza *P. ferratilis* can be easily confused with the sympatric *P. erschoffi*, *P. cledonia,* and *P. petri*. *P. erschoffi* is about the same size as *P. ferratilis*. It occurs at higher elevations and, except for a rare form with a small yellow anal wedge, its HWD is all blackish brown. *P. ferratilis* is larger than *P. cledonia* and *P. petri*. Its HWV ripple pattern is less intense than in the latter species or even completely absent, and the orange/red anal wedge is clearly defined. The four species can be immediately recognised by comparing their male genitalia (Fig. 165) and shape of the FWD androconial patch (Fg. 186).

*P. ferratilis* is found in low to mid-elevation cloud forests at 1800-2400 m.

### *Pedaliodes phrasicla rufa* PYRCZ, n. ssp.

(Figs. 81, 82, 164, 186)

[*Pronophila perperna* C. & R. FELDER, 1867: 468, *nec Pronophila perperna* HEWITSON, 1862].
*Pronophila phrasicla* HEWITSON, 1874: pl. 29, fig. 52.
*Pedaliodes labulla* THIEME, 1905: 65, replacement name for *P. perperna* C. & R. FELDER (synonymy established by WEYMER, 1912: 251).
*Pedaliodes phrasicla* (HEWITSON); THIEME, 1905: 52, 56-57.
*Pedaliodes phrasicla* (HEWITSON) *galaxias* THIEME, 1905: 56 (as ab.); WEYMER, 1912: 251 (as form); GAEDE, 1931: 498 (as var.), **n. stat.**

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, El Cedro, 10.IX.1998, 1800 m, B. Calderón *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, El Cedro, 10.IX.1998, 1800 m, B. Calderón *leg*., MZUJ; ***Paratypes*** (**46** ♂♂ and **2** ♀♀): **1** ♂: Peru, Amazonas, El Cedro, 1800 m, 17.IX.1998, B. Calderón *leg*., TWP; **1** ♂: same data but 31.VIII.1998; **1** ♂: same data but 04.IX.1998; **4** ♂♂: same data but 25.VIII.1998; **1** ♂: same data but 02.VIII.1998; **2** ♂♂: same data but 31.VIII.1998; **2** ♂♂: same data but 27.IX.1998; **2** ♂♂: same data but III.2003, TWP; **4** ♂♂: same data but 2000-2300 m, VII-VIII.1998, T. Pyrcz *leg*., MUSM; **2** ♂♂: same data

but III.2002, B. Calderón *leg*. TWP; **4** ♂♂: Amazonas, Tingo-Ocol, 2400-2500 m, 20-30.VI.1998, T. Pyrcz & J. Wojtusiak leg., MUSM; **1** ♂: same data but 28.VI.1998; **1** ♂: same data but 26.VI.1998; **1** ♂: same data but 02.VII.1998; **1** ♂: same data but 05.VII.1998, MZUJ; **1** ♂: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg.*, MBLI; **1** ♂: Huamanpata, near Rodríguez de Mendoza, 2300 m, 13.XI.2000, B. Calderón, MBLI; **1** ♂: Rodríguez de Mendoza, 1600-1800 m, MBLI; **3** ♂♂: Abra Pardo Miguel, 2300 m, V.2003, B. Calderón *leg*., PB; **2** ♂♂: same data but III.2002, TWP; **3** ♂♂: Rodríguez de Mendoza, 1500-2000 m, II.2003, B. Calderón *leg*., PB; **4** ♂♂: same data but III.2003, PB; **2** ♂♂: Jorge Chavez, 1000-1400 m, II.2003, P. Melendez *leg*., PB; **1** ♂♂: Rodríguez de Mendoza, 1999-2000?, B. Calderón *leg*., PB; **1** ♀: Pomacochas, 2150 m, 13.VI.2000, B. Calderón *leg*., PB; **1** ♀: Rodríguez de Mendoza, Pomacochas, 1500-3000 m, B. Calderón *leg*., PB.

DIAGNOSIS: *P. phrasicla rufa* differs from other subspecies in the red-orange overcast extending from anal to median area of the HWV. Postdiscal snow-white spots in Rs-M1, M1-M2, M2-M3 are smaller than in the nominotypical subspecies and *galaxias* THIEME but larger than in the central Peruvian undescribed subspecies, or barely noticeable or even absent in *inmaculata* PYRCZ.

DESCRIPTION: Male (Fig. 81): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW (length: 26-28 mm; mean: 26.9 mm; n=20) outer margin straight, but longer and darker fringes at the vein ends create the impression of delicate waviness; fringes alternately brown and white veins; androconial patch as illustrated (Fig. 186). HW outer margin wavy; fringes brown. FWD and HWD uniformly dark-brown, glossy. FWV dark-brown in basal and median area, lighter in postmedian and submarginal area; subapical and apical areas speckled with deep-red and light brown scales; outer margin deep-red; minute elongate subapical whitish dots in R5-M1 and M1-M2. HWV dark-brown with a ripple pattern, suffused with brick red, orange and yellow gradually more intense and lighter from median area towards anal margin; a lighter postmedian to submarginal band with dentate outer and inner edges; a small elongate whitish spot on the postmedian line in cell M2-M3.

Male genitalia (Fig. 164): As illustrated, not differing noticeably from the nominotypical.

Female (Fig. 82): Larger and lighter colour on both surfaces than the male with larger HWV postdiscal white spots.

ETYMOLOGY: The epithet - *rufa* (red) – refers to the diagnostic colour of the HWV.

REMARKS: Six subspecies of this widespread species can be identified. The nominotypical ranges from Colombia, throughout eastern Ecuador to extreme north Peru (Piura). *P. p. inmaculata* PYRCZ (1999) occurs in the Chocó south of the Río Patía valley in Colombia and in northwestern Ecuador. *P. p. rufa* is restricted to the highlands of Chachapoyas. It is replaced towards central Peru by two undescribed subspecies (PYRCZ in prep.), one in central (Junín, Pasco) and the other in southern Peru (Cusco). *P. p. galaxias* THIEME (1905), considered herein as a *bona fide* subspecies, is found in Bolivia. *P. phrasicla* inhabits lower and mid-elevation montane forests from approximately 1600 to 2400 m. It is common throughout the year.

### *Pedaliodes tucca tucca* THIEME, 1905

*Pedaliodes tucca* THIEME, 1905: 107, pl. 2, fig. 15.

REMARKS: This little known taxon is reported herein for the first time from elsewhere than its type locality - Bolivia. The highlands of Chachapoyas constitute its northern range limit because on the opposite bank of the Río Marañon, in the Cordillera del Cóndor, it is replaced by its subspecies *P. tucca luperca* THIEME (1905). The individual illustrated by D'ABRERA (1988) as *P. tucca* f. *luperca* represents in fact the nominotypical subspecies, whereas *luperca* is characterised by a crimson-violet red underside ground colour.

### *Pedaliodes palaepolis* (HEWITSON, 1878)

*Pronophila palaepolis* HEWITSON, 1878: 227.
*Pedaliodes palaepolis* (HEWITSON); GROSE-SMITH & KIRBY, [1893]: pl. 2, figs 3, 4.
*Pedaliodes porina* (HEWITSON) form (var.) *palaepolis* (HEWITSON); WEYMER, 1912: 260.
*Pedaliodes porina palaepolis* (HEWITSON); HAYWARD, 1958: 285.
*Pedaliodes paleopolis* [*sic*] (HEWITSON); D'ABRERA, 1988: 859, fig.

REMARKS: There is some confusion concerning the status of *P. palaepolis* (HEWITSON, 1862) and *P. porina* (HEWITSON, 1878) both from Bolivia (according to VILORIA (Ph.D.) even though the type locality of *P. porina* was not stated). THIEME (1907) retained their original specific status but subsequent authors (WEYMER 1912 and FORSTER 1964) considered them variations of the same species. *P. porina* and *P. palaepolis* are sympatric in the Bolivian Yungas, Northern of La Paz and Southern of Cochabamba. In *P. porina* the white FWD oblique subapical band is considerably narrower and characteristically broken or narrowing at vein M3. *P. porina* has a lighter HWV ground colour with a yellowish suffusion in the postdiscal area, and more prominent darker ripple pattern somewhat reminding of *P. corderoi* (DOGNIN), another species with which it has been often confused (i.e. D'ABRERA 1988), which however does not occur in Bolivia. On the other hand, *P. porina* does not seem to occur in Peru, whereas *P. palaepolis* extends as far north as the highlands of Chachapoyas. Peruvian *P. palaepolis* could well be divided into a number of subspecies differing mostly in the expression of the FWD white band. In the Chachapoyan and Chanchamayo populations the band is generally as wide as in the nominotypical from Bolivia, whereas it is even wider in the Cusco specimens. However, given the extent of individual variation and the number of not sufficiently studied populations presenting slightly different phenotypes, I refrain from naming a new subspecies from Chachapoyas. In Chanchamayo and elsewhere in central Peru *P. palaepolis* is very common and occurs in disturbed habitats occasionally far away from bamboo stands, which indicates that it uses secondary grasses as host plants. On the other hand, in Chachapoyas it is rather scarce and restricted to low and mid-elevation primary and secondary cloud forests. In the area of Mendoza and elsewhere in Peru and Bolivia it occurs at 1600-2400 m.

### *Pedaliodes erschoffi* Pyrcz, n. sp.

(Figs. 83, 84, 85, 166, 189)

Type series:

***Holotype*** ♂: Peru, Amazonas, Molinopampa – Granada, 2715 m, 29.VI.1998, T. Pyrcz *leg.*, MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa – Granada, 29.VI.1998, T. Pyrcz *leg.*, TWP; ***Paratypes*** (**68** ♂♂ and **7** ♀♀): **2** ♂♂: Peru, Amazonas, Molinopampa – Granada, 2665 m, 29.VI.1998, T. Pyrcz & J. Wojtusiak leg.; **4** ♂♂: same data but 2715 m, 29.VI.1998; **1** ♂: same data but 2815 m, 29.VI.1998; **1** ♂: same data but 2915 m, 29.VI.1998; **2** ♂♂: same data but 2715 m, 01.VII.1998; **2** ♂♂: same data but 2765 m, 01.VII.1998; **1** ♂♂: same data but 2915 m, 01.VII.1998; **1** ♂♂: same data but 2865 m, 03.VII.1998; **1** ♂: same data but 2765 m, 04.VII.1998; **2** ♂♂: same data but 2915 m, 04.VII.1998; **1** ♂: same data but 2665 m, 05.VII.1998; **2** ♂♂: same data but 2765 m, 05.VII.1998; **1** ♂: same data but 2715 m, 05.VII.1998; **2** ♂♂: same data but 2865 m, 06.VII.1998; **1** ♂: same data but 2765 m, 29.VII.1998; **1** ♂: same data but 2865 m, 29.VII.1998; **1** ♂: same data but 2965 m, 06.VIII.1998; **1** ♂: same data but 3065 m, 06.VIII.1998; **1** ♂: same data but 2565 m, 23.VIII.1998; **1** ♂: same data but 2665 m, 25.VIII.1998; **1** ♂: same data but 2565 m, 23.VIII.1998; **3** ♂♂: same data but 2615 m, 26.VIII.1998; **3** ♂♂: same data but 2665 m, 23.VIII.1998; **2** ♂♂: same data but 2765 m, 26.VIII.1998; **1** ♂: same data but 2815 m, 26.VIII.1998; **2** ♂♂: same data but 2915 m, 26.VIII.1998; **2** ♂♂: same data but 2965 m, 26.VIII.1998; **1** ♂: same data but 3015 m, 26.VIII.1998; **1** ♂: same data but 3065 m, 26.VIII.1998; **2** ♂♂: same data but 2565 m, 27.VIII.1998; **2** ♂♂: same data but 2765 m, 27.VIII.1998; **1** ♂: same data but 2865 m, 27.VIII.1998; **1** ♂: same data but 2765 m, 29.VIII.1998; **3** ♂♂: same data but 2815 m, 29.VIII.1998; **2** ♂♂: same data but 2865 m, 29.VIII.1998; **1** ♂: same data but 2665 m, 30.VIII.1998; **1** ♂: same data but 2800-3100 m, 26.VIII.1998; **1** ♂: same data but 3000-3300 m, 03.VII.1998; **1** ♂: same data but 2650-3250 m, 29.VI.1998; **1** ♂: same data but 2650-3100 m, 04.VII.1998; **1** ♂: Tingo – Ocol, 2400-2500 m, 28.VI.1998, T. Pyrcz *leg.*, (20 MUSM, 22 TMP, 20 MZUJ); **1** ♂: Molinopampa, 2900-3100, I.2001, B. Calderón *leg*., PB; **2** ♂: Nieva, 2500 m, VIII.2003, B. Calderón *leg*., PB; **1** ♂: Jorge Chavez, 1400 m, I.2003, B. Calderón *leg*., PB (locality data unreliable); **1** ♂: Molinopampa, XI.2000, B.Calderón *leg*., PB; **1** ♀: Molinopampa – Granada, 2665 m, 06.VII.1998, T. Pyrcz *leg*., TWP; **1** ♀: same data but 2665 m, 03.VII.1998; **1** ♀: same data but 2965 m, 03.VII.1998; **1** ♀: same data but 2665 m, 23.VIII.1998; **1** ♀: same data but 2665 m, 26.VIII.1998; **1** ♀: same data but 2665 m, 30.VIII.1998; **1** ♂ and **1** ♀: Molinopampa – Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., TWP.

Diagnosis: A nearly all blackish-brown species, with an acute FW apex and straight outer margin, in opposition to similar Peruvian species, *P. exanima* and *P. balnearia*, characterised by a blunt apex and convex outer margins, most similar to the Colombian *P. obstructa* Pyrcz & Viloria (1999). The two species also share a polymorphic HWV pattern with reddish or white scaling along anal margin near tornus.

Description: Male (Figs. 83, 84): *Head*: frons with a tuft of black hair; palpi over twice the length of the head, gray, covered with blackish-brown hair; antennae 2/5 the length of the costa, dorsally blackish-brown, ventrally chocolate brown, club formed gradually, twice the width of the shaft. *Thorax*: dorsally and ventrally blackish-brown; legs dull gray-brown. *Abdomen*: dorsally and laterally blackish-brown, ventrally dull brown. *Wings*: FW (length: 27-30 mm; mean: 28.2 mm; n=63) apex sub-acute, outer margin straight; fringes alternately blackish-brown and yellow-beige; androconial patch as illustrated (Fig. 189). HW outer margin slightly undulated; fringes blackish-brown, short. FWD uniformly blackish-brown, lustrous. HWD surface uniformly blackish-brown. FWV dull dark-brown, slightly lighter in distal one-third and along inner margin. HWV blackish-

brown; a series of faint, barely noticeable submarginal white dots; anal area towards tornus occasionally suffused with white or red scales, rarely forming a faint wedge.

Male genitalia (Fig. 166): Uncus the length of the tegumen; gnathos stout, more than 1/2 the length of the uncus; valvae with a long distal extremity and a well developed thin, dorsal process pointing upwards; saccus long, tubular; aedeagus stout, strongly contorted with a spiny tip.

Female (Fig. 85): Similar to the male but slightly larger (FW length: 28-31 mm; mean: 29 mm; n=8) and paler, especially on the ventral surface with occasional diffused faint red patches in the postdiscal FWV area.

ETYMOLOGY: This species is named after Nikolai Grigorievich ERSCHOFF (1837-1891), a renowned Russian entomologist who described a superficially similar Peruvian species *P. exanima*.

REMARKS: *P. erschoffi* occurs in three discreet morphs - all black, with red anal suffusion on the HWV and with white scaling in the same area. This polymorphism is found in other species of *Pedaliodes* as well, more specifically in *P. proerna*. The male genital structure indicates however that *P. erschoffi* is more closely related to *P. obstructa* PYRCZ & VILORIA found in Colombia and northwestern Ecuador. The two are quite similar in the male genitalia but given the huge geographic disjunction it seems unjustified to treat the two taxa as conspecific. *P. erschoffi* has a wide vertical range. It occurs from 2550-3100 m.

### ***Pedaliodes boettgeri* PYRCZ, n. sp.**

(Figs. 86, 167, 194)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Moyobamba-Nieva, 1800-2200 m, I-II.2003, M. Tafur *leg*., MUSM; ***Paratypes*** (**20** ♂♂): Peru, Pasco, Oxapampa, La Antena, 2300-2700 m, V.2003, J. Böttger *leg*., (6 MUSM, 6 MZUJ, 8 TWP).

DIAGNOSIS: *P. boettgeri* resembles the sympatric *P. aureola* n. sp. whose HWV markings, especially the costal streak, are yellow instead of white. The most similar species is however the little known *P. poetica* STAUDINGER from Bolivia (illustrated as *P. patizathes* by D'ABRERA (1988)), which has a lighter HW ground colour, chocolate brown instead of dark brown, and shows a number of slight but consistent differences in wing shape, androconia and male genitalia.

DESCRIPTION: Male (Fig. 86): *Head*: eyes blackish-brown, lustrous, setose; labial palpi twice the length of the head, gray, covered with dark-brown hair; antennae 2/5 the length of the costa, dorsally brown, ventrally orange chestnut, club formed gradually, terminal segments blackish-brown. *Thorax*: dorsally black, hairy, ventrally black, legs blackish-brown. *Abdomen*: dorsally and laterally black, ventrally brown. *Wings*: FW (length: 26 mm, n=2) apex subacute, outer margin straight. HW round, outer margin slightly wavy. FWD uniformly dark-brown; fringes short, alternately brown and yellow; androconial patch as illus-

trated (Fig. 194). HWD uniformly dark-brown; fringes dark-brown, short. FWV dull dark brown, subapical area suffused with white scales, forming a diffuse patch along costa, outer margin from apex to the vein M2 chocolate brown. HWV dark-brown liberally speckled with white scales forming a white costal streak and a diffuse postmedian band, a row of faint white submarginal dots.

Male genitalia (Fig. 162): Uncus the length of the tegumen; gnathos thin, half the length of the uncus; valvae with a blunt apical extremity, shorter than in *P. aureola* n. sp. and a tip-like dorsal process pointing upwards, thinner than in *P. aureola*; saccus cylindrical, short; aedeagus slightly contorted.

Female: Hitherto unknown.

ETYMOLOGY: This species is dedicated to José Böttger from Oxapampa, a butterfly collector and nature lover who provided the author with most of the specimens of this species.

REMARKS: *P. boettgeri* has a rather unusual distribution pattern. In the surveyed area it is apparently very rare and is known only from the Abra Pardo Miguel area. Further south it is found in Carpish (Huánuco) where it is also uncommon, compared to the sympatric *P. aureola* n. sp. *P. boettgeri* appears very common in the area of Oxapampa and Huancabamba (Pasco) in central Peru at 2400-2700 m. It has not been collected in other central Peruvian localities in the well-sampled Chanchamayo valley. Other species recorded in the highlands of Chachapoyas exclusively from the mid-elevation forests in Abra Pardo Miguel are *Lasiophila alkaios*, *Manerebia diffusa* and *Corades cybele semiplena. P. boettgeri* is replaced in Bolivia (and southern Peru?) by the closely related *P. poetica*.

### ***Pedaliodes aureola*** **PYRCZ, n. sp.**

(Figs. 87, 88, 168, 193)

[*Pedaliodes auraria* THIEME; D'ABRERA, 1988: 850, fig.]

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa – Granada, 3065 m, 20.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM. ***Allotype*** ♀: Peru, Amazonas, Pomacochas, Qda. El Chido via Peña Blanca, 3100 m, 12.IX.19999, B. Calderón *leg.*, TWP; ***Paratypes***: (**145** ♂♂ **& 3** ♀♀): **6** ♂♂: Peru, Amazonas, Molinopampa – Granada, 2650-3250 m, 06.VII.1998, T. PYRCZ *leg.*, TWP; **2** ♂♂: same data but 2650-3100 m, 27.VI.1998, TWP; **1** ♂: same data but 2915 m, 29.VI.1998, TWP; **2** ♂♂: same data but 2665 m, 01.VII.1998, TWP; **5** ♂♂: same data but 2815 m, 01.VII.1998, TWP; **1** ♂: same data but 2915 m, 01.VII.1998, TWP; **2** ♂♂: same data but 2965 m, 01.VII.1998, TWP; **1** ♂: same data but 3015 m, 01.VII.1998, TWP; **1** ♂: same data but 3065 m, 01.VII.1998, TWP; **1** ♂: same data but 3000-3300 m, 01.VII.1998, TWP; **1** ♂: same data but 2565, 03.VII.1998, TWP; **1** ♂: same data but 2665, 03.VII.1998, TWP; **1** ♂: same data but 2815 m, 03.VII.1998, TWP; **3** ♂♂: same data but 3000-3300 m, 03.VII.1998, TWP; **3** ♂♂: same data but 2815 m, 04.VII.1998, TWP; **1** ♂: same data but 3065 m, 04.VII.1998, TWP; **1** ♂: same data but 2800-3100 m, 05.VII.1998, TWP; **1** ♂: same data but 2915 m, 06.VII.1998, TWP; **4** ♂♂: same data but 2800-3100 m, 20.VIII.1998, TWP; **1** ♂: same data but 2915 m, 23.VIII.1998, TWP; **1** ♂: same data but 2665 m, 26.VIII.1998, TWP; **2** ♂♂: same data but 2915, 26.VIII.1998, TWP; **3** ♂♂: same data but 2965 m, 26.VIII.1998, TWP; **1** ♂: same data but 3065 m, 26.VIII.1998, TWP; **1** ♂: same data but 2815 m, 27.VIII.1998, TWP; **2** ♂♂: same data but 2965 m, 27.VIII.1998, TWP; **1** ♂: same data but 3065 m, 27.VIII.1998, TWP; **2** ♂♂: same data but 2815 m, 29.VIII.1998, TWP; **1** ♂: same data but 2915 m,

29.VIII.1998, TWP; **1** ♂: same data but 2665 m, 30.VIII.1998, TWP; **1** ♂: Chachapoyas, 1889, M. de Mathan, (genit. prep. ALV100-96), OC; **1** ♂: Pérou, OC, BMNH; **1** ♂: E. Peru, Muna, Pearce, G-S, BMNH; **4** ♂♂: 2 km. from Granada, 3400 m, X.2001, B. Calderón *leg.*, MBLI; **1** ♂: El Oso, near Laguna de Pomacochas, 2800-2950 m, VI.2000, B. Calderón *leg.*, MBLI; **1** ♂: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg.*, MBLI; **2** ♂♂: Peña Blanca, Laguna de Pomacochas, 2900-3050 m, VI.2000, B. Calderón *leg.*, MBLI; **2** ♂♂: Road Leimebamba - Balsas, 3550-3650 m, 1-15.XII.2001, B. Calderón *leg.*, MBLI; **1** ♂: Molinopampa - Granada, 2800 m, X.2000, B. Calderón *leg.*, MBLI; **5** ♂♂: same data but 3000 m, MUSM; **1** ♂: same data but 3050 m, MBLI; **4** ♂♂: same data but 3100 m, MBLI; **37** ♂♂: same data but 3150-3250 m, MBLI; **7** ♂♂: same data but 3300 m, MBLI; **1** ♂: same data but 3350 m, MBLI; **1** ♂: same data but 3400 m, MBLI; **1** ♂: Pomacochas, Qda. El Chido, 2400-2600 m, III.2003, M. Tafur *leg.*, TWP; **6** ♂♂: Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg.* (1 TWP, 5 GR); **1** ♀: Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón *leg.*, MBLI; **8** ♂♂ and **1** ♀: same data but IX.2002, MUSM; **1** ♂: Pomacochas, El Oso, 2900 m, 8.V.2000, B. Calderón *leg.*, PB; **1** ♂: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg.*, PB; **1** ♂: Molinopampa, XI.2000, B. Calderón *leg.*, PB; **1** ♂: Molinopampa - Granada, 2900-3100 m, 30.VIII.1998, T. Pyrcz *leg.*, PB; **2** ♂♂ & **1** ♀: same data but 3100-3250 m, III.2003, M. Tafur *leg.*, TWP.

Diagnosis: This species resembles the sympatric *P. boettgeri*, which can be immediately recognised by the white markings of the HWV, yellow in *P. aureola*. *P. aureola* is related to *P. auraria* from southern Peru which is considerably larger with more acute FW apex.

Description: Male (Fig. 87): *Head*: eyes dark-brown, lustrous; palpi beige covered dorsally with blackish-brown hair; antennae 2/5 the length of the costa, dorsally brown, ventrally orange, club formed gradually slightly thicker than shaft, terminal segments brown. *Thorax*: dorsally blackish-brown, hairy; ventrally blackish, legs beige, tibiae and femora covered with black hair. *Abdomen*: dorsally and laterally blackish-brown, ventrally dull brown. *Wings*: FW (length: 24-27 mm; mean: 26,1 mm; n=55) apex sub-acute, outer margin very slightly convex from apex to vein M2; fringes brown on the veins and yellow in between; androconial patch as illustrated (Fig. 193). HW round, outer margin slightly wavy; fringes grayish-brown, yellow in apical area. FWD uniformly dark-brown to blackish-brown, glossy. HWD uniformly dark-brown to blackish-brown, glossy. FWV dull dark-brown, slightly lighter in outer 1/3; subapical area speckled with gray-violet scales, in some individuals taking the shape of a costal streak extending from costa to vein M1; apex dusted with dark-brown-chocolate scales. HWV ground colour dark-brown liberally speckled with blackish-brown and violet-gray scales not forming any noticeable pattern except for a faint concentration of darker brown scales in the postdiscal area; a pale yellow costal streak extending to vein M1 and occasionally beyond, incised basally at vein Rs.

Male genitalia (Fig. 168): Uncus the length of the tegumen; gnathos thin and less than half the length of the uncus; valvae with a long distal extremity and a rather short, tooth-like dorsal process; saccus shallow and wide; aedeagus strongly contorted.

Female (Fig. 88): Dorsal and ventral surface of FW and HW considerably lighter brown; HWV speckled with light brown and occasionally white scales forming a uniform ripple-like pattern; costal streak whitish dusted with brown, larger than in the male.

ETYMOLOGY: The specific epithet *aureola* - golden (Lat., adj., fem.) refers to the HWV yellow costal streak, and underlines its superficial similarity to a south Peruvian species *P. auraria* THIEME.

REMARKS: *P. aureola* is closely related to the locally sympatric *P. boettgeri* described above, which mostly differs in that the HWV markings are white, and to *P. auraria* from southern Peru, which is considerably bigger (FW length 30-31 mm), has more elongate FW with an acuter apex and somewhat darker HWV with richer violet-white pattern. On the genital level the difference between the three are mostly quantitative. *P. aureola* is distributed between the highlands of Chachapoyas and central Peru where it was detected in Carpish (Huánuco), Oxapampa (Pasco), and Malambo (Junín). Individuals found in central Peru do not differ from the Chachapoyan specimens. It is worth pointing out that the first specimens of *P. aureola* were collected north of Chachapoyas in 1889 by Marc de Mathan. *P. aureola* is one of the commonest species of the genus in mid-elevation and upper cloud forests at 2550-3050 m.

### ***Pedaliodes sophismata* PYRCZ, n. sp.**

(Figs. 89, 90, 91, 169, 190)

[*Pedaliodes paneis* var. HEWITSON, 1862: 8, pl. 4, fig. 26]

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa – Granada, 3015 m, 26.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa – Granada, 2965 m, 27.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; ***Paratypes*** (**164** ♂♂ and **5** ♀♀): **1** ♂: Peru, Amazonas, Molinopampa – Granada , 2915 m, 29.VI.1998, T. PYRCZ & J. Wojtusiak *leg*., TWP; **2** ♂♂: same data but 2815 m, TWP; **2** ♂♂: same data but 2965 m, TWP; **2** ♂♂: same data but 2765 m, TWP; **1** ♂: same data but 2815 m, 01.VII.1998, TWP; **3** ♂♂: same data but 3015 m; **1** ♂: same data but 3115 m, TWP; **1** ♂: same data but 2715 m, 03.VII.1998, TWP; **1** ♂: same data but 2815 m, TWP; **3** ♂♂: same data but 3105 m, TWP; **1** ♂: same data but 3065 m, TWP; **2** ♂♂: same data but 3165 m, TWP; **1** ♂: same data but 3115 m, 04.VII.1998, TWP; **1** ♂: same data but 3165 m, TWP; **2** ♂♂: same data but 3215 m; **1** ♂: same data but 2965 m, 05.VII.1998, TWP; **2** ♂♂: same data but 3165 m, TWP; **1** ♂: same data but 3215 m, TWP; **1** ♂: same data but 2715 m, 06.VII.1998, TWP; **1** ♂: same data but 2815 m, TWP; **1** ♂: same data but 3065 m, TWP; **3** ♂♂: same data but 3115 m, TWP; **1** ♂: same data but 3215 m, TWP; **1** ♂: same data but 3165 m, 01.VIII.1998, TWP; **1** ♂: same data but 2965 m, 06.VIII.1998, TWP; **3** ♂♂: same data but 2915 m, 23.VIII.1998, TWP; **3** ♂♂: same data but 2765 m, 26.VIII.1998, TWP; **1** ♂: same data but 2815 m, TWP; **5** ♂♂: same data but 2915 m, TWP; **4** ♂♂: same data but 2965, TWP; **5** ♂♂: same data but 3015 m, TWP; **4** ♂♂: same data but 3065 m, TWP; **2** ♂♂: same data but 3115 m, TWP; **2** ♂♂: same data but 3165 m, TWP; **1** ♂: same data but 3215 m, TWP; **3** ♂♂: same data but 2915 m, 2715 m, TWP; **1** ♂: same data but 2815 m, 29.VIII.1998, TWP; **1** ♂: same data but 2715 m, 30.VIII.1998, TWP; **2** ♂♂: same data but 2815 m, TWP; **1** ♂: same data but 2915 m, TWP; **7** ♂♂: same data but 3015 m,TWP; **1** ♂: same data but 3065 m, TWP; **1** ♂: same data but 3115 m, TWP; **1** ♂: same data but 3215, TWP; **4** ♂♂: same data but 3100-3250 m, III.2003, M. Tafur *leg*., TWP; **71** ♂♂: same data but 3100-3250 m, IX.2002, B. Calderón *leg*., (4 BHNH, 4 MZUJ; 30 MUSM, 3 SMTD, 30 TWP); **5** ♀♀: same data, TWP; **2** ♂♂: Pomacochas, Qda. El Chido, 2600-2800 m, I.2003, M. Tafur *leg*., TWP.

DIAGNOSIS: *P. sophismata* can be recognised from the sympatric *P. demathani* n. sp. and *P. paneis* by a darker and uniform HWV, except for the anal wedge. It always has a yellow submarginal dot in Cu1-Cu2 whereas *P. paneis* has none and

*P. demathani* several white ones. Another similar species, *P. sztolcmani* has a white or yellow costal streak.

DESCRIPTION: Male (Figs. 89, 90): *Head*: eyes blackish-brown, lustrous, setose; labial palpi twice the length of the head, gray, laterally covered with short silver hair, ventrally with longer yellow and brown hair; antennae 2/5 the length of the costa, dorsally chestnut orange, club slightly lighter, ventrally orange, club formed gradually, terminal segments darker, brown. *Thorax*: dorsally and ventrally black, hairy, legs covered with brown and yellow hair, tibiae and tarsi additionally with silver scales. *Abdomen*: dorsally and laterally black, ventrally gray. *Wings*: FW (length: 25-28 mm, mean: 26.7 mm, n= 88) outer margin straight, slightly truncate from apex to vein M1; fringes dark-brown, short; androconial patch as illustrated (Fig. 190). HW outer margin slightly undulated; fringes dark-brown, short. FWD uniformly dark-brown, lustrous. HWD uniformly dark-brown, lustrous; anal area suffused in about 50% of examined specimens with sparse brick red or orange scales. FWV almost uniformly dull dark-brown; in some specimens a faint pale yellow postdiscal costal streak; apical and submarginal area covered with faint ripple pattern made up of darker brown and pale yellow scales. HWV chocolate brown liberally dusted with faint, pale yellow scales forming a delicate ripple pattern; faint median pale yellow costal streak apparent in some specimens; postdiscal area a shade lighter than the rest of the wing; submarginal yellow dot in cell Cu1-Cu2; extremely variable rusty yellow (rarely brick red) anal wedge dusted with brown scales, in the less patterned specimens shaped as a triangle reaching vein Cu2, in some extending as a row of patches as far as vein M2, in others as a gradually narrowing band with a straight inner edge extending to vein M3 or M2.

Male genitalia (Fig. 169): Uncus slightly longer than tegumen; gnathos thin, shorter than half the length of the uncus; valvae with a blunt distal extremity and a stout but short dorsal process; saccus short, cylindrical; aedeagus slightly contorted.

Female (Fig. 91): FWD and HWD similar to the male but lighter brown. FWV and HWV beige; in the most patterned individuals a FW whitish postdiscal band from costa to vein M3 and a faint whitish costal streak on the HW.

ETYMOLOGY: This species name *sophismata* (false conclusions, Lat.) refers to THIEME's wrong conclusions as far the identity of this taxon is concerned (see below).

REMARKS: *P. sophismata* is taxonomically one of the most demanding species of *Pedaliodes.* It was confused in the past with a number of congeners, due to its wide geographic and altitudinal range (at least 2400-3200 m) and huge individual variation affecting the size, wing shape and HWV pattern, which may lead to the conviction that there are several species involved, not one. *P. sophismata* was first illustrated by HEWITSON (1862) as a variation of *P. paneis*, a sympatric species occurring in the highlands of Chachapoyas. THIEME (1905) realised that error and decided to name and describe the HEWITSON "*paneis form"* as *Pedaliodes*

*tyro*. However, the male specimens referred to by THIEME were from Marcapata in Cusco and Limbani in Puno in south Peru [BMNH, examined], where *P. sophismata* does not occur, and in fact belong to a separate species only superficially resembling *P. sophismata*. In *P. tyro* the HWV yellow pattern is monomorphic and is reduced to an anal triangle. There are also notable distinguishing features in the male androconia and genitalia. It is worth mentioning that *P. sophismata* and *P. tyro* (an unnamed subspecies, PYRCZ in prep.) are locally sympatric in central Peru (Junin) where *P. tyro* occurs at slightly higher (3000-3600 m) and *P. sophismata* at lower elevations (2500-3100 m). In the highlands of Chachapoyas *P. sophismata* is the dominant species in the *Pedaliodes* community in middle to high elevation cloud forests at 2600-3200 m. *P. sophismata* is, as already mentioned, also found in central Peru, and the individuals collected in Carpish (Huánuco), Oxapampa (Pasco) and Malambo (Junín) do not differ noticeably from the individuals found in northern Peru.

### *Pedaliodes stuebeli* PYRCZ, n. sp.

(Figs. 92, 170, 198)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Pomacochas, Qda. El Chido, 2200-2800 m, 8-10.VII.1998, T. Pyrcz *leg*., MUSM; ***Paratypes*** (**25** ♂♂): **2** ♂♂: Peru, Amazonas, Pomacochas, Qda. El Chido, 2200-2800 m, 8-10.VII.1998, T. Pyrcz *leg*., MUSM; **2** ♂♂: same data but 2180-2800 m, 18.VIII.1998, TWP; **2** ♂♂: same data but 2600-2800 m, III.2003, M.Tafur *leg*., TWP; **1** ♂: El Oso, near Laguna de Pomacochas, 3000 m, VI.2000, B. Calderón *leg.*, MBLI; **1** ♂: same data but 3050-3150 m, MBLI; **16** ♂♂: Laguna de Pomacochas, 2300-2500 m, X-XI.1999, B. Calderón *leg.*, (8 MUSM, 4 TWP, 4 MB); **1** ♂: La Sonada, Pomacochas, 1500-3000 m, IX-X.2000, B. Calderón *leg*., PB.

DIAGNOSIS: The only outstanding element of the wing ventral surface colour pattern is a HW yellow anal wedge. It is found in the sympatric *P. sophismata* n. sp. as well, which however has a yellow dot in cell Cu1-C2, and in *P. xanthosphenisca* which has a wider and lighter yellow wedge with a smoothly arched inner edge, always irregular in *P. stuebeli*.

DESCRIPTION: Male (Fig. 92): *Head*: eyes black, lustrous; palpi covered with black hair; antennae half the length of the costa, dorsally brown, ventrally beige, club twice the width of shaft, formed gradually. *Thorax*: Blackish-brown, hairy. *Abdomen*: Dorsally blackish-brown, ventrally light brown. *Wings*: FW (length: 26-27 mm; mean: 26.9 mm; n=5) costa nearly straight, very slightly arched towards apex; apex sub-acute, outer margin arched from apex to vein M2, then straight to 1A; fringes medium-brown slightly lighter between veins; androconial patch as illustrated (Fig. 198). HW oval; outer margin very lightly wavy; fringes dark-brown. FWD blackish-brown. HWD blackish-brown. FWV uniformly medium-brown with a lighter sheen towards inner margin. HWV dark-brown; a yellow anal wedge extending to vein M3, with a small tip pointing basally on vein 1A and another one, slightly bigger on Cu2, its outer margin incurved in cell Cu2-1A.

Male genitalia (Fig. 170): Uncus the length of the tegumen; gnathos long, more than half the length of the uncus; valvae with a short distal extremity, a

rudimentary dorsal process and an irregular ampulla; saccus moderately long, tubular; aedeagus massive, longer than tegumen+uncus, slightly contorted, flattened

Female: Hitherto unknown.

ETYMOLOGY: This species is dedicated to a German naturalist Alphons STUEBEL who was amongst the first collectors of butterflies in the highlands of Chachapoyas.

REMARKS: *P. stuebeli* appears to be a *bona fide* endemic species of the northern part of the highlands of Chachapoyas, the so-called La Peca unit where it is relatively common in mid-elevation cloud forests. Moreover, it does not seem to be related closely to any species found in the central Molinopampa unit or any south Ecuadorian *Pedaliodes*.

### *Pedaliodes balnearia* PYRCZ & VILORIA, 1999

*Pedaliodes balnearia* PYRCZ & VILORIA, 1999: 127, figs 8, 9 (adults), 29 (male genitalia).

REMARKS: *P. balnearia* is one of many brown, barely marked, superficially very similar, yet not always closely related species of *Pedaliodes*. *P. balnearia* has been confused in the past with *P. phrasis* GROSE-SMITH, described from Bolivia, and was illustrated as such by D'ABRERA (1988). In the northern Andes *P. balnearia* is widely sympatric with *P. dracula* PYRCZ & VILORIA, which can be recognised by the concentration of white scales on the anal margin, and *P. obstructa* PYRCZ & VILORIA (1999), which has a distinctive straight FW outer margin and an acute apex, blunt in *P. balnearia*. In Peru the most similar species is however *P. exanima* (ERSHOFF). *P. exanima* is one of the most difficult species of *Pedaliodes* to identify given that it is almost totally dark-brown on the upper and underside, and that it's type is lost (ERSCHOFF 1875) . The types collected by Jelski come from Pumamarca, a locality situated in the valley of Chanchamayo (Central peru) and the altitude, 6000 feet (approx. 1800 m) indicate that it's a low to mid-elevation cloud forest species. Recently, individuals agreeing with the original description were collected in Mina Pichita, near the type locality. The differences between *P. balnearia* and *P. exanima* consist in the slightly lighter brown upperside, more acute FW apex and bigger androconial patch in the latter species. It cannot be ruled out that the two are conspecific unless proven locally sympatric. The wing shape, especially the acute FW apex, also allows to separate *P. balnearia* from another similar symaptric species *P. erschoffi* n. sp. *P. erschoffi* occurs however at higher elevations (2500-3000 m), whereas both *P. balnearia* and *P. exanima* are mid-elevation cloud forest species (2000-2400 m). The female of *P. balnearia* is larger than other brown congeners. *P. balnearia* is particularly common in the upper valley of Pastaza in eastern Ecuador. However, it is also known to occur further north (Napo) and in southern Ecuador (Zamora-Chinchipe). Individuals collected in Pomacochas do not differ from the types and extend the range of this species considerably southwards.

### *Pedaliodes xanthosphenisca* HAYWARD, 1968

*Pedaliodes xanthosphenisca* HAYWARD, 1968: 201-202, figs. 1, 5 (male genitalia).

REMARKS: *P. xanthosphenisca* was described from southern Ecuador where it occurs on the west slopes of the Andes in the upper valley of the Río Puyango and its tributaries. It was also reported recently from northwestern Peru in Piura and Cajamarca. The individuals collected in Amazonas, around Pomacochas, in the northern part of the surveyed area, do not differ from the nominotypical subspecies. The shape of the yellow wedge on the HWV in this species (in the Pomac0chas population) is not subject to individual variation to such an extent as in the sympatric *P.sophismata*. *P. xanthosphenisca* is a mid-elevation cloud forest species.

### *Pedaliodes morenoi* DOGNIN, 1887

*Pedaliodes morenoi* DOGNIN, 1887: 173, fig. 2.

REMARKS: Typical individuals of *P. morenoi* were collected along the road between Balsas situated in the valley of the Río Marañon and Leimebamba at 3100 m. This is the only known locality record of this species in the surveyed area. Otherwise, this species is widely distributed in southern and western Ecuador. It usually occurs at high elevations close to the upper limit of cloud forest.

### *Pedaliodes praxithea* (HEWITSON, 1870)

*Pronophila praxithea* HEWITSON, 1870: 157.
*Pedaliodes praxithea* (HEWITSON); KIRBY, 1871: 645.
*Physcopedaliodes praxithea* (HEWITSON); ADAMS, 1986: 308.

REMARKS: There is some controversy concerning the origin of the nominotypical *P. praxithea*. HEWITSON (1870) described this species from Ecuador but ADAMS (1986) indicated that the type specimen bears no locality label and that it corresponds with the Bolivian population. In fact, *P. praxithea* can be divided into two subspecies, differing in the extent of the HW apical patch, shorter in the Colombian, Ecuadorian and Peruvian specimens, longer in the Bolivian population (there are also differences in the shape of the HWV lines between the two). The HEWITSON description provides no clue as to this feature but the original figure matches best Ecuadorian specimens. Therefore, we may assume that, contrary to the opinion expressed by ADAMS (*op. cit.*), the Bolivian population represents an undescribed subspecies (VILORIA & PYRCZ in prep.). The individuals found in the area of Molinopampa and Mendoza are identical to the Ecuadorian ones. Some aspects of the behaviour of *P. praxithea* were discussed by ADAMS (1986). In the highlands of Chachapoyas *P. praxithea* occurs locally at 2200-2600 m.

## *Pedaliodes maruda* Pyrcz, n. sp.

(Figs. 93, 94, 173, 196)

Type series:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2800-3100 m, 20.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa - Granada, 2765 m, 26.VIII.1998, T. Pyrcz leg., TWP; ***Paratypes*** (**46** ♂♂): Peru, Amazonas, **1** ♂: Molinopampa - Granada, 2915 m, 23.VIII.1998, TWP; **1** ♂: same data but 2665 m, 26.VIII.1998, TWP; **2** ♂♂: same data but 2765 m, 26.VIII.1998, TWP; **1** ♂: same data but 2965 m, 26.VIII.1998, TWP; **2** ♂: same data but 2800-3100 m, 26.VIII.1998, TWP; **3** ♂♂: same data but 2765 m, 27.VIII.1998, TWP (1 TWP, 1 MZUJ, 1 BMNH); **1** ♂: same data but 2865 m, 29.VIII.1998, TWP; **2** ♂♂: same data but 2765 m, 29.VIII.1998, TWP; **3** ♂♂: same data but 2915 m, 29.VIII.1998 (1 TWP, 1 MZUJ, 1 BMNH); **1** ♂: same data but 2665 m, 30.VIII.1998, TWP; **2** ♂♂: same data but 2765 m, 01.VII.1998, TWP; **1** ♂: same data but 2865 m, 01.VII.1998, TWP; **1** ♂: same data but 2965 m, 03.VII.1998, TWP; **2** ♂: same data but 2765 m, 03.VII.1998, TWP; **1** ♂: same data but 2715 m, 03.VII.1998, TWP; **1** ♂: same data but 2965 m, 04.VII.1998, TWP; **1** ♂: same data but 2865 m, 04.VII.1998, TWP; **1** ♂: same data but 2865 m, 05.VII.1998, TWP; **1** ♂: same data but 2915, 06.VII.1998, TWP; **1** ♂: same data but 2765 m, 06.VII.1998, TWP; **1** ♂: same data but 2965 m, 06.VII.1998, TWP; **1** ♂: same data but 2650-3100 m, 06.VII.1998, TWP; **1** ♂: same data but 2765 m, 29.VII.1998, MUSM; **1** ♂: same data but 2650-3250 m, 29.VI.1998, MUSM; **1** ♂: same data but 2815 m, 29.VI.1998, TWP; **1** ♂: same data but 2715 m, 29.VI.1998, TWP; **1** ♂: Molinopampa - Granada, 3050 m, X.2000, B. Calderón *leg.*, MBLI; **9** ♂♂: same data but 3150-3250 m, MBLI; **1** ♂: same data but 3300 m, MBLI.

Diagnosis: FWD postdiscal orange band same as in *P. uaniuna*, also similar to *P. peruda* but lighter and narrower with a regular inner edge (no subapical incision). HWD band shaped almost identically to *P. peruda* but lighter, without the diagnostic deep scissor-like incision of *P. uaniuna*.

Description: Male (Fig. 93): *Head*: eyes and palpi blackish-brown; antennae reaching 2/5 the length of the costa, dorsally dark-brown, ventrally chocolate brown. *Thorax* and *abdomen*: blackish-brown, slightly lighter and paler ventrally. *Wings*: FW (length: 26-28 mm; mean: 27.1 mm; n=37) apex blunt, outer margin slightly convex; fringes alternately blackish-brown and milky white; androconial patch as illustrated (Fig. 196). HW squarish, outer margin slightly undulated; fringes alternately blackish-brown and milky white. FWD with a yellow-orange post-discal band from near costa to inner margin, gently curved in cells R5 to M2, then almost straight, broadening gradually to approximately 4 mm at inner margin; the remainder of the wing lustrous dark-brown basally, and lighter pale brown distally. HWD with a lighter yellow-orange and broader, approximately 5 mm wide, post-discal band from costa to inner margin at tornus, with a sharp-cut inner edge, slightly incised in cell M2-M3 then almost straight to tornus, outer edge slightly sinuate, dusted with brown and narrowing from cell M3-Cu1 towards tornus; the remainder of the wing lustrous dark-brown. FWV with the post discal band reflected from the upperside but slightly lighter, the area basally from the band dark-brown, distally slightly lighter and suffused with violet and silvery scales in the subapical area; outer margin at apex chocolate brown; a series of four subapical white dots. HWV with the post-discal band reflected from the upperside, milky white, centrally dusted with brown; a series of four white dots from Rs-M1 to M3-Cu1, and a Cu1-Cu2 dot on the chocolate brown area which covers the remainder of the wing basally and distally from the post-discal band; a few lighter scales scattered along outer and inner margin.

Male genitalia (Fig. 173): Uncus slightly shorter than tegumen, noticeably thicken ventrally; gnathos longer than half the length of the uncus; valvae with a blunt distal extremity and a well developed dorsal process, nearly as long as the distal one, pointing distally; saccus moderately long, shorter than in *P. uaniuna*; aedeagus slightly contorted.

Female (Fig. 94): Similar to the male; dorsal surface median orange band wider lighter and slightly wider; ventral surface pattern lighter.

ETYMOLOGY: The name of this species is a free phonetic association derived from the specific epithet of the parapatric closely related ally *P. peruda*.

REMARKS: *P. maruda* occurs in the highlands of Chachapoyas but also farther south, in Abiseo (San Martín), Carpish (Huánuco) and as far as Yanachaga (Pasco) in central Peru. Most individuals were collected in baited traps along the Molinopampa - Granada trail at altitudes from 2700-2900 m. *P. maruda* replaces parapatrically at higher elevations its close relative *P. peruda* but the two occur sympatrically within a rather wide 200 m altitude band, where both are occasionally equally common, and is at the same time the lower parapatric replacement of *P. uaniuna*. The flight pattern and behaviour are also similar to *P. peruda*.

### ***Pedaliodes uaniuna*** **PYRCZ & VILORIA, n. sp.**

(Figs. 95, 171, 195)

[*Pedaliodes spec?* KÖNIG, 2004: pl. XVII, figs. 10a, b.]

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 2800-3100 m, 20.VIII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Paratypes*** (**29** ♂♂): **2** ♂♂: Peru, Amazonas, Molinopampa – Granada, 2800-3100 m, 20.VIII.1998, T. Pyrcz *leg*., TWP; **1** ♂: same data but 2650-3250 m, 29.VI.1998, TWP; **1** ♂: same data but 3115 m, 29.VIII.1998, TWP; **1** ♂: same data but 3115 m, 03.VII.1998, TWP; **1** ♂: same data but 3115 m, 04.VII.1998, TWP; **1** ♂: same data but 3115 m, 05.VII.1998, TWP; **13** ♂♂: Molinopampa – Granada, 3100-3250 m, III.2003, M. Tafur *leg*., (6 MUSM, 7 TWP); **1** ♂: same data but 3100-3250 m, V.2003, B. Calderón *leg*., TWP; **1** ♂: same data but 3100-3250 m, IX.2002, TWP; **1** ♂: Molinopampa - Granada, 3050 m, X.2000, B. Calderón *leg.*, MBLI; **1** ♂: same data but 3150-3250 m, MBLI; **1** ♂: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg*., PB; **2** ♂♂: same data but IX.2002, PB; **1** ♂: same data but XI.2000, PB; **1** ♂: Molinopampa, 2000-2500 m, X1.2002, B. Calderón *leg*., PB.

DIAGNOSIS: This species and its lower parapatric allies, *P. peruda* (HEWITSON) and *P. maruda* n. sp., share a roughly similar colour pattern characterised by a wide orange median band crossing both FW and HW from costa to inner margin. The most obvious distinguishing character of *P. uaniuna* is a deep triangular distal incision of brown from tornus into mid cell M3-Cu1 on the HW.

DESCRIPTION: Male (Fig. 95): *Head*: eyes and palpi blackish-brown, antennae, reaching 2/5 the length of the costa, dorsally dark-brown, ventrally chocolate brown. *Thorax* and *abdomen*: blackish-brown, slightly lighter and paler ventrally. *Wings*: FW (length: 28-31 mm, mean: 29.1 mm, n=7) apex blunt, outer margin straight; fringes pale yellow; androconial patch as illustrated (Fig. 195). HW round, outer margin slightly undulated; fringes pale yellow. FWD with a yellow-

orange post-discal band from near costa to inner margin, gently curved in cells R5 to M2, then almost straight, broadening gradually to approximately 4 mm at inner margin, slightly incised along veins along distal edge; the remainder of the wing uniformly lustrous dark-brown. HWD with a wide post-discal band of the same colour as on the FW, from costa, with sharp-cut basal edge angled at vein M2 and moon shaped distal edge from costa to vein Cu1, in cell M3-Cu1 divides into two branches, one extending along vein Cu1 towards outer margin, the other, as a narrow band, towards tornus; remainder of the wing uniformly dark-brown. FWV with the post-discal band reflected from the upperside but slightly wider and lighter, the area basally from the band dark-brown, distally slightly lighter and suffused with violet and silvery scales in the subapical area; outer margin at apex chocolate brown; a series of four subapical white dots. HWV surface with the post-discal band reflected from the upperside, milky white, heavily dusted with brown, especially on costa; a series of four white dots from Rs-M1 to M3-Cu1, the latter on the edge of the brown area; the area basally and distally from the post-discal band blackish-brown.

Male genitalia (Fig. 171): Uncus shorter than tegumen; gnathos longer than half the length of the uncus; valvae slender with a long distal extremity and a well-developed thin dorsal process pointing distally; saccus long, tubular; aedeagus thin, strongly contorted.

Female: Hitherto unknown.

ETYMOLOGY: The epithet of this species, *uaniuna*, means "dead" in Kechua and refers to the Pico Pishcouaniuna (Dead Bird Peak) situated above its type locality.

REMARKS: *P. uaniuna* for its big size and unusual colour pattern is undoubtedly the most striking member of the genus found in the highlands of Chachapoyas. The first collected individual was taken by the author in flight for an *Oxeoschistus*! It is the uppermost parapatric member of the trio involving *P. peruda* and *P. maruda* n. sp., all three closely related. It could be an endemic species of the Molinopampa area. Nevertheless, given its extremely restricted altitude range and scarcity in the field it cannot be ruled out that it would eventually show up in other Peruvian localities.

### *Pedaliodes peruda* (HEWITSON, 1862)

(Figs. 96, 172, 197)

*Pronophila peruda* HEWITSON, 1862: 3, pl. 1, figs. 7.
*Pedaliodes peruda* (HEWITSON); BUTLER, 1867: 267.

REMARKS: *P. peruda* is characterised by a wide orange median band and can be easily confused with *P. maruda*. *P. maruda* is slightly larger. Its orange band has a slight yellowish sheen, is wider in the middle but narrower in the FW postdiscal area. Moreover, the inner edge of the median band on the FW of *P. peruda* is distinctly displaced at vein M3. Androconial patch as illustrated (Fig. 197).

*P. maruda* n. sp. occurs at slightly higher elevations than *P. peruda* but within a 200 m wide band the two are sympatric. *P. peruda* is one of the commonest pronophilines in mid-elevation forests. It can be found at 2300-2800 m. Male genitalia (Fig. 172) as illustrated.

### *Pedaliodes paneis* (HEWITSON, 1862)

(Figs. 97, 98)

*Pronophila paneis* HEWITSON, 1862: 8-9, pl. 4, fig. 27.
*Pedaliodes paneis* (HEWITSON); BUTLER, 1867: 267.
*Pedaliodes pancis* [*sic*] (HEWITSON); DRUCE, 1876: 214. Synonymy given by GAEDE, 1931: 493.

REMARKS: *P. paneis* is known from northern Peru exclusively. The identity of this species was mistaken by D'ABRERA (1988) who illustrated as *P. paneis* another species, described herein as *P. demathani* n. sp. The lectotype of *P. paneis* was selected by VILORIA (unpubl.) from the Hewiston material. *P. paneis* is a common upper forest species, dominant in the *Pedaliodes* community at around 3000-3200 m. It has the same geographical range as *P. demathani* n. sp. and similarly to the latter species it is replaced in central Peru (Huánuco and Pasco) by an undescribed species (PYRCZ in prep.).

### *Pedaliodes demathani* PYRCZ, n. sp.

(Figs. 99, 100, 174)

[*Pedaliodes paneis* (HEWITSON); D'ABRERA, 1988: 857]

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 3115 m, 04.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; ***Allotype*** ♀: Peru, Amazonas, Molinopampa - Granada, 2800-3100 m, 20.VIII.1998, T. Pyrcz *leg*., TWP; ***Paratypes*** (**126** ♂♂ & **11** ♀♀): **7** ♂♂: Peru, Amazonas, Molinopampa - Granada, 2650-3250 m, 29.VI.1998, T. Pyrcz & J. Wojtusiak *leg*., (2 MUSM; 2 MZUJ, 2 BMNH, 1 TWP); **1** ♂: same data but 2715 m, 01.VII.1998, TWP; **2** ♂♂: same data but 3000-3250 m, 01.VII.1998, TWP; **1** ♂: same data but 3100-3400 m, 03.VII.1998, TWP; **1** ♂: same data but 3015 m, 04.VII.1998, TWP; **5** ♂♂: same data but 3115 m, 04.VII.1998, TWP; **1** ♂: same data but 2800-3100 m, 05.VII.1998, TWP; **1** ♂: same data but 3015 m, 06.VII.1998, TWP; **1** ♂: same data but 3065 m, 06.VII.1998, TWP; **5** ♂♂: same data but 3000-3300 m, 06.VII.1998, TWP; **1** ♂: same data but 2800-3100 m, 20.VIII.1998, TWP; **2** ♂♂: same data but 3015 m, 26.VIII.1998, TWP; **1** ♂: same data but 2765 m, 26.VIII.1998, TWP; **1** ♂: same data but 2800-3100 m, 26.VIII.1998, TWP; **4** ♂♂: same data but 3100-3250, III.2003, M. Tafur *leg*., TWP; **1** ♂: same data but III.2003, TWP; **2** ♂♂: El Oso, near Laguna de Pomacochas, 2800-2950 m, VI.2000, B. Calderón *leg*., MBLI; **10** ♂♂: same data but 3000 m, MBLI; **12** ♂♂: same data but 3050-3150 m, VI.2000, MBLI; **3** ♂♂: Peña Blanca, Laguna de Pomacochas, 2900-3050 m, VI.2000, B. Calderón leg., MBLI; **7** ♂♂: Road Leimebamba - Balsas, 3550-3650 m, 1-15.XII.2001, B. Calderón *leg*., MBLI; **2** ♂♂: Molinopampa - Granada, 3000 m, X.2000, B. Calderón leg., MBLI; **4** ♂♂: same data but 3100 m, MBLI; **27** ♂♂: same data but 3150-3250 m, MUSM; **4** ♂♂: same data but 3300 m, MBLI; **1** ♂: same data but 3350 m, MBLI; **4** ♂♂: same data but 3100-3250 m, IX.2002, TWP; **1** ♂: Pomacochas, Peña Blanca, 3000 m, 20.VI.2000, B. Calderón *leg*., PB; **1** ♂: same data but 5.VI.2000, PB; **1** ♂: Pomacochas, El Oso, 2900 m, 15.V.2000, B. Calderón *leg*., PB; **4** ♂♂: Pomacochas, Qda. El Chido, 2500-2900 m, VI.2002, B. Calderón *leg*., TWP; **3** ♂♂: same data but III.2003, M. Tafur *leg*., TWP; **1** ♂: Molinopampa - Granada, 3100 m, 23.VIII.1998, T. PYRCZ *leg*., PB; **1** ♀: 2 km. from Granada, 3400 m, X.2001, B. Calderón *leg*., MBLI; **1** ♀: Molinopampa - Granada, 3100

m, X.2000, B. Calderón *leg.*, MBLI; **4** ♂♂: same data but 3100-3250 m, III.2003, M. Tafur *leg.*, TWP; **5** ♀: same data but 3150-3250 m, MBLI; **1** ♀: same data but 3300 m, MBLI; **1** ♀: same data but 3000 m, 28.VI.2000, B. Calderón *leg*., PB; **1** ♀: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg*., PB; **1** ♀: same data but IX.2002, TWP.

DIAGNOSIS: *P. demathani* most closely resembles *P. paneis*, the two species being characterised by a HWV yellow band bent at sharp angle on vein M2. *P. paneis* however has no white dots distally to the HWV yellow median band. *P. demathani* resembles somewhat an individual form of *P. sophismata* n. sp., which has no white dots either and instead only one yellow spot in cell Cu1-Cu2, and whose yellow wedge ends at vein M2.

DESCRIPTION: Male (Fig. 99): *Head*: frons with a tuft of dark-brown hair; eyes dark-brown, lustrous; palpi two and a half the length of the head dorsally dull brown, ventrally sandy yellow, covered with short, dark-brown hair; antennae reaching 2/5 the length of the costa, chestnut, club formed gradually, slender, only slightly wider than shaft. *Thorax*: dorsally and ventrally dark-brown; walking legs gray-brown. *Abdomen*: dorsally and laterally dark-brown, ventrally dull, light brown. *Wings*: FW (length: 26-27 mm, mean: 26.4 mm, n=31) apex acute, outer margin slightly truncate between apex and vein M1, straight from vein M1 to tornus; fringes dark-brown. HW oval, outer margin wavy; fringes dark-brown. FWD uniformly dark-brown, lustrous. HWD uniformly dark-brown. FWV dark-brown, dull; a faint, white postdiscal streak from costa to vein M2; subapical area speckled with sparse lighter scales; outer margin from apex to vein M1 dark-brown. HWV dark-brown; a faint sandy yellow costal streak displaced on discal cell extending into middle of discal cell; a sandy yellow postmedian band extending and gradually narrowing from mid anal margin and tornus to vein M2 with a straight and sharp inner edge from anal margin to vein M2 and diffuse outer edge; postmedian line bent at vein M2 at a straight angle and continues to Rs where out curved again before reaching costa; distally the entire submarginal area suffused with sandy yellow scales somewhat denser along basal edge of the submarginal dentate line; marginal area only lightly dusted with lighter brown, ripple-like pattern scales; a row of five white dots in cells Rs-M1 to Cu1-Cu2 along distal edge of sandy yellow band.

Male genitalia (Fig. 174): Uncus the length of the tegumen; gnathos thin, slightly less than half the length of the uncus; valvae with a rudimentary dorsal process and a serrate ampulla; saccus moderately long; aedeagus very slightly contorted, slender.

Female (Fig. 100): Dorsal surface lighter and duller than in the male; ventral surface pattern as in the male but white instead of sandy yellow; white scales form a ripple-like pattern apparent in the postbasal area of the HW; HW postmedian white band suffused with brown ripple-like pattern.

ETYMOLOGY: This species is dedicated to Marc DE MATHAN, a French customs officer who explored northern Peruvian highlands in 1878-1899 and 1906-1909, and gathered an important collection of butterflies. He was among the first persons to collect pronophiline butterflies in this part of the Andes.

REMARKS: *P. dematha*ni was misidentified by D'ABRERA (1988) with *P. paneis*. The two species are, especially the males, somewhat similar at first sight for the presence of the wide yellow HWV band, but after a closer look they appear completely different in all other respects. The two are also sympatric and seemingly occupy the same altitude range. *P. dematha*ni is however less frequent. *P. dematha*ni occurs in the central (Molinopampa) and northern (Pomacochas) unit of the Eastern Cordillera in the highlands of Chachapoyas, as well as in the Central Cordillera (Barro Negro), and possibly further south to Abiseo, which remains to be confirmed. In Huánuco and Pasco (central Peru) it is however replaced by a related undescribed species (PYRCZ in prep.).

### *Pedaliodes sztolcmani* PYRCZ, n. sp.

(Figs. 101, 102, 103, 104, 175)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 3215 m, 04.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa – Granada, 2650-3250 m, 06.VII.1998, T. Pyrcz *leg*.; ***Paratypes*** (**94** ♂♂ & **7** ♀♀): **1** ♂: Peru, Amazonas, Molinopampa - Granada, 2650-3050 m, 27.VI.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **1** ♂: same data but 3115 m, 01.VII.1998, TWP; **4** ♂♂: same data but 3000-3250 m, 01.VII.1998, TWP; **2** ♂♂: same data but 3065 m, 03.VII.1998, TWP; **1** ♂: same data but 3165 m, 03.VII.1998, TWP; **11** ♂♂: same data but 3100-3400 m, 03.VIII.1998 (1 TWP, 3 MZUJ, 3 BMNH, 3 MUSM); **1** ♂: same data but 3065 m, 04.VII.1998, TWP; **1** ♂: same data but 3165 m, 04.VII.1998, TWP; **5** ♂♂: same data but 3115 m, 04.VII.1998, TWP; **2** ♂♂: same data but 3215 m, 04.VII.1998, TWP; **1** ♂: same data but 3265 m, 04.VII.1998, TWP; **1** ♂: same data but 3115 m, 05.VII.1998, TWP; **1** ♂: same data but 2800-3100 m, 05.VII.1998, TWP; **9** ♂♂: same data but 2650-3250 m, 06.VII.1998, MUSM; **1** ♂: same data but 3115 m, 06.VII.1998, TWP; **4** ♂♂: same data but 3100-3250 m, 20.VIII.1998, TWP; **2** ♂♂: same data but 3100 m, 20.VIII.1998, TWP; **2** ♂♂: same data but 3015 m, 26.VIII.1998, TWP; **2** ♂♂: same data but 3115 m, 26.VIII.1998, TWP; **1** ♂: Molinopampa - Granada, 2500 m, X.2000, B. Calderón *leg*., MBLI; **1** ♂: same data but 2800 m, MBLI; **3** ♂♂: same data but 3050 m, MBLI; **14** ♂♂: same data but 3100 m, MUSM; **4** ♂♂: same data but 3300 m, MBLI; **5** ♂♂: Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., GR; **6** ♂♂: Molinopampa, X.2000, B. Calderón *leg*., PB; **1** ♂: same data but IX.2002, TWP; **1** ♂: same data but 2900-3100 m, I.2001, B. Calderón *leg*., PB; **2** ♀♀: Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón *leg*., MBLI; **2** ♀♀: same data but 3000-3250 m, IX.2002, TWP; **1** ♀: same data but 3100-3400 m, 03.VII.1998, T. Pyrcz *leg*., TWP; **1** ♀: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg*., PB; **6** ♂♂ and **1** ♀: same data but 3100-3250 m, III.2003, M. Tafur, TWP.

DIAGNOSIS: *P. sztolcmani* cannot be confused with any sympatric congener because its HWV pattern is unique. *P. sztolcmani* is most similar to *P. auristriga*, occurring in central Peru, as far as the HWV postmedian markings are concerned. In both species there is a series of individual forms varying between a fully developed, continuous band and a short anal wedge. The shape of the band is however different. It is nearly straight in *P. auristriga* and sharply curved at vein M2 in *P. sztolcmani*. The two species differ markedly in male genitalia.

DESCRIPTION: Male (Figs. 101, 102, 170): *Head*: eyes and palpi black; frons with a tuft of hair; palpi twice the length of the head with brown hair; antennae reaching 2/5 the length of the costa, dorsally dark-brown, ventrally chestnut with

a darker tip. *Thorax*: dorsally and ventrally black. *Abdomen*: dorsally black, chestnut ventrally. *Wings*: FW (length: 23-25 mm; mean: 23.9 mm; n=51) triangular, apex subacute, outer margin slightly concave; fringes alternately black and milky-white. HW sub-oval, outer margin slightly undulated; fringes dark-brown. FWD uniformly blackish-brown, lustrous; scent patch small and split into a deries of elongate spots, entering discal cell. HW blackish-brown, basal third, especially along anal margin densely hairy; red scales along anal margin near tornus apparent in some individuals. FWV dull dark-brown; a few lighter scales on the apex and a distinct silver costal streak one third between discal cell and apex. HWV dark chocolate brown liberally suffused with lighter brown scales; a variable postmedian white and sandy yellow pattern: in the most patterned individuals it forms a continuous band extending from costa to anal margin, from costa to M2 as a silvery white costal streak, then displaced distally, sharply bent at vein M2 then straight to anal margin, gradually widening, as a sandy yellow band; in the intermediate individuals the band is split into a series of patches, larger towards costa and anal margin; in the extreme form, the only remains of the band is a costal streak and a short anal wedge.

Male genitalia (Fig. 175): Uncus the length of the tegumen; gnathos half the length of the uncus; valvae stout with a short distal extremity and a prominent dorsal process as long as distal tip; saccus moderately long; aedeagus strongly contorted and curved at distal extremity.

Female (Fig. 105, 106): There are at least two forms of females. First one is similar to the male except that the HWV median yellow and white band is lighter and duller. In the second one the band is overcast with brown and barely visible.

ETYMOLOGY: This taxon is dedicated to Jan Sztolcman (1854-1928), a Polish explorer, and author of a two-volume chronicle of his voyages across Peru and Ecuador in the late nineteenth century. Sztolcman visited the type locality of this species, Molinopampa, in 1877.

REMARKS: *P. sztolcmani* superficially resembles *P. auristriga* from central Peru (Junín, Huánuco), which was illustrated by D'ABRERA (1988, p. 859) as *P. stilla* THIEME. The latter is however only an infrasubspecific form of *P. auristriga*, whose HWV median band is broken into a series of spots. Such a form is also found in *P. sztolcmani*. The male genitalia of *P. sztolcmani* and *P. auristriga* are markedly different and rule out any closer affinity between the two species. *P. sztolcmani* occurs in the upper cloud forest, within a very narrow altitude band comprised between 3050-3150 m. It is locally abundant.

### ***Pedaliodes sztolcmani gilvaecosta*** **PYRCZ, n. ssp.**

(Fig. 105, 106, 176)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Road Leimebamba - Balsas, near Abra de Barro Negro, 3550-3650 m, 1-15.XII.01, B. Calderón *leg.*, MUSM (ex coll. MBLI); ***Allotype*** ♀: same data as the holotype, MBLI; ***Paratypes*** (**45** ♂♂): same data as the holotype, (25 MBLI, 10 TWP, 2 BMNH, 2 MZUJ, 6 MUSM).

DIAGNOSIS: This subspecies differs from the nominotypical in that the HWV costal streak is sandy yellow instead of white.

DESCRIPTION: Male (Fig. 105): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW length: 23.5-26.5 mm; mean: 25.38 mm; n=21. FWD uniformly blackish-brown, lustrous. HW blackish-brown; in some individuals red scales along anal margin near tornus. FWV dull dark-brown; a few lighter scales on the apex; a distinct, silver costal streak one third between discal cell and apex. HWV dark chocolate brown; suffused with sparse lighter brown scales; a sandy yellow postmedian pattern, varying between a continuous band extending from costa to anal margin, a series of patches, larger towards costa and anal margin, and a short anal wedge.

Male genitalia (Fig. 176): Not differing noticeably from the nominotypical subspecies.

Female (Fig. 106): Similar to the male but lighter on the underside.

ETYMOLOGY: This subspecies owes its name to the yellow, *gilva* (Lat.), HWV costal streak, which is its distinguishing feature.

REMARKS: *P. sztolcmani* is the only example known so far of a pronophiline species represented in the Eastern (Molinopampa) and Central Cordillera (Abra Barro Negro) in the highlands of Chachapoyas by two clearly differentiated subspecies.Other species occurring in high elevation cloud forests found on the opposite banks of the Ríos Utcumbamba – Huambo valleys are morphologically unseparable and have wider geographical ranges.

### *Pedaliodes jelskii* PYRCZ, n. sp.

(Figs. 107, 108, 177)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 3000-3300 m, 01.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa, via Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., TWP; ***Paratypes*** (**51** ♂♂ & **15** ♀♀): Peru, Amazonas: **1** ♂: Molinopampa - Granada, 2650-3250, 27.VI.1998, TWP; **3** ♂♂: same data but 2650-3250 m, 29.VI.1998, TWP; **1** ♂: same data but 3115 m, 01.VII.1998, TWP; **2** ♂♂: same data but 3000-3250, 01.VII.1998, TWP; **1** ♂: same data but 3100-3400 m, 03.VII.1998, TWP; **1** ♂: same data but 3215 m, 04.VII.1998, TWP; **1** ♂: same data but 2650-3100 m, 04.VII.1998, TWP; **1** ♂: same data but 3115 m, 05.VII.1998, TWP; **1** ♂: same data but 3215 m, 06.VII.1998, TWP; **4** ♂♂: same data but 2650-3250 m, 06.VII.1998 (2 MZUJ, 2 BMNH); **3** ♂♂: same data but 3100-3250 m, 20.VIII.1998 (1 TWP, 1 MZUJ, 1 BMNH); **1** ♂: same data but 3215 m, 26.VIII.1998, TWP; **1** ♂: same data but 3265 m, 26.VIII.1998, TWP; **12** ♂♂: 2 km. from Granada, 3400 m, X.2001, B. Calderón *leg*., MUSM; **4** ♂♂: Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón *leg*., MBLI; **8** ♂♂: Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., (6 TWP, 2 GR); **2** ♂♂: Molinopampa 2900-3100 m, I.2001, B. Calderón *leg*., PB; **1** ♂: same data but IX.2002, PB; **2** ♂♂: same data but 3100-3250 m, III.2003, M. Tafur *leg*., TWP; **1** ♂: Pomacochas, La Sonada, 1500-3000 m, IX-X.2000, B. Calderón *leg*., PB; **15** ♀♀: Road Leimebamba - Balsas, 3550-3650 m, 1-15.XII.2001, B. Calderón *leg*., MBLI.

DIAGNOSIS: This species is characterised by a wide HWV median band, widening gradually from costa to anal margin. The superficially most similar species is *P. chrysotaenia* from Central Peru (Junín). *P. chrysotaenia* has s lighter

brown ventral surface of both FW and HW; a series of six white HWV submarginal dots ringed with dark-brown, not apparent in *P. jelskii*; the HWV median yellow band is produced basally in cells Rs-M1 and in Cu1-Cu2 in the nominotypical, whereas in *P. jelskii* it shows a notch oriented basally at vein Cu2. The two species are markedly different in male genitalia, which rules out their conspecifity. Otherwise, *P. jelskii* is unmistakable in the field.

DESCRIPTION: Male (Fig. 107): FW (length: 23-25 mm; mean: 24.4 mm; n=22) triangular, costa very slightly arched towards apex; apex sub-acute; outer margin very slightly concave; fringes uniformly dark-brown. HW round; outer margin wavy; fringes grayish-brown. FWD uniformly dark-brown, glossy. HWD uniformly dark-brown, basal one third hairy. FWV dark-brown, lustrous, lighter brown towards inner margin, dusted with gray scales along costa and on apex. HWV dark-brown, a tone darker than the FW; blackish-brown and dusted with sparse beige scales between a dentate submarginal line and outer margin; a wide yellow median band from costa near apex to anal margin near tornus, gradually wider towards anal margin with sharp a basal and a diffused outer margin between costa and vein Cu2, curving basally at vein M1.

Male genitalia (Fig. 177): Uncus thin, slightly less than half the length of the tegumen; gnathos long, more than half the length of the uncus and thin; valvae without dorsal process, with a wavy dorsal surface; saccus long, tubular; aedeagus massive, slightly contorted and flattened, wider in median part.

Female (Fig. 108): Dorsal and ventral surface of the wings considerably lighter brown; HWV median band milky white, the area between its diffused distal edge and the dentate submarginal line light brown dusted with white.

ETYMOLOGY: This species is named after Konstanty JELSKI (1837-1896), a Polish naturalist and companion of Jan SZTOLCMAN in their voyages across northern Peru.

REMARKS: *P. jelskii* was incorrectly illustrated by D'ABRERA (1988, p. 859) as *P. auristriga* THIEME. *P. chrysotaenia* HOPFFER, a superficially similar species, is found in the uppermost forest of central Peru (Junín, Pasco). The two differ considerably in male genitalia ruling out any closer phyletic affinity. *P. jelskii* is an uppermost cloud forest species. It has a particularly narrow vertical range being found from 3100 m to timberline at approximately 3250 m. It is not uncommon within its altitude belt and is readily attracted to various baits, similarly to other sympatric congeners.

### *Pedaliodes albicilia* PYRCZ, n. sp.

(Figs. 109, 110, 178, 200)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, 5km north of Molinopampa, 3000 m (inaccurate), 0610/7739, 20.VIII.1998, J. Grados *leg.* MUSM; ***Allotype*** ♀: Peru, Amazonas, vía Molinopampa - Granada, 3000-3300 m, 01.VII.1998, T. Pyrcz *leg*., TWP; ***Paratypes*** (**20** ♂♂ and **3** ♀♀): **3** ♂♂: Peru, Molinopampa – Granada, 3300-3400 m, 05. VII.1998, T. Pyrcz *leg*., TWP; **1** ♂: same data but 3265 m, 04.VII.1998; **4** ♂♂: same data but III.2003, A. Tafur *leg*., MUSM; **1** ♀: same data but 3100-3400 m, 03.VII.1998, T. Pyrcz *leg*., TWP; **1** ♀: same data but 3300-3400 m, 05.VII.1998, TWP; **1** ♂: Molinopampa - Granada, 2500 m (altitude data

unreliable), X.2000, B. Calderón *leg.*, MBLI; **8** ♂♂: same data but 3150-3250 m, MBLI; **1** ♂: same data but 3300 m, MBLI; **1** ♂: Molinopampa, 2500-3000 m, III.2003, M. Tafur *leg*., PB; **1** ♂: same data but TWP; **1** ♀: same data, TWP.

DIAGNOSIS: As compared to other predominantly dark-brown *Pedaliodes* this species can be recognised by the long, snow-white fringes of the FW.

DESCRIPTION: Male (Fig. 109): *Head*: eyes and palpi black; frons with a tuft of hair; palpi short, less than twice the length of the head; antennae reaching 2/5 the length of the costa, dark-brown. *Thorax*: dorsally and ventrally black. *Abdomen*: dorsally black, light dull brown ventrally. *Wings*: FW (length: 24-25 mm, mean: 24.4 mm, n=5) triangular, apex subacute, outer margin straight; fringes long (over 1 mm), snow white, black only at vein's end; androconial patch as illustrated (Fig. 200). HW oval. FWD dark chocolate brown, uniform, lustrous, scent patch small and compact, from root of M2 to Cu2. HWD uniformly dark chocolate brown; outer margin slightly undulated. FWV dull brown, lighter than on the upperside, uniform except for sparse silvery scales in the subapical area, forming a faint costal streak at 1/3 the distance between cell-end and apex. HWV dark-brown with mixed blackish and silver scales forming a faint pattern of barely noticeable median and submarginal bands; a short milky white median costal streak; a sinuate milky white postmedian costal streak extending into cell M1-M2; a row of minute, postmedian white dots parallel to the outer margin; occasionally a small yellow postmedian patch in cell Cu2-1A.

Male genitalia (Fig. 178): Uncus slightly shorter than tegumen; gnathos wide and long, approximately 2/3 the length of the uncus; valvae with an elongate distal extremity and a rudimentary dorsal process; saccus moderately long; aedeagus slightly contorted.

Female (Fig. 110): FW length: 23-25 mm, mean: 24 mm, n=3. FWD and HWD slightly lighter than the male. HWV lighter than the male, suffused with gray scales in basal area and along outer margin; a postmedian to submarginal band dusted with whitish scales concentrated along its inner edge from costa to vein M1 and in cell M2-M3; a series of white black spots with white pupils in cells Rs-M1 to Cu1-Cu2.

ETYMOLOGY: *albi* (Lat., adj.) - white; *cilia* (noun) - fringes.

REMARKS: *P. albicilia* was found in the paramo above 3200 m along the Molinopampa - Granada trail. A few individuals have been also observed within the forest near timberline. This species is sympatric and synchronic with *P. flavopunctata minima* but is easily recognizable on the wing because of its darker colour and different flight pattern, much faster and less erratic.

### ***Pedaliodes woytkowskii* PYRCZ, n. sp.**

(Figs. 111, 112, 179, 199)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa – Granada (transect), 2650-3250 m, 29.VI.1998, T. PYRCZ *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa – Granada, 3000-3200 m, IX.2002, B.

Calderón *leg*., TWP; ***Paratypes*** (**52** ♂♂ and **1** ♀): **6** ♂♂: Peru, Amazonas, Molinopampa – Granada, 2800-3000 m, III.2003, A. Tafur *leg*., TWP; **9** ♂♂: same data but 3100-3250 m; **5** ♂♂: same data but 3200-3400 m; **14** ♂♂: Molinopampa – Granada, IX.2002, B. Calderón *leg*., (10 MUSM, 4 TWP); **1** ♂: Molinopampa – Granada, 3250-3400 m, 20.VIII.1998, T. Pyrcz *leg*., TWP; **1** ♂: same data but 3065 m, 05.VII.1998; **1** ♂: same data but 2650-3100 m, 06.VII.1998; **1** ♂: same data but 3000-3300 m, 01.VII.1998; **1** ♂: same data but 3000-3300 m, 29.VI.1998; **5** ♂♂: same data but IX.2002, B. Calderón *leg*.; **1** ♂: Molinopampa – Granada, I.2001, B. Calderón *leg*., PB; **4** ♂♂: same data but IX.2002, TWP; **1** ♂: same data but V.2003, PB; **2** ♂♂ and **1** ♀ : Molinopampa – Granada, 3200-3400 m, III.2003, A. Tafur *leg*., TWP.

Diagnosis: *P. woytkowskii* is most similar to *P. albicilia*, which is darker, blackish-brown on the upperside and has conspicuous white fringes on the FW. *P. erschoffi*, another almost uniformly dark-brown species, is generally bigger, with more acute FW apex, occasionally a red suffusion on the HWV anal area and a much larger FW androconial patch. The individual variation of *P. woytkowskii* with a HWV reddish median band is readily recognisable from any other north Peruvian *Pedaliodes*.

Description: Male (Figs. 111): *Head*: frons with a tuft of short blackish hair; eyes chocolate brown covered with dense, long setae; antennae reaching 2/5 the length of the costa dorsally blackish-brown, ventrally chocolate brown, club formed gradually only slightly wider than shaft. *Thorax*: dorsally dark-brown, ventrally blackish-brown; *Abdomen*: dorsally and laterally dark-brown, ventrally pale brown. *Wings*: FW (length: 24-28 mm; mean: 25.7 mm; n=14) apex blunt, outer margin slightly convex; fringes of the FW dark-brown and white in the interspaces alternately; androconial patch as illustrated (Fig. 199). HW oval, outer margin delicately wavy; fringes dark-brown except for some white scales at apex. FWD uniformly dark-brown, lustrous. HWD basal area covered with hair-like scales, dark-brown lustrous with a chestnut sheen towards outer one third. FWV chocolate brown, slightly darker in basal area and distal one third; a faint darker brown postdiscal band from costa to vein Cu1; sparse dark-brown and grayish scales in subapical and apical area; occasionally minute whitish submarginal dots in cells R5-M1 to M3-Cu1. HWV dark-brown sparsely speckled with lighter brown scales throughout and whitish scales along outer margin; a slightly lighter area between postmedian and submarginal line; a lighter costal streak, occasionally taking the shape of a faint, narrow dark red band running along distal edge of the postmedian line.

Male genitalia (Fig. 179): Uncus thin and long, slightly longer than tegumen; gnathos thin, approximately half the length of the uncus; valvae slender without dorsal process and with a wavy dorsal surface; aedeagus massive, slightly contorted, flattened, with serrate tip.

Female (Fig. 112): Similar to the male except that a shade lighter on both surfaces and with more conspicuous whitish scaling on the entire surface of the HWV.

Etymology: This species is dedicated to Feliks Woytkowski, a Polish adventurer and naturalist, amateur botanist and entomologist (1892-1968), who lived and worked in Peru in 1929-1964 (Woytkowski 1974). Woytkowski gathered a large number of medicinal plants, molluscs, arachnids and insects, including many

butterflies from all over Peru, most of which were sold to American museums and private collectors.

REMARKS: *P. woytkowskii* occurs in the elfin forest near timberline at 3000-3200 m. It is not an endemic species of the highlands of Chachapoyas. Several individuals (not included in the type series) were collected in the Abiseo National Park (in MUSM, examined) some two hundred kilometres to the south. They possibly represent a separate subspecies. *P. woytkowskii* appears to be a rare or at least a seasonal species.

## *Corderopedaliodes* FORSTER, 1964

*Corderopedaliodes* FORSTER, 1964: 155. Type species: *Pedaliodes corderoi* DOGNIN, by original designation.

GENERIC INTRODUCTION: According to VILORIA (Ph.D.) *Corderopedaliodes* are butterflies of medium size, with slight sexual dimorphism (females noticeably larger, wing pattern slightly different). They have a characteristic HWV ripple-pattern. Male genitalia are recognised by regularly domed tegumen, robust uncus always shorter than tegumen, well developed subunci, very well developed saccus, relatively thick at base, conical, and longer than tegumen, slightly curved dorsoventrally, slightly asymmetrical laterally aedeagus and long valvae, with ampullar process moderately developed near apex, never serrate dorsally.

### *Corderopedaliodes corderoi exornata* PYRCZ, n. ssp.

(Figs. 113, 114, 180)

*Pedaliodes corderoi* DOGNIN, 1893: 367-368.
*Pedaliodes porina* (HEWITSON) form (var.) *corderoi* DOGNIN; WEYMER, 1912: 260, pl. 55, row c.
*Pedaliodes porina corderoi* DOGNIN; GABRIEL, 1932: 13.
*Corderopedaliodes corderoi* (DOGNIN); FORSTER, 1964: 155, 156, fig. 194 (male genitalia).
*Pedaliodes corderio* [*sic*] DOGNIN; D'ABRERA, 1988: 859.

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 02.VIII.1998, B. Calderón *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Rodríguez de Mendoza, Cedro, 2000-2300 m, VII-VIII.1998, T. PYRCZ *leg*., TWP; ***Paratypes*** (**1** ♂ & **3** ♀♀): **1** ♂: Peru, Amazonas, Rodríguez de Mendoza, Qda. Pirruro, 28.VIII.1998, T. PYRCZ *leg*., TWP; **1** ♀: Rodríguez de Mendoza, Cedro, 2200 m, 16.XII.1998, B. Calderón, MUSM; **1** ♀: Rodríguez de Mendoza, Cedro, 2000-2300 m, VII-VIII.1998, T. PYRCZ *leg*., TWP; **1** ♀: Qda. Totomal, near Rodríguez de Mendoza, 16.X.1998, B. Calderón *leg.* MBLI.

DIAGNOSIS: The male of this subspecies has a smaller FWD subapical patch dusted with brown compared to the nominotypical. The female has a lighter, pale yellow outer half of the HWD, compared to the all brown HWD of the nominotypical.

DESCRIPTION: Male (Fig. 113): *Head*, *thorax* and *abdomen*: same as is the nominotypical subspecies. FW (length: 25 mm, mean: 25 mm, n=2) dorsal surface

medium brown; oblique subapical white band suffused with brown scales spreading from the edges towards its central part. HWD slightly lighter than the FW, turning beige towards distal one third. FWV medium brown; dark-brown ripple pattern in median area; magenta scales in apical area; white oblique subapical band wider than on the upperside, without any darker suffusion. HWV medium brown in basal two thirds, whitish beyond, brown again on the outer margin; uniform brown ripple-like pattern covering the entire surface of the wing.

Male genitalia (Fig. 180): As illustrated, not differing noticeably from the nominotypical subspecies.

Female (Fig. 114): White FW subapical band wider than in the male without any brownish suffusion. HWD medium brown, gradually lighter in distal two thirds, pale, turning light yellow along brown submarginal band between veins M2 and Cu2.

ETYMOLOGY: *exornata* (Lat. adj.) – colourful, referring to the yellow HWD pattern of the female, not found in other populations of *P. corderoi*.

REMARKS: *P. corderoi* is a widespread species occurring in low to mid-elevation cloud forests in the northern Andes. Although not uncommon, it is always outnumbered by some of the sympatric congeners. *P. corderoi* is exceptionally rare only in the northern part of its range. Only a handful of individuals were collected in Colombia and in Venezuela (PYRCZ & VILORIA in press). It is much more common in eastern Ecuador and northern Peru, which appears to be its southern distribution limit.

## *Panyapedaliodes* FORSTER, 1964

*Panypapedaliodes* FORSTER, 1964: 157. Type species: *Pronophila panyasis* HEWITSON, by original designation.

GENERIC INTRODUCTION: According to VILORIA (Ph.D.) *Panyapedaliodes* are butterflies of medium size. Some species are sexually dimorphic (*e. g.*, *P. muscosa* (THIEME)). HWV is characteristically mossy-like or marble-patterned. Male genitalia are somewhat variable but definitely distinct from other genera with a tegumen moderately domed, well developed uncus, subunci varying from absent (*P. puma* (THIEME)), through rudimentary (*P. jephtha* (THIEME)), to present, but short (the rest of species), and a small to medium-sized saccus. The aedeagus is straight to slightly curved both laterally and dorsoventrally, in some cases contorted but never as much as in *Pedaliodes* (except for *P. puma*). Valvae are semi-rectangular (most species) to semi-fusiform (*P. jephtha*, *P. puma*), devoid of dorsal tooth-like processes, ampullar process rarely present (*P. muscosa* or rudimentary.

### *Panyaedaliodes muscosa muscosa* THIEME, 1905

[*Pedaliodes muscosa* STAUDINGER, *in litt.*, THIEME, 1905: 83.]

*Pedaliodes muscosa* THIEME, 1907: 78, 83-84, pl. 2, fig. 17.
*Muscopedaliodes muscosa* (THIEME); FORSTER, 1964: 154, 155, fig. 185 (male genitalia).

REMARKS: *P. muscosa* was described from Bolivia. It also occurs in Peru, Ecuador and Colombia (ADAMS 1986; PYRCZ 1999; PYRCZ & RODRÍGUEZ in press). The individuals collected in the area of Mendoza and Jorge Chavez belong to the nominotypical subspecies. A local subspecies found in Napo (Ecuador) is outstanding for a subapical orange band showing on the FWD in the female (PYRCZ & RODRÍGUEZ in press). *P. muscosa* inhabits the lower belt of the cloud forest, at or below 2000 m, usually inside dense primary forest (PYRCZ & WOJTUSIAK 1999).

### *Panyapedaliodes drymaea* (HEWITSON, 1858)

*Daedalma drymaea* HEWITSON, [1858]: 86, pl. 43, fig. 6.
*Pedaliodes angularis* BUTLER, 1868: 176, pl. 4, fig. 7 (synonymy established by THIEME, 1905: 81).
*Pronophila drymaea* (HEWITSON); KIRBY, 1879: 114.
*Pedaliodes drymaea* (HEWITSON); THIEME, 1905: 77, 81, 82.
*Spinantenna drymaea* (HEWITSON); HEIMLICH, 1972: 184.

REMARKS: *P. drymaea* occurs in Colombia (all three Cordilleras, except the northern part of the Eastern Cordillera), Ecuador (western and eastern slopes), Peru (eastern slopes, also on the left bank of the Río Marañon in Cajamarca) and in Bolivia. This species is an indicator of secondary areas. Even though its biology has not been studied, field observations indicate that its larvae feed on secondary grasses, not on primary cloud forest bamboosoids. Therefore, *P. drymaea* is associated throughout its wide range with non-forested habitats and heavily intervened areas found within forests. It is generally extremely common and persistent throughout the year wherever it occurs. It forms several subspecies which have not been described so far. Particularly the western Colombian population clearly deserves a subspecific status (PYRCZ in prep.). On the other hand, the population found in the area of Chachapoyas agrees with the types coming from "Guayaquil", reading southwestern Ecuador.

### *Panyapedaliodes panyasis* (HEWITSON, 1862)

*Pronophila panyasis* HEWITSON, 1862: 7, pl. 3, fig. 22 .
*Pedaliodes panyasis* (HEWITSON); BUTLER, 1867: 267.
*Panyapedaliodes panyasis* (HEWITSON); FORSTER, 1964: 157, 158, fig. 197 (male genitalia).
*Spinantenna panyasis* (HEWITSON); HEIMLICH, 1972: 184.

REMARKS: *P. panyasis* is a widespread species. It is distributed between the Venezuelan Cordillera de La Costa and the Bolivian Yungas. ADAMS & BERNARD (1981) report it as a rare species. It is in fact locally common, although never as abundant as its congeners *P. phila* and particularly *P. drymaea*. *P. panyasis* inhabits mid-elevation cloud forests at 2200-2600 m (PYRCZ & WOJTUSIAK 1999,

2002). In southern Ecuador it is replaced at higher elevations by *P. traceyannae* (PYRCZ & VILORIA), whereas in central and southern Peru and Bolivia its upper parapatric replacement is *P. mara* (THIEME). *P. mara* has not been collected so far in the highlands of Chachapoyas but its presence there is very likely given its distribution pattern.

### *Panyapedaliodes tomentosa* WEYMER, 1912

*Pedaliodes tomentosa* WEYMER, 1912: 255, pl. 54, row b.
*Panyapedaliodes tomentosa* (WEYMER); ADAMS, 1983: 474.

REMARKS: ADAMS (1986) synonymized *P. tomentosa* (THIEME) described from Colombia with the Bolivian taxon *P. silpa* (THIEME). PYRCZ & Viloria (1999) argued that the two taxa are not conspecific. *P. tomentosa* occurs on both slopes of the Andes in Ecuador and the few specimens collected in the surveyed area in Pomacochas and around Rodríguez de Mendoza certainly belong to this species. *P. tomentosa* is an uncommon inhabitant of mid-elevation mostly primary cloud forests (PYRCZ & WOJTUSIAK 1999).

### *Panyapedaliodes stellata* PYRCZ, n. sp.

(Figs. 115, 116, 182)

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas: Molinopampa - Granada, 2800-3100 m, 26.VIII.1998, T. Pyrcz *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas: Molinopampa - Granada, 2800-3100 m, 26.VIII.1998, T. Pyrcz *leg*., TWP; ***Paratypes*** (**23** ♂♂): **1** ♂: Peru, Amazonas: Molinopampa - Granada, 2800-3100 m, 26.VIII.1998, T. PYRCZ *leg*., TWP; **1** ♂: Molinopampa - Granada, 3100 m, X.2000, B. Calderón *leg.*, MBLI; **11** ♂♂: same data but 3150-3250, (6 MUSM, 5 MB); **2** ♂: same data but 3200 m, MBLI; **1** ♂: Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., GR; **2** ♂♂: Molinopampa, XI.2000, B. Calderón *leg*., PB; **2** ♂♂: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg*., PB; **1** ♂: Molinopampa, 2900-3000 m, IX.2002, B. Calderón *leg*., PB; **2** ♂♂: same data but 3100-3250 m, III.2003, M. Tafur *leg*., TWP.

DIAGNOSIS: FW and HW margins appear dentate due to conspicuously marked fringes - yellow between the veins and brown and noticeably longer at the veins. This feature, the lack of androconial patch on the FWD and a unique marble-like HWV pattern make *P. stellata* unmistekable.

DESCRIPTION: Male (Fig. 115): *Head*: eyes chocolate brown, hairy; palpi covered with black hair, three times as long as head; antennae less than half the length of the costa, dorsally brown, ventrally yellowish, club twice as wide as shaft and slightly darker, composed of 10 segments. *Thorax*: blackish-brown; legs grayish with white scales. *Abdomen*: dorsally blackish-brown, ventrally gray. *Wings*: FW (length: 23-25 mm; mean: 24.2 mm, n=11) costa arched, apex acute, outer margin truncate, outer margin dentate below apex; fringes gray-brown on the veins, yellowish, shorter in between. HW oval, outer margin scalloped; fringes alternately yellow and grayish-brown. FWD varying between chestnut and dark-brown, a shade darker in median area, glossy. HWD uniformly chestnut or dark-

brown, glossy. FWV chocolate brown, lustrous; costa, apex and outer margin dusted with dark-brown, pale violet scales; a series of tiny yellowish submarginal dots parallel to outer margin, one in each cell; occasionally faint brick red patch in postdical area. HWV mottled with gray, violet, brown and yellowish scales throughout without any noticeable pattern, except for the lighter postdiscal to submarginal band due to denser yellow scaling; a milky white postdiscal spot in cell M2-M3; faint yellow submarginal dots, one in each cell; marginal area slightly darker.

Male genitalia (Fig. 182): Uncus long, slightly longer than tegumen; gnathos absent; valvae slender, gradually narrowing towards distal extremity, without dorsal process; aedeagus straight and slender.

Female (Fig. 116): Slightly smaller than the male (FW length: 22 mm). FWD and HWD lighter, chestnut. FWV and particularly HWV duller, considerably lighter and less contrasting.

ETYMOLOGY: The epithet of this species, *stellata* (Lat., adj.), meaning full of stars, is derived from the characteristic HWV pattern.

REMARKS: *P. stellata* is placed tentatively in the genus *Panyapedaliodes* based on its characteristic mottled HWV and the male genitalia characterised by the absence of subunci (VILORIA, Ph.D.). Interestingly however, the lack of subunci characterises also the endemic genera of the northern Andes, *Paramo*, *Dangond* and *Redonda* (all) ADAMS & BERNARD. *P. stellata* has been collected so far only along the Molinopampa - Granada trail at 3000-3100 m on a ridge where cloud forests intergrades with patchy paramo. Individuals of *P. stellata* fly in non-forested areas keeping close to the ground. They are equally attracted to moisture, urine and dung. *P. stellata* is seemingly rare or at least seasonal.

### ***Panyapedaliodes phila certa* PYRCZ, n. ssp.**

(Figs. 117, 118, 181)

*Pronophila phila* HEWITSON, 1862: 2-3, pl. 1, figs. 3, 4.
*Pedaliodes phila* (HEWITSON); BUTLER, 1867: 267.
*Panyapedaliodes phila* (HEWITSON); ADAMS, 1986: 243, 277.

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas: Molinopampa - Granada, 2965 m, 01.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón *leg.*, TWP; ***Paratypes*** (**56** ♂♂ & **6** ♀♀): **2** ♂♂: Peru, Amazonas: Molinopampa - Granada, 2800-3100 m, 26.VIII.1998, TWP; **6** ♂♂: same data but 2915 m, 29.VIII.1998 (2 MUSM, 2 BMNH, 2 MZUJ); **1** ♂: same data but 2650-3250 m, 27.VI.1998, TWP; **1** ♂: same data but 2815 m, 29.VI.1998, TWP; **1** ♂: same data but 2650-3250, 29.VI.1998, TWP; **1** ♂: same data but 2965 m, 03.VII.1998, TWP; **1** ♂: same data but 2815 m, 04.VII.1998, TWP; **1** ♂: same data but 2815 m, 05.VII.1998, TWP; **1** ♂: same data but 2965 m, 06.VII.1998, TWP; **4** ♂♂: same data but 3000-3250 m, 01.VII.1998, TWP; **1** ♂: same data but 2815 m, 01.VII.1998, TWP; **1** ♂: same data but 2965 m, 01.VII.1998, TWP; **3** ♂♂: same data but 2650-3250 m, 06.VII.1998, TWP; **1** ♂: same data but 2865 m, 01.VIII.1998, TWP; **1** ♂: same data but 2800-3100 m, 20.VIII.1998, TWP; **1** ♂: same data but 2765 m, 27.VIII.1998, TWP; **2** ♂♂: Rodríguez de Mendoza, 1600-1800 m, B. Calderón *leg.*, MBLI; **2** ♂♂: El Oso, near Laguna de Pomacochas, 3000 m, VI.2000, B. Calderón *leg.*, MBLI; **12** ♂♂: Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón *leg.*, MUSM; **1** ♂: same

data but 3050 m, MBLI; **1** ♂: same data 3000 m, MBLI; **1** ♂: 2 km. from Granada, 3400 m, X.2001, B. Calderón *leg.*, MBLI; **1** ♂: Molinopampa - Granada, 3100 m, 23.VIII.1998, T. Pyrcz *leg*., PB; **1** ♂: same data but 3000 m, 27.VI.1998, PB; **1** ♂: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg*., PB; **1** ♂: Molinopampa, 2900-3000 m, IX.2002, B. Calderón *leg*., PB; **1** ♂: Molinopampa, XI.2000, B. Calderón *leg*., PB; **5** ♂♂: Molinopampa, Granada, 3000-3200 m, IX.2002, B. Calderón *leg*., GR; **1** ♀: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg*., PB; **1** ♀: Molinopampa, 2900-3000 m, IX.2002, B. Calderón *leg*., PB; **2** ♀♀: Molinopampa, XI.2000, B. Calderón *leg*., PB; **1** ♀: Molinopampa - Granada, 3150-3250 m, X.2000, B. Calderón *leg.*, MBLI; **1** ♀: same data but 3000-3200 m, TWP.

Diagnosis: This subspecies differs from the nominotypical subspecies and *pilla* Lamas in that the FWD oblique orange band is slightly narrower and darker, more intense orange, and also in that the HWD apical patch is narrower. As compared to an undescribed subspecies from southern Ecuador, the FWD orange band has the same sheen but is narrower in *certa* and slightly arched, whereas in the Ecuadorian subspecies it is straight.

Description: Male (Fig. 117): *Head*, *thorax* and *abdomen*: same as in other subspecies. *Wings*: FW length: 23-25 mm, mean: 23.7 mm, n=37; fringes alternately brown and light orange. HW round, outer margin scalloped; fringes light orange from apex to vein M3, brown from vein M3 to tornus. FWD blackish brown; an oblique postmedian to submarginal orange band approximately 3-4 mm wide, extending from costa, along outer edge of discal cell to tornus. HWD blackish brown; a marginal orange patch extending in most individuals from apex to cell M2-M3, occasionally to M3-Cu1. FWV dark brown; orange band slightly lighter and wider than on the upperside; apex dusted with magenta and beige scales. HWV dark brown from base to postmedian line, dusted with lighter scales along postbasal and postmedian line; a light brown band from postmedian to submarginal line with diffuse darker patches near costa and in cell M2-M3. Marginal area dark brown dusted with magenta scales.

Male genitalia (Fig. 181): As illustrated, not differing significantly from the nominotypical subspecies.

Female (Fig. 118): Differing slightly from the male. FWD oblique orange band wider and lighter. HWV pattern lighter, dark-brown pattern is restricted to basal area, distal half of discal cell and along outer margin.

Etymology: *certa* (Lat., adj.) certain.

Remarks: There is some confusion in literature concerning the type locality of *P. phila* resulting from an error in the original description. Hewitson (1862) stated that *P. phila* is from Colombia (New Granada). However, the original figure shows a male, whose colour pattern agrees with the Bolivian population, particularly in the width and shape of the FWD band, and the extent of orange markings on the HWD apex. Adams (1986) first pointed out correctly that the type specimen of *phila* [BMNH, examined], bearing no locality data, is from Bolivia. Adams (*op. cit.*) however also claimed that Colombian populations represent the subspecies *philaenis* described by Thieme (1905) from northeastern Ecuador and that *combeima* Krüger (1924) described from the Colombian Central Cordillera is its synonym. Pyrcz (1999) demonstrated that Adams' conclusion was erroneous and

that *combeima* is in fact a good subspecies differing consistently from *philaenis* in a conspicuous orange patch on the HWD apex, whereas *philaenis* has only a few orange scales on the HWD or no trace of orange at all. Another, as yet undescribed subspecies occurring in southeastern Ecuador (Zamora-Chinchipe, Morona-Santiago) has similar orange markings on the HWD as *combeima* but a consistently wider FWD orange band (VILORIA & PYRCZ in prep.). LAMAS (2003) described *P. phila pilla* from Cusco. The holotype (type locality: Pillahuata) and all of the paratypes but one are from the valley of Kosñipata in the watersheds of Madre de Dios. This subspecies is very close in facies to the Bolivian nominotypical. The specimen from Machu Picchu included by LAMAS in the type series actually belongs to *certa*, which reaches in the valley of Urubamba its southern distribution limit.

*P. phila* can be recognised immediately by the wide, oblique FWD postmedian band and the orange patch on the HWD apex. There are only two similar species: *P. praxithea*, which is however almost twice as big, and *P. monticola*, which has a markedly different HWD pattern. *P. monticola* has not been found in the highlands of Chachpoyas so far but it occurs in central Peru in the same habitat and elevational band as *P. phila*. *P. phila* is relatively common, wherever it occurs, but never really abundant. It inhabits mid to high elevation cloud forests.

### *Parapedaliodes* FORSTER, 1964

*Parapedaliodes* FORSTER, 1964: 153. Type species: *Pronophila parepa* HEWITSON, by original designation.

GENERIC INTRODUCTION: According to VILORIA (PhD) they are butterflies of medium size, not dimorphic. Androconial patch of *Parapedaliodes* always exceeds discal area of forewing upperside, broadly entering postdiscal region. Ocellar elements are rudimentary, but always present on postdiscal region of hindwing underside. Hindwing veins Rs, M1, M2 and M3 are relatively long, but discal cell does not exceed half the length of the wing. Male genitalia are characterised by flat-domed tegumen, well developed uncus, shorter than tegumen, more or less straight, short subunci, saccus as long as tegumen + uncus, tubular. The aedeagus is very long (twice to three times the length of the saccus) and straight apically processed. Valvae are subrectangular to subfusiform, dorsally devoid of tooth-like processes, but ampullar process present subapically.

### *Parapedaliodes parepa parepa* (HEWITSON, 1862)

*Pronophila parepa* HEWITSON, 1862: 2, pl. 1, figs. 1, 2.
*Pedaliodes parepa* (HEWITSON); BUTLER, 1867: 267.
*Parapedaliodes parepa* (HEWITSON); FORSTER, 1964: 153, 155, fig. 189 (male genitalia).

REMARKS: The nominotypical *P. parepa* occurs on the western slopes of the Andes in southern Ecuador and northern Peru (Cajamarca, Lambayeque, La

Libertad, Ancash) and in the valley of the Río Marañon as far south as Ancash and Huánuco. *P. parepa milvia* THIEME is found only on the western slopes of the Andes in central Peru (Lima). Similarly to *P. drymaea*, *P. parepa* occurs in secondary habitats. In the northern part of the surveyed area, around Pomacochas, these two species are equally common in pastures and forest clearings. However, in the area of Molinopampa *P. parepa* is rare, perhaps being at the southeastern limit of its range. It was reported only in the valley of the Río Ventilla, a tributary of the Río Utcubamba. PELZ (1997) described its early stages.

### *Pherepedaliodes* FORSTER, 1964

*Pherepedaliodes* Forster, 1964: 149. Type species: *Pedaliodes pheretiades* Grose-Smith & Kirby, by original designation.

GENERIC INTRODUCTION: According to VILORIA (Ph.D.) *Pherepedaliodes* are butterflies of medium size, not sexually dimorphic. Male genitalia are characterised by low-domed tegumen, well-developed uncus, curved downwards and long (sometimes longer than tegumen), subunci either absent or very short and small, almost globular saccus. The aedeagus is basally compressed, long and thick, more or less straight but very asymmetrical, although not contorted, not entirely sclerotised and dorsally very membranous, bearing aggregations of abundant spines distally. Valvae are more or less lanceolate, in one species smooth and devoid of processes, heavily processed in the remaining two species, ampullar process very spiny, developed up to a claw-like structure in one species.

### *Pherepedaliodes naevia* THIEME, 1905

*Pedaliodes naevia* THIEME, 1905: 50, 64, pl. 3, fig. 26.
*Pherepedaliodes naevia* (THIEME); FORSTER, 1964: 150, fig. 180 (male genitalia).

REMARKS: *P. naevia* was described from southern Ecuador and for nearly a hundred years was known only from a handful of specimens obtained in the valley of Zamora. Recently however, it has been discovered much farther north, in the upper valley of Napo, and during the course of this study, in northern (Amazonas, San Martín) and central Peru (Junín). It is an inhabitant of dense lower montane forests (1400-1800 m), rarely observed, possibly because of the inaccessibility of its habitat.

### *Punapedaliodes* FORSTER, 1964

*Punapedaliodes* Forster, 1964: 148. Type species: *Pedaliodes albopunctata* WEYMER, by original designation.

GENERIC INTRODUCTION: According to VILORIA (Ph.D.) *Punapedaliodes* are butterflies of small to medium size with slight sexual dimorphism. Antennal club

is formed gradually and is broader than in *Pedaliodes*. Androconial patches are absent. Ocellar elements are present on HWV as tiny postdiscal ocelli, on FW simplified as postdiscal series of white or yellowish white dots visible on both sides. Male genitalia are characterised by low-domed, almost flat tegumen, uncus shorter than tegumen, robust and more or less straight; subunci thin, reaching half the length of the uncus, and saccus longer than the tegumen, tubular, slightly constricted at mid-length. The aedeagus is slightly asymmetrical and slightly contorted, laterally compressed at base, large and broad, membranous at distal extremity, with apical aggregation of multiple tiny spines. Valvae are subtriangular, with a rudimentary flat protuberance dorsally near apex, otherwise devoid of any conspicuous process.

### ***Punapedaliodes albopunctata* (WEYMER, 1890)**

(Fig. 183, 201, 202)

*Pedaliodes albopunctata* WEYMER, 1890: 110-111, pl. 3, fig. 9.
*Punapedaliodes albopunctata* (WEYMER); FORSTER, 1964: 148-149, 150, fig. 178 (male genitalia, misidentification of *P. flavopunctata* STAUDINGER).
*Altopedaliodes albopunctata* (WEYMER); LAMAS, [1997]: 50.

REMARKS: LAMAS (1997) explained that *albopunctata* WEYMER and *flavopunctata* Staudinger are not conspecific because they are sympatric in the Peruvian departments of Ancash and La Libertad. More precisely, as it has been found out during this study, these two species are rather parapatric along an altitude gradient than sympatric. *P. albopunctata* occurs in open communities such as patchy humid puna and secondary paramo-like grassland formations below the upper cloud forest limit. It was found at 2400-2500 m along the road from Tingo to Ocol and along the trail from Molinopampa to Granada at 2800-3000 m. It does not occur in primary *ichu*-puna above 3200 m which is the habitat of *P. flavo-punctata*. The presence of *P. albopunctata* was confirmed in the northern Peruvian departments of Ancash, La Libertad (LAMAS 1997) and Amazonas, but the distribution pattern indicates that it certainly occurs in the highlands of San Martín as well. Male genitalia as illustrated (Fig. 183).

### ***Punapedaliodes flavopunctata minima* PYRCZ, n. ssp., comb. rest.**

(Figs. 119, 120, 184)

*Pedaliodes albopunctata* var. *flavopunctata* STAUDINGER, 1894: 73.
*Punapedaliodes albopunctata* (WEYMER) form *flavopunctata* STAUDINGER; FORSTER, 1964: 149.
*Altopedaliodes flavopunctata* (STAUDINGER); LAMAS, [1997]: 50.

TYPE SERIES:

***Holotype*** ♂: Peru, Amazonas, Molinopampa - Granada, 3300-3400 m, 05.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., MUSM; ***Allotype*** ♀: Peru, Amazonas, Molinopampa - Granada, 3300-3400 m, 06.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; ***Paratypes*** (**42** ♂♂ and **5** ♀♀) **6** ♂♂ and **1** ♀: Peru, Amazonas, Molinopampa - Granada, 3300-3400 m, 03.VII.1998, T. Pyrcz & J. Wojtusiak *leg*., TWP; **2** ♂♂: same data

but 29.VI.1998, TWP; **14** ♂♂ and **3** ♀♀: same data but 05.VII.1998 (10 MUSM, 2 MZUJ, 2 BMNH); **4** ♂♂ and **1** ♀: same data but 06.VII.1998, TWP; **8** ♂♂: same data but 20.VIII.1998, TWP; **2** ♂♂: same data but 26.VIII.1998, TWP; **2** ♂♂: Molinopampa - Granada, 3400 m, 30.VIII.1998, T. Pyrcz *leg*., PB; **2** ♂♂: Molinopampa, XI.2000, B. Calderón *leg*., PB; **1** ♂: Molinopampa, 2900-3100 m, I.2001, B. Calderón *leg*., PB; **1** ♂: Rodríguez de Mendoza, 1999-2000?, B. Calderón *leg*., PB.

DIAGNOSIS: This subspecies is considerably smaller than the nominotypical (*flavopunctata*: 24-25 mm; mean 24.33 mm, n=19). Upperside yellow dots are faint or absent. The underside pattern is consistently darker.

DESCRIPTION: Male (Figs. 122, 123): *Head*, *thorax* and *abdomen*: same as in the nominotypical subspecies. *Wings*: FW (length: 21-23 mm, mean = 21.66 mm, n=38). FW apex acute; outer margin straight. FWD chestnut with a heavy golden sheen. HWD chestnut with a golden sheen. FWV chestnut with a golden sheen; faint submarginal whitish dots, in some individuals not apparent in cells M1-M2, M2-M3 and M3-Cu1; apex and outer margin suffused with grey and brown fine scaling. HWV medium brown liberally speckled with fine darker scaling; a faint postbasal dark brown line; a dark brown postmedian line roughly parallel to outer margin; a row of two to five milky white submarginal dots, variable in size, in some individuals not apparent except for two always present in cells M3-Cu1 and Cu1-Cu2; a dark brown submarginal line, irregular from apex to vein M3, parallel to outer margin from vein M3 to tornus.

Male genitalia (Fig. 184): As illustrated, not differing noticeably from the nominotypical.

Female (Fig. 124): Sexual dimorphism is slight and expressed only in the duller colours of the upperside and lighter ventral surface of the female.

ETYMOLOGY: *minima* (Lat., adj.) the smallest, for the small size as compared to the nominotypical subspecies.

REMARKS: LAMAS (1996) correctly observed that the name *flavopunctata* STAUDINGER has priority over *flavopunctata* KRÜGER, a fact overlooked by ADAMS (1986). He also pointed out that it applies to a species separate from *P. albopunctata*, contrary to the opinion of FORSTER (1964). D'ABRERA (1988) illustrated a typical Bolivian specimen of *P. flavopunctata* under the name *albopunctata*. Bolivian and southeast Peruvian (Puno, Cusco) individuals belong to the nominotypical subspecies. *P. flavopunctata minima* is known so far only from the type locality, the Molinopampa - Granada trail. It occurs in the puna grassland dominated by *Stipa ichu* (Poaceae) above the timberline, from 3250 m to at least 3500 m. It is the commonest butterfly in this kind of habitat. Males fly actively during short periods of sunshine low above grass and rocky slopes. When chased after they fall into *ichu* tussock rather than try to fly away. Females behave in the same way but their flight is less energetic. Cryptic underside of *P. flavopunctata* makes the individuals of this species invisible while at rest with their wings folded behind. Males are attracted to the faeces of carnivorous animals.

## DIVERSITY AND DISTRIBUTION PATTERNS

### SPECIES RICHNESS

Species richness is the simplest way of evaluating diversity. Two diversity indices expressed in species richness within a given area are used: *alpha* ($\alpha$) and *gamma* ($\gamma$). The *alpha* index refers to the diversity at a local scale, within a particular area or ecosystem (WHITTAKER 1972). The *gamma* index is a measure of diversity at a large scale, of a region, landscape, or ecosystems combined (CORNELL 1985; BECCALONI & GASTON 1995). The *beta* diversity index, contrary to the two previous indices, it is not expressed in numbers of species because is a rate of proportion, normally represented in terms of the similarity index or of a species turnover rate.

### MATERIAL AND METHODS

For the purposes of this zoogeographical analysis, a simple diversity measure, called *potential altitudinal transect* (*pat*), is proposed. It aims at fine-tuned geographic diversity patterns and is designed particularly for the taxa linked with mountainous habitats that demonstrate high species turnover ratio with elevation and intricate horizontal distributions. *Pat* is a combination of within and between area indices. On the one hand, similarly to a *beta* index, it is elaborated based on data gathered along a transect. However, similarly to an *alpha* index it is expressed in terms of species richness. *Pat* is the total number of species recorded along a transect extending over the entire altitudinal span of the measured taxon (genus, tribe, sub-family etc.) along the slope of a given mountain or range. It takes into account all the species sympatric and parapatric along an altitude gradient being therefore a continuum of assemblages of potentially interactive species. It excludes allopatric species, isolated physically and not interactive. The word "potential" refers to the fact that *pat* does not necessarily refer to any specific transect actually carried out, which is technically very difficult, but can be a combined set of partial transects or data.

The potential altitudinal transect is elaborated in order to avoid methodological artefacts linked with other within-area measures, especially the *alpha* index. The *alpha* index is the most popular method in evaluating the patterns of species richness and identifying the hot spots of diversity because it is easy to standardize, and is considered relatively free from methodological artefacts (LEES 1996). However, the patterns of spatial diversity on a wider scale constructed based on the total number of species obtained in a standard area (BECCALONI Ph. D.; LEES 1996) may produce artificial hotspots of diversity that are merely products of random mapping. Standard grids are not sensitive to local topography and therefore will produce numerous distortions. As a result this method may lead to merging allopatric and mutually exclusive faunas, particularly the faunas of two sides of a sharp zoogeographical barrier: opposite sides of a deep valley or slopes

of a high ridge. Thus, standard grids are likely to inflate figures and create artificial hotspots of diversity. The *gamma* index is inadequate for fine-tuned zoogeographical analysis. Although some authors did attempt to use it to evaluate biodiversity in mountainous areas (ADAMS 1985), the comparison of the species richness between mountain ranges largely differing in surface is irrelevant and may only yield a very general, unquestionable conclusion that area is positively correlated with diversity. Particularly, the use of man-made divisory lines, especially boundaries between countries, makes no biological sense, and is rather a political tool resulting in the creation of the so-called mega-diverse countries (LAMAS 1994). The *pat* method of evaluating diversity in montane habitats is being currently studied and will be discussed in detail in a forthcoming paper (PYRCZ & WOJTUSIAK in prep.)

## RESULTS

Herein, a data matrix for 10 north Andean *pat* is presented (Table 1, p. 163). The *pat* "Granada" is calculated based on distributional data of all the species reported for the highlands of Chachapoyas regional check list. Eight species, found exclusively in the western part of the surveyed area (*P. morenoi*, *P. xanthosphenisca*, *L. dyari*, *Pr. rosenbergi*, *Pr. attali* and *E. porphyria transmaraniona*) or endemic to the Pomacochas area (*P. stuebeli* and *Pr. bernardi*), are excluded because their distribution pattern indicate that they do not occur along the Granada *pat*.

The figure obtained for the Granada *pat*, 104 species, is significantly higher compared to all Venezuelan and Colombian *pat* and similar to Zamora in southern Ecuador. The most straightforward conclusion is a noticeable latitudinal pattern. There is a steady, nearly linear decrease of diversity from the registered maximum in northern Peru and southern Ecuador towards northern part of the continent. It is however premature to draw any further conclusions based on that. There is currently not enough data on distributions of Pronophilini butterflies from central and southern Peru, Bolivia and north Argentina as carry out a thorough diversity pattern analysis on the Andean scale. This issue will be discussed in a separate paper (PYRCZ in prep.).

## ALTITUDINAL DISTRIBUTIONS

Altitudinal distribution patterns of Neotropical satyrines have attracted the attention of researchers since the early XX century. FASSL (1911, 1915 and 1918) was the first to notice that the Colombian montane brown butterflies occur within well-defined and narrow bands of altitude. He defined the upper and lower distribution limits for most of the then known species occurring on western and eastern slopes in all three Colombian Cordilleras. FASSL (*op. cit.*) pointed out that the same species occupy rather similar bands of altitude in different parts of the Andes. Unfortunately, FASSL did not explain the kind of sampling methodology he

used and confused the identity of several species that he discussed. KRÜGER (1924, 1925) described several new taxa of satyrines and also paid a great deal of interest to their altitudinal distribution in the Colombian Cordilleras. His taxonomic data are more reliable than FASSL's but the altitudinal data are not as precise. Subsequent authors' works dealing with the tribe Pronophilini, BROWN (1941, 1944, 1945), HAYWARD (1958, 1973) and FORSTER (1964), did not attach any attention to the patterns of altitudinal distributions. Even if they published some elevational data, they usually based on second hand information. The renewed interest in this issue came with the articles of ADAMS & BERNARD (1977, 1979, 1981) and ADAMS (1985, 1986) who treated the analysis of altitudinal distribution patterns in the tribe Pronophilini as one of the dominant issues of their research. ADAMS & BERNARD (*op. cit.*) defined upper and lower maxima of elevational bands occupied by every studied species, but they did not carry out any quantitative altitudinal sampling. RAGUSO & GLOSTER (1993) sampled for butterflies along an altitude gradient in western Ecuador and obtained partial distribution data for 13 species of Pronophilini.

PYRCZ & WOJTUSIAK (1999, 2002) for the first time used a standard method of quantitative altitudinal sampling. They applied it in 1996 in the Cordillera de Mérida in Venezuela, in 1997 in the Colombian Western Cordillera and in northwestern Ecuador (PYRCZ & WOJTUSIAK in prep.). Altitudinal transects data are generally used to evaluate the *beta* diversity, that is assessing the changes in biodiversity and community structure at different altitudes by such indicators as species richness, diversity, abundance, dominance, and equitability (JANZEN *et al*. 1976; LAWTON *et al*. 1987; WOLDA 1987; HOLLOWAY *et al*. 1990; SÁNCHEZ-RODRÍGUEZ & BAZ 1995; PYRCZ & WOJTUSIAK 1999, 2002). They are also used in the analysis of altitudinal distribution patterns of individual species and interspecific relations in taxonomical studies (HANSKI 1983; ADAMS 1985; WILSON FERNANDES & PRICE 1988; HANSKI & NIEMELA 1990; PYRCZ & WOJTUSIAK 1999, 2002).

## MATERIAL AND METHODS

An altitudinal transect was set up along the old Inca trail leading from Molinopampa across the highlands to the village of Granada between 2550 m-3250 m. 15 altitudinal stations were established with an altimeter each 50 m. At each station one baited trap was placed. Every trap was provided each two days with carnivorous animal dung. The authors walked the trail every two days during two periods of three weeks in the period June-August 1998. Each trap was checked for pronophiline butterflies. All individuals were placed in paper envelopes and duly marked with date and altitude in situ.

## INDIVIDUAL SPECIES ALTITUDINAL DISTRIBUTION PATTERNS

A total of 1086 individuals belonging to 45 species and 20 genera of pronophiline butterflies were recorded. Their altitudinal distribution pattern is shown in Fig. 206.

The most numerous species is *Pedaliodes sophismata* with 243 individuals. It accounts for nearly a quarter (22.37%) of the total sample. It is also the species with the widest altitudinal range - 700 m. The second most numerous species in the sample is *Pedaliodes erschoffi* with less than half as many (114) individuals and a 550 m wide altitudinal range. The third, *Pronophila colocasia* with 90 individuals, has a 550 m wide altitudinal range and notably, a very sharp peak of abundance at 2650 m accounting for nearly 50% of all collected individuals. The fourth is *Pedaliodes aureola* with 73 individuals, 550 m wide range and two abundance peaks at 2800 and 2950 m. The fifth, *P. peruda* with 65 individuals, was recorded along 450 m altitude span along the transect but elsewhere found to 2300 m. It is worth pointing out that the seventh most abundant species, *P. drymaea* with 64 individuals, is an indicator of secondary and heavily disturbed areas. It is very common in the pastures below the lowest point of the transect, where it is the sole representative of pronophilines. The peak of its abundance along the 550 m altitudinal range on the transect falls at 2700 m where logging was particularly heavy. Notably, from among eight most numerous species in the sample, seven belong to the genus *Pedaliodes sensu lato*. Four more species are represented in the sample by 30 or more individuals: *Lasiophila phalaesia* (40), *Pedaliodes maruda* (37), *Lasiophila cirta* (32), and *Corades peruviana* (30).

27 species are represented by less than 10 individuals. Their rarity in the sample can be explained by the fact that their top abundance altitude is situated below the altitude of the lowest trap on the transect (2550 m). Their collecting altitudes along the transect are by the same their top altitudinal ranges: *Pronophila unifasciata* – 2550 m, *Pedaliodes praxithea* – 2700 m, *Lasiophila orbifera* – 2650 m, *Lymanopoda obsoleta* – 2750 m, and *L. albocincta* – 2550 m. Several species occurring in the highlands of Chachapoyas were not recorded along the transect. They occur below the lowest reach of the transect: *Pedaliodes ferratilis*, *P. petri*, *P. palaepolis*, *Manerebia benigni* and *Oxeoschistus iphigenia*, or above it (in the páramo): *Punapedaliodes flavopunctata*, *Manerebia ignilineata*, *Lymanopoda inde* and *L. ingasayana*. Some species represented in the sample in Molinopampa by a few or single individuals apparently occur at low-density throughout their range, particularly *Manerebia trirufa*, *Pseudomaniola mirabilis* and *Proboscis pomarancia*. The very low abundance of *Steroma bega* - only 5 individuals collected – which is a very common species in other sampled localities throughout the Andes at 2500-2800 m, is difficult to explain. Some seasonal variation in abundance might have affected the number of collected individuals.

Several duos or trios of closely related pronophiline species distributed within adjacent bands of altitude were reported along the Molinopampa transect. Remarkably, one of the species studied in Monte Zerpa (PYRCZ & WOJTUSIAK, 2002) - *L. obsoleta* - is also replaced in Molinopampa by an upper parapatric replacement - *L. magna*. *L. obsoleta* was reported in Molinopampa at 2550-2750 m. In Monte Zerpa (PYRCZ & WOJTUSIAK 2002) or indeed in Tambito (PYRCZ & WOJTUSIAK 1999) the maximum abundance of *L. obsoleta* was at 2350 m.

*L. magna* was reported in Molinopampa at 2650-2850 m with the maximum abundance at 2650-2700 m. The overlapping zone between *L. obsoleta* and *L. magna* in Molinopampa was 100 m wide. A similar pattern was observed in other pairs of closely related parapatric species replacing each other along an elevational gradient. *Apexacuta improvisa* and *Apexacuta superior*. Their altitudinal ranges are very narrow - 350 m for *A. improvisa* and 200 m for *A. superior*. The overlapping altitude in Molinopampa falls at 3050 m. An even more complex pattern was found for two trios of closely related species. The first trio involves *Pedaliodes peruda*, *P. maruda* and *P. uaniuna* (Fig. 212). The overlapping zone of *P. peruda* and *P. maruda* is wider than in the previous cases and extends over 450 m. It is by the same wider than the altitudinal range of the upper parapatric species - 350 m! The maximum abundance falls at 2700 m for *P. peruda* and at 2750 m for *P. maruda*. The uppermost species of the trio, *P. uaniuna*, has one sharp peak of abundance at 3100 m. Its altitudinal range extends also over 350 m. The second trio involves *Lasiophila orbifera*, *L. phalaesia* and *L. cirta* (Fig. 211). *L. orbifera* is a common low and mid-elevation cloud forest species. Its maximum abundance falls roughly at 2200-2300 m, well below the reach of the Molinopampa transect. Along the transect *L. orbifera* was found only at the lowest stations - 2550-2650 m. *L. phalaesia* occurs as high as 2950 m but its maximum abundance was reported at 2700 m. The overlapping zone of *L. orbifera* and *L. phalaesia* measured on the transect is 100 m. It is however most probably wider overall because *L. phalaesia* occurs down to 2200 m. *L. cirta* is the uppermost member of the trio found up to 3100 m and with the maximum abundance falling at 3000 m. Its overlapping zone with *L. phalaesia* is 300 m wide. There are possibly other examples of closely related parapatric species in Molinopampa including other species of *Pedaliodes* and also *Steremnia*, *Eretris* and *Corades* but quantitative data are not sufficient to identify them unequivocally.

It is worth emphasizing that the uppermost elevations reported for *L. albocincta* and *L. obsoleta* are the same in the highlands of Chachapoyas and in Monte Zerpa (PYRCZ & WOJTUSIAK 2002). Moreover, *L. zapatoza*, which is the Venezuelan allopatric replacement of *Lasiophila orbifera* (the two are considered by some authors conspecific e.g. LAMAS 1997), was found in Monte Zerpa at similar highest elevation (2700 m) as *L. orbifera* in Molinopampa. These data confirm that altitudinal distributions of Pronophilini can be exceptionally stable throughout their wide geographical ranges (ADAMS 1985).

Quantitative data on altitudinal distribution patterns are crucial for the understanding of the mechanisms that sustain parapatry of closely related species. Overall and relative abundance within the overlapping band, where interspecific interaction occurs, influence their dispersal abilities. Parapatric distributions along altitudinal gradients are dynamic. The equilibrium between two parapatric species depends on relative population densities that can be largely affected by factors such as climate changes and consequent vegetation changes, which can lead within a short period of time to altitudinal compression or expansion of habitats. In a montane environment, the higher the altitude, the faster and more

radical the habitat changes. A climatic shift may alter ecological conditions and may lead to the changes in the relative abundance of parapatric species occurring along an altitudinal gradient. The species inhabiting at higher elevations are under more severe ecological stress and most probably their abundance undergo important fluctuations more often, that the species occurring at lower elevations where ecological conditions are more stable. We may therefore expect them to be occasionally outnumbered within the lower portion of their altitudinal range by closely related lower parapatric species. In a situation when an indiscriminate hybridisation occurs (RIBEIRO 1988) or a simple signal jamming takes place (BULL 1991) the species that undergo a population abundance breakdown may be pushed out of their altitudinal ) band by numerically superior parapatric allies. A simple modelling indicates that, as a result of such a process the distribution patterns of the species inhabiting at high elevations should present some particular features, such as narrow altitudinal ranges and at the same time sharp abundance peaks. This is confirmed in the light of data obtained in Molinopampa (and indeed in Monte Zerpa).

## DIVERSITY PATTERNS

Diversity indices obtained in Molinopampa can be compared with similar studies carried out in Tambito (PYRCZ & WOJTUSIAK 1999) and Monte Zerpa (PYRCZ & WOJTUSIAK 2002). The applied method of sampling, collecting, person/time effort, and altitude span covered (700-800 m) were similar. However, the results obtained in Tambito are not directly comparable because the transect was set there at 1700-2400 m, which corresponds to low and mid-elevation cloud forest. On the other hand, the transects in Monte Zerpa and Molinopampa covered respectively the elevations 2250-3050 m and 2550-3250 m, corresponding in both cases to mid and high elevation cloud forest to timberline.

The highest abundance in Molinopampa was recorded at 2700 m, whereas the lowest at 3250 m (Fig. 207). Abundance is not significantly corelated with altitude (-0.47, p = 0.07).

The highest species richness in Molinopampa (Fig. 210) was recorded at 3050 m, where 22 species were collected. This is more than the overall species richness in Monte Zerpa, where only 20 species were recorded. However, it is worth pointing out that the 20 species collected along the transect in Monte Zerpa represent 57% of the overall species richness of the tribe Pronophilini at the regional level (ADAMS & BERNARD 1981; PYRCZ & WOJTUSIAK, 2002). On the other hand, the 45 species collected along the transect in Molinopampa represent only 40% of the overall species richness in the highlands of Chachapoyas. This proves that the sampling in Monte Zerpa was very effective. Species richness is not significantly corelated with altitude (-0.16, p = 0.56) in Molinopampa.

Diversity (Fig. 208) was calculated using the Shannon's index (Magurran, 1988): $H' = \Sigma\, p_i \ln (p_i)$, where $\Sigma$ is the total number of species in the whole sample. The proportion of species *i* relative to the total number of species ($p_i$) is calcu-

lated, and then multiplied by the natural logarithm of this proportion ($\ln p_i$). In Molinopampa, the maximum diversity (*H'*) was observed at 2850 m ($H' = 4.05$) roughly 300-500 m below timberline. This is consistent with the observations made by ADAMS (1985) who concluded that the highest number of species of Pronophilini in the Colombian Cordilleras occur at 2700-2900 m, which is 400-500 metres below the upper forest limit. This also agrees with the results obtained in Monte Zerpa where the maximum diversity falls at 2650 m, which is also approximately 400 m below timberline (PYRCZ & WOJTUSIAK 2002). The minimum diversity (*H'*=1.4) was reported in Molinopampa at the second highest elevation covered by the transect, just below timberline. A similar effect was observed also in Monte Zerpa where a sharp decrease in diversity was reported at the highest elevations (above 3000 m) in the forest – paramo ecotone. In Tambito, where the uppermost data gathering site of the transect was well below this ecological boundary, contrary the maximum diversity was reported at the highest part of the transect - 2450 m. Diversity is not significantly corelated with altitude (-0.17; $p = 0.54$).

Dominance (Fig. 209) was calculated using the BERGER-PARKER index (MAGURRAN 1988): $D = N_{max}/N$, where $N_{max}$ is the most abundand in the sample and N is the total abundance. The highest dominance figures were recorded in Molinopampa at the top of the transect (3150-3200 m) due to low species richness and the dominant ratio of one species, *Pedaliodes sophismata* in the sample. Dominance is not significantly corelated with altitude (0.18; $p = 0.51$).

In Monte Zerpa it was demonstrated that the maximum diversity elevation - 2650 m - corresponds with the overlapping of ranges of two major groups of species, those inhabiting the upper and lower parts of the cloud forest (PYRCZ & WOJTUSIAK, 2002). In Tambito (PYRCZ & WOJTUSIAK 1999), in spite of a weak statistical support due to a relatively low number of collected individuals, it was also possible to identify three major groups of species (lower, intermediate and upper) partitioned in elevation. In Molinopampa the statistical analysis did not come up with any pattern from which major groups of species with similar altitudinal patterns would emerge. This apparently random pattern is due to still insufficient quantitative data and at the same time to the larger number of species to be dealt with. Additionally, the destruction of primary vegetation in Molinopampa is heavier than in the other two studied sites. ADAMS (1985) suggests that habitat disturbance seriously affects the patterns of altitudinal distributions of the Pronophilini.

## GEOGRAPHIC PATTERNS

LAMAS (1982) proposed a zoogeographical division of Peru based on the patterns of distribution of butterflies (supported in some extent by more accurate ornithological data). He identified 48 zoogeographical units combining ecological (vegetation types) and physical data (bands of altitude) including three units covering the highlands of Chachapoyas, the so-called “upper montane forest

Chachapoyas", "upper montane open Molinopampa" and "upper montane open La Peca" units. Current data on Peruvian cloud forest butterflies distributions and the understanding of their systematics largely surpass the data LAMAS was handling more than twenty years ago, especially thanks to this study. Therefore the original units that LAMAS' proposed can be tested for accuracy. It should be pointed out however that a thorough comparative zoogeographical analysis cannot be carried out at the present time due to still incomplete data from other faunal units in Peru, particularly from the uppermost forest and the area above timberline, which is the zone with the highest ratio of endemic taxa. Even though there has been recently some sampling focused on cloud forest butterflies in central and southern Peru, we have to take into account that the 112 reported from the highlands of Chachapoyas is an outcome of a tremendous collecting effort starting from 1998. The level of quality of the data on the Pronophilini distribution and taxonomy from Chachapoyas is equalled on the overall Andean scale only by the data from Ecuador and the Venezuelan Cordillera de Mérida.

## FAUNAL UNITS

La Peca unit (*sensu* LAMAS, 1982) comprises the northern part of the highlands of Chachapoyas, situated north and northwest of the Lake of Pomacochas. It is a somewhat isolated range with top elevations above 3600 m. LAMAS (*op. cit.*) identified it as a hypothetical upper open montane community based on avian distributions only, having no data on butterflies. Currently there are fairly good data for this area except for the paramo which has not been sampled. The elements making up the pronophiline fauna of La Peca fall within four different zoogeographic categories apart from widespread Andean species. Even though the highlands of Chachapoyas are situated entirely within the Amazon basin, thus on the eastern slopes of the Andes, there is a noticeable influence on the pronophiline fauna of typically western Andean elements. This influence is particularly notable in the La Peca unit, in the northwestern part of the studied area (particularly on the left bank of the Río Utcubamba) progressively decreasing towards south and east, with some elements reaching as far south as Molinopampa. Western Andean elements found in La Peca are: *Lasiophila phalaesia phalaesia*, *Parapedaliodes parepa parepa*, *Pedaliodes morenoi*, *Pedaliodes xanthosphenisa*, and *Pronophila rosenbergi rosenbergi*. The second category is made up of one species widely distributed throughout the northern Andes (Venezuela, Colombia and Ecuador) reaching in La Peca its southern distribution limit: *Eretris porphyria transmaraniona*. The bulk of species occurring in La Peca are also found in the Molinopampa unit as phenotypically identical populations (*Pedaliodes paneis*, *P. demathani*, *Lymanopoda araneola* etc.). Finally, there are a few taxa endemic in La Peca. Some of them occur in La Peca and Molinopampa units as separate subspecies: *Lasiophila cirta atropurpurea*, *Corades tripunctata necrufa*, and *Manerebia benigni tessmanni*. Two taxa are endemic at the specific level in La Peca: *Pronophila bernardi* and *Pedaliodes stuebeli*.

Molinopampa unit (*sensu* LAMAS, *op. cit.*) refers to the central part of the sampled area made up by the highest part of the Eastern Cordillera (4000 m). Elevations above 3200 m are covered with paramo/jalca grassland vegetation. Some species inhabiting the paramo are apparently endemic of Molinopampa unit. These are *Lymanopoda inde*, *Lymanopoda ingasayana*, *Pedaliodes uaniuna*, *P. albicilia*, *P. sztolcmani*, *P. jelskii,* and *Panypaedaliodes stellata*. However, it has to be considered that the puna/paramo and uppermost cloud forests have been very little sampled in other Peruvian units, therefore it is possible that some species reported as endemic to Molinopampa may eventually turn out present much further south. This is the case of *Apexacuta superior*, which was recently discovered at 3450 m in central Peru (Junín) even though within the highlands of Chachapoyas it was collected only in the Molinopampa unit. This unit is interesting in the way that it is an area of overlapping of several sister-species distributed between Molinopampa and La Peca and between Molinopampa and Carpish (in central Peru). The most outstanding examples of such sister-species are *Pedaliodes peruda* - *P. maruda* and *Apexacuta improvisa* - *A. superior*.

Numerous species and subspecies are common to Chachapoyas and Carpish units (central Peru, Huánuco, *sensu* LAMAS, *op cit.*), including: *Pedaliodes aureola*, *P. erschoffi*, *Proboscis pomarancia*, *Corades tripunctata tripunctata*, *Steremnia lucillae,* and *Apexacuta improvisa*. Several other species occur in all three units but they are represented in Carpish by local subspecies: *Manerebia trirufa*, *Eretris truncatina*, *Manerebia haywardi*, and *Lymanopoda inde*. Three (undescribed) species of *Pedaliodes* are probably restricted to Carpish and they are replaced by closely related allopatric species in Chachapoyas: *P. paneis*, *P. demathani*. Reassuming, the upper montane forest unit of Chachapoyas are substantially differentiated, the latter proves as a separate unit as it harbours several exclusive faunal elements.

Interestingly enough, some species occur only on the eastern slopes of the highlands of Chachapoyas. Even though they occur at low (1400-1600 m) or intermediate elevations (2000-2400 m) they do not penetrate into the area of Rodríguez de Mendoza or Pomacochas. They are *Lasiophila alkaios gita*, *Corades cybele semiplena*, *Pedaliodes boettgeri*, *Manerebia diffusa,* and *Eretris oculata*. Perhaps the most striking example is *Lymanopoda acraieda*, which has a separate species in that area – *chavezi* – and in the area of Rodríguez de Mendoza – *malia*.

Some high elevation paramo and uppermost forest species are restricted to the northern part of the Central Cordillera within the highlands of Chachapoyas: *Lymanopoda dyari*, *Manerebia enigma,* and *Pedaliodes sztolcmani gilvaecosta*. However, it has to be pointed out that this part of the surveyed area has not been sampled as intensively as the Eastern Cordillera.

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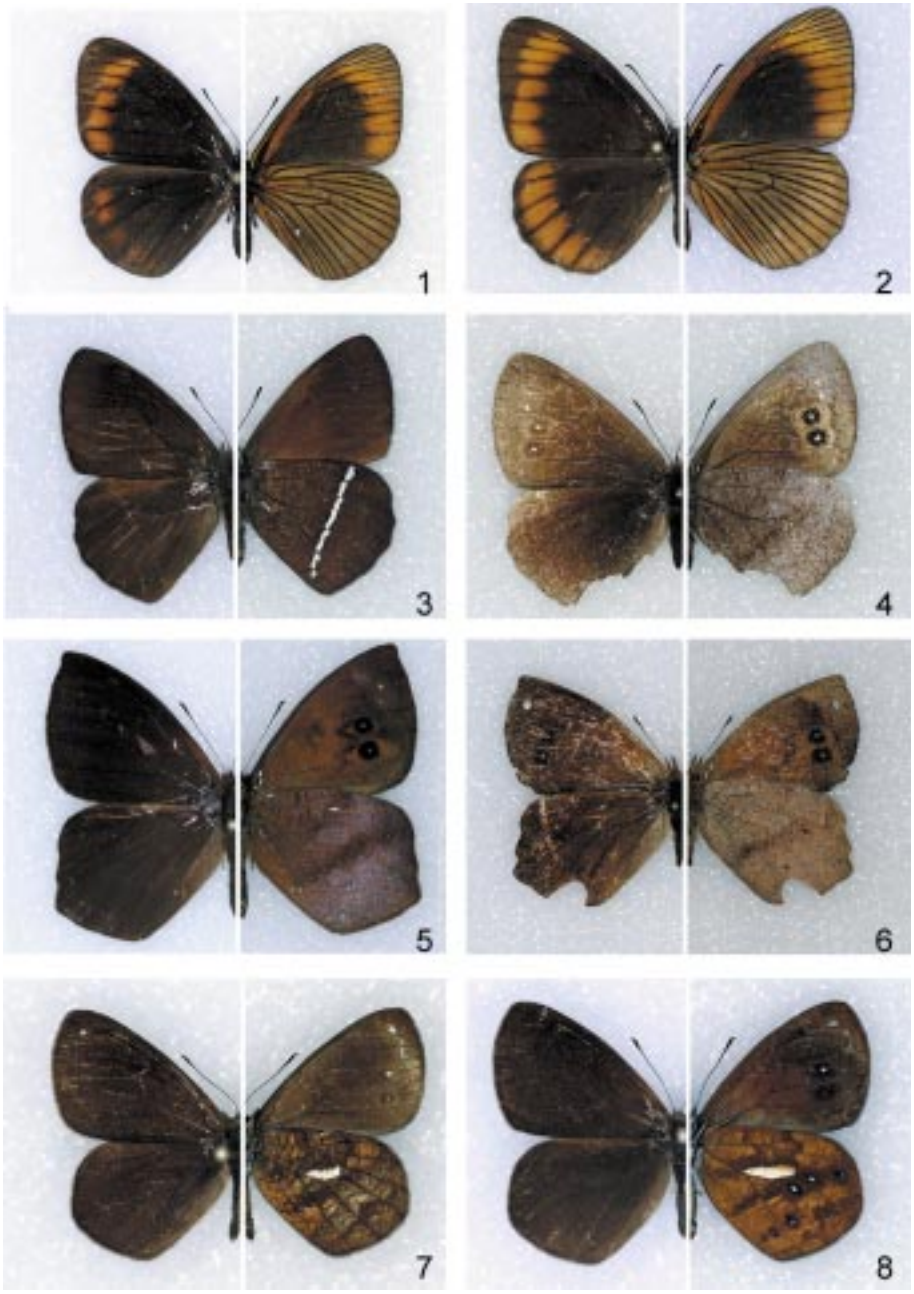
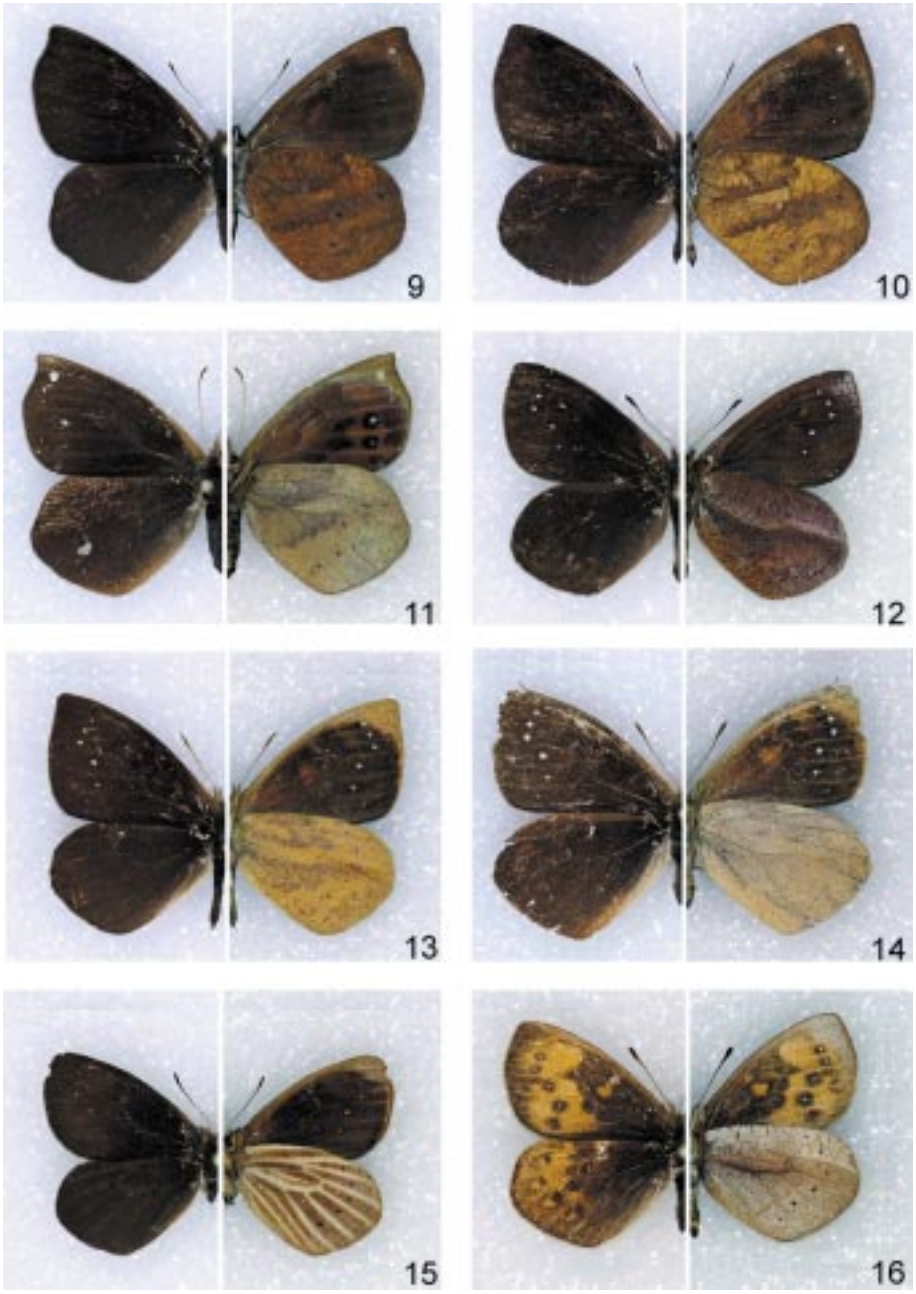
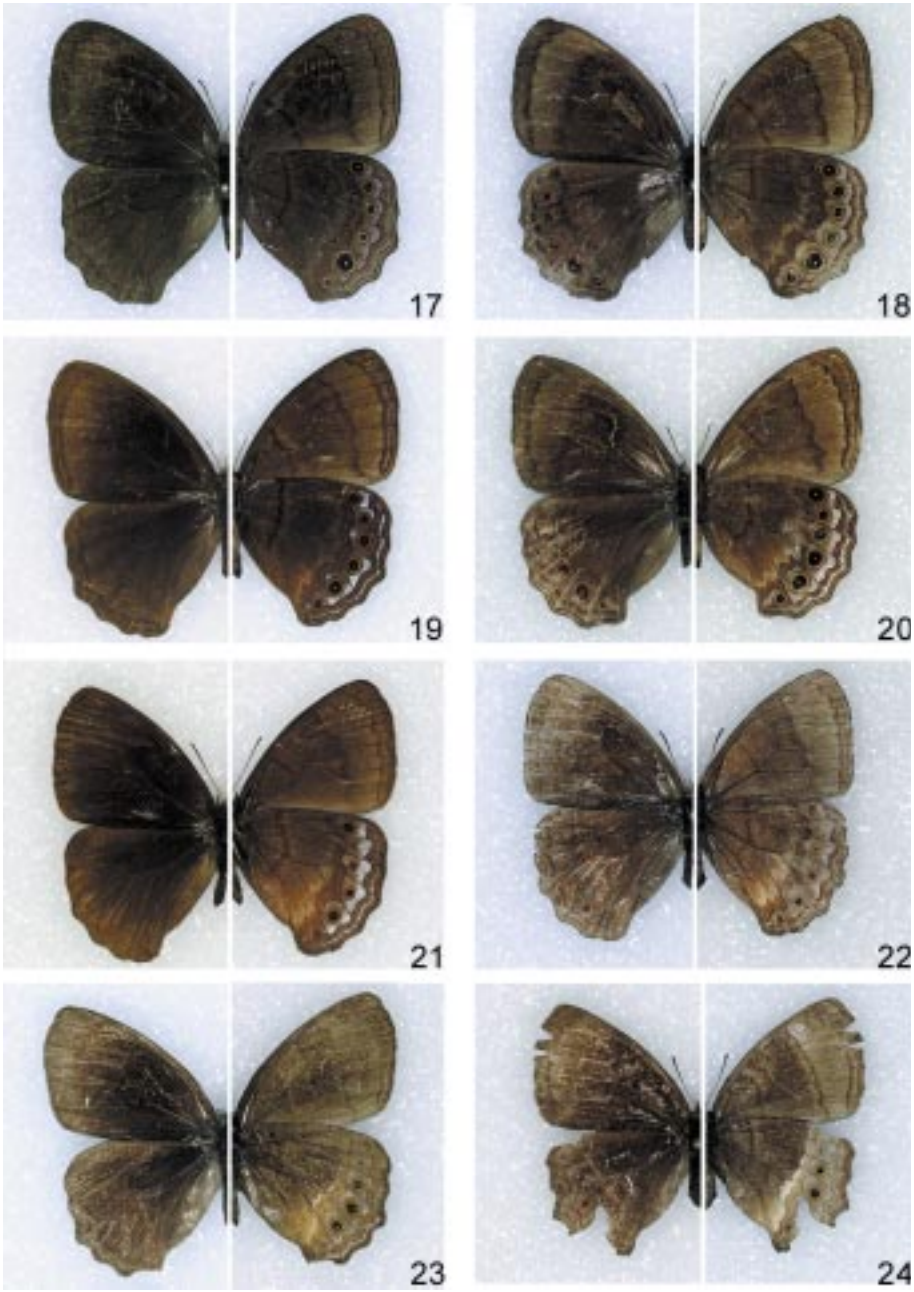


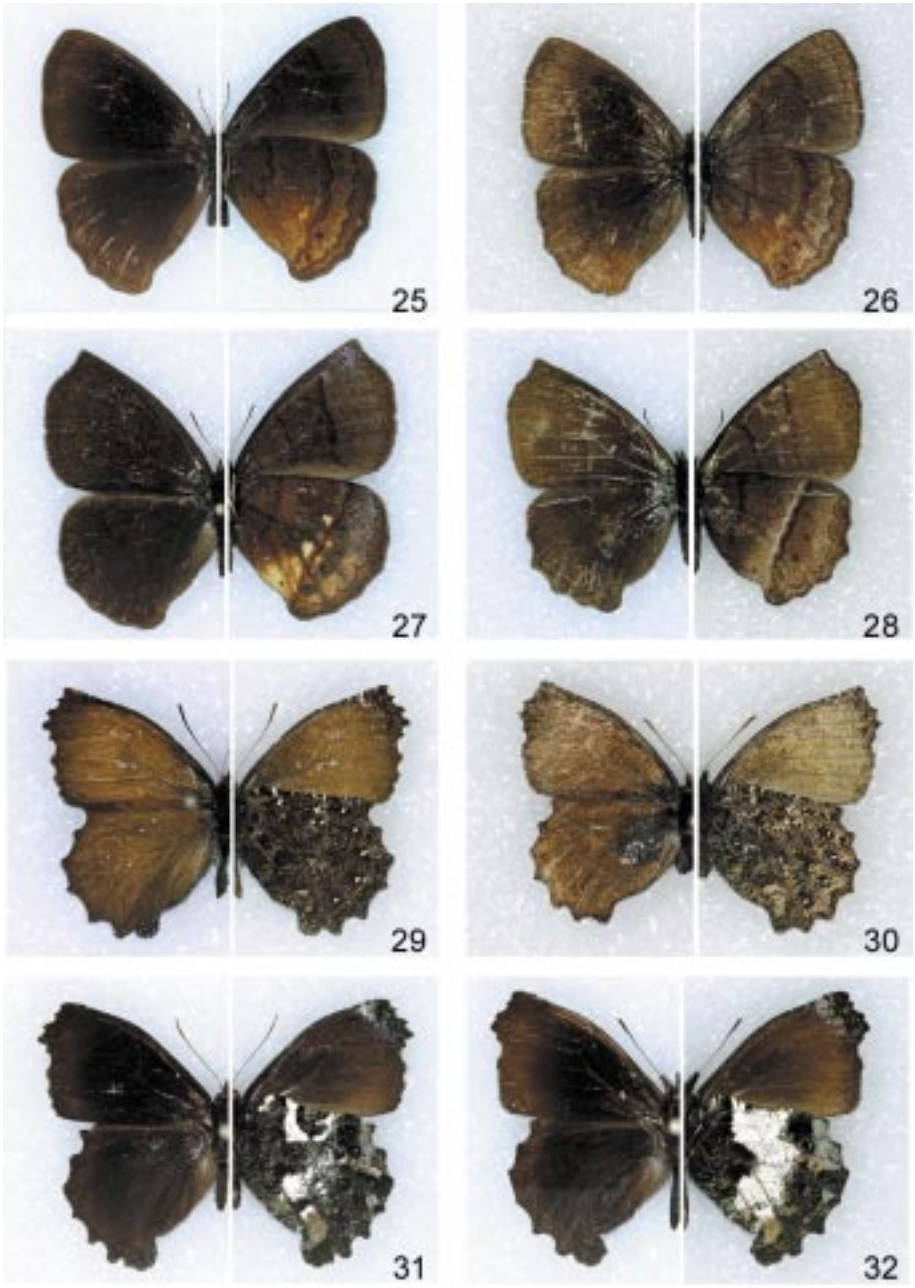

1. 1-8. Adults: 1 - *Lymanopoda acraeida malia* ♂; 2 - *L. acraeida chavezi* ♂; 3 - *L. albocincta intermedia* ♂; 4 - *L. albocincta intermedia* ♀; 5 - *L. magna* ♂; 6 - *L. magna* ♀; 7 - *L. ferruginosa* ♂; 8 - *L. rana* ♂



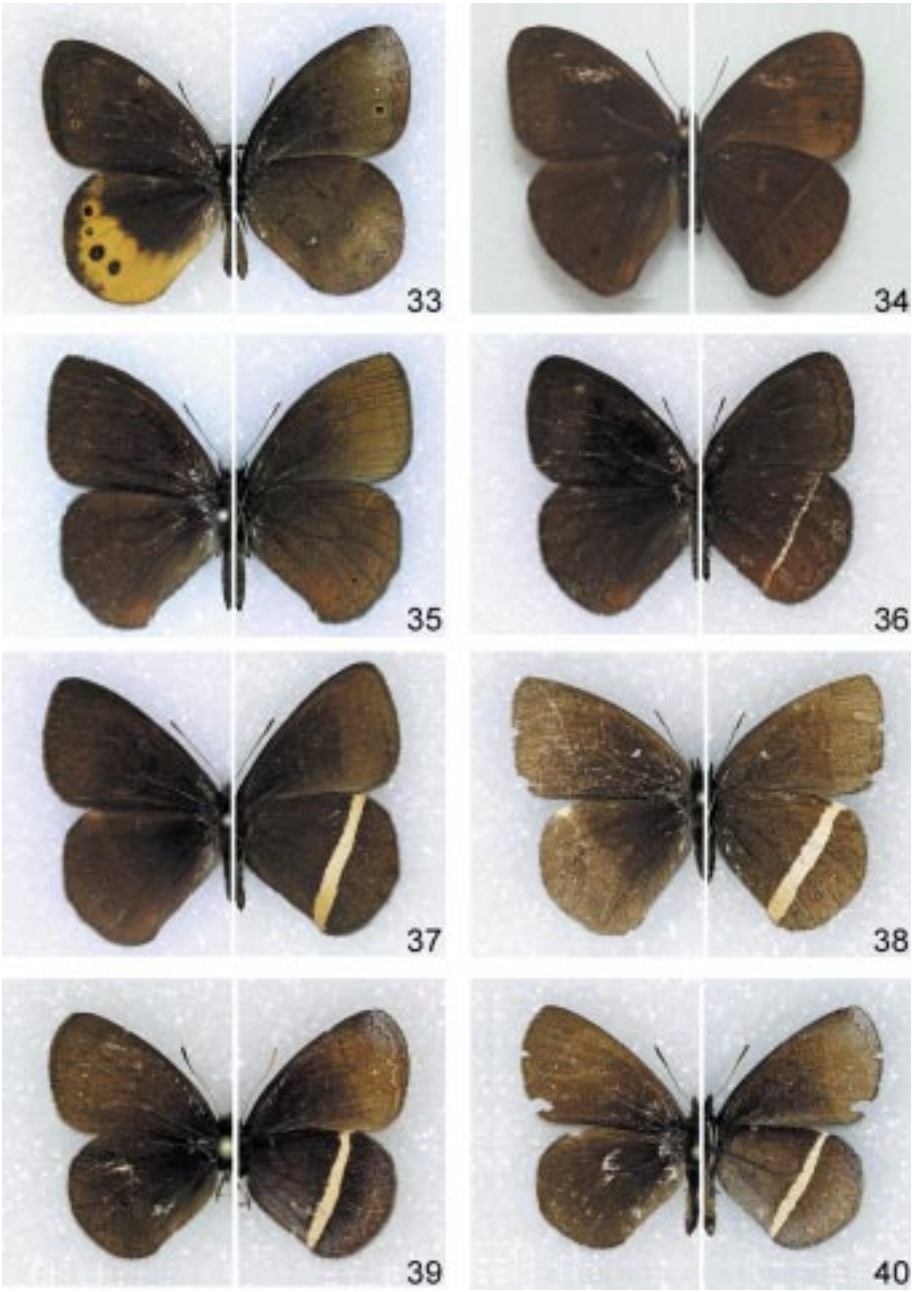

9-16. Adults: 9 - *Lymanopoda araenola* ♂ form 1; 10 - *L. araenola* ♂ form 2; 11 - *L. araenola* ♀; 12 - *L. dyari* ♂; 13 - *L. ingasayana* ♂; 14 - *L. ingasayana* ♀; 15 - *L. inde* ♂; 16 - *L. inde* ♀




17-24. Adults: 17 - *Eretris oculata* ♂; 18 - *E. oculata* ♀; 19 - *E. calisto* ♂ ; 20 - *E. calisto* f; 21 - *E. mendoza* ♂; 22 - *E. mendoza* ♀; 23 - *E. porphyria transmaraniona* ♂; 24 - *E. porphyria transmaraniona* ♀

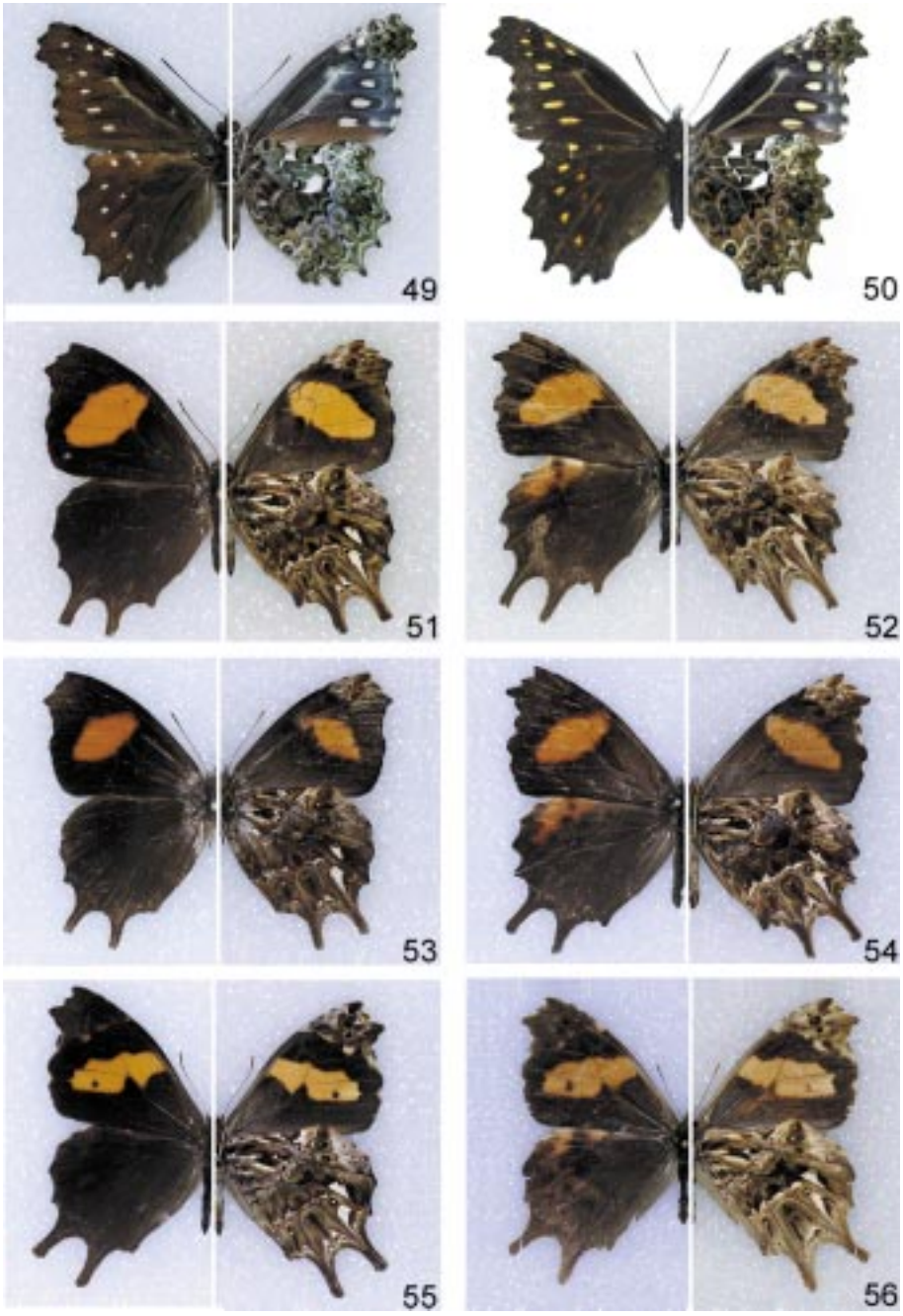



25-32. Adults: 25 - *Eretris apuleina* ♂; 26 - *E. apuleina* ♀; 27 - *E. trunctatina* ♂; 28 - *E. truncatina* ♀; 29 - *Steremnia agraulis agraulina* ♂; 30 - *S. agraulis agraulina* ♀; 31 - *S.lucillae* ♂; 32 - *S. lucillae* ♂ form *vittavinosa*



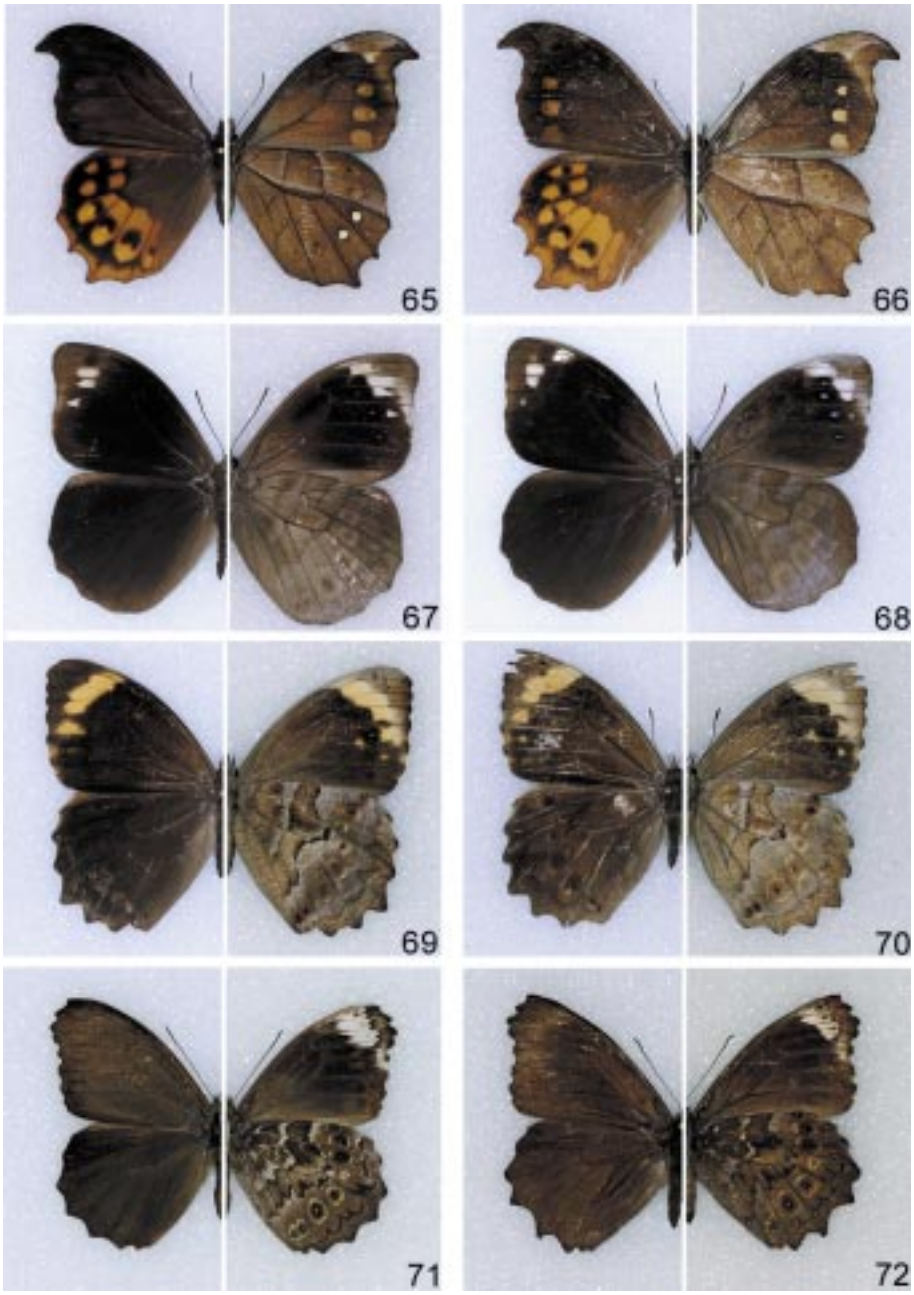

33-40. Adults: 33 - *Manerebia tirufa* ♂; 34 - *M. diffusa* ♂; 35 - *M. benigni benigni* ♂; 36 - *M. benigni tessmanni* ♂; 37 - *M. haywardi* ♂; 38 - *M. haywardi* ♀; 39 - *M. ignilineata jalca* ♂; 40 - *M. ignilineata jalca* ♀


41-48. Adults: 41 - *Apexacuta improvisa* ♂; 42 - *A. improvisa* ♀; 43 - *A. superior* ♂; 44 - *A. superior* ♀; 45 - *Corades ulema mirianae* ♂ form; 46 - *C. ulema mirianae* ♀ form; 47 - *C. tripunctata tripunctata* ♂; 48 - *C. tripunctata necrufa* ♂

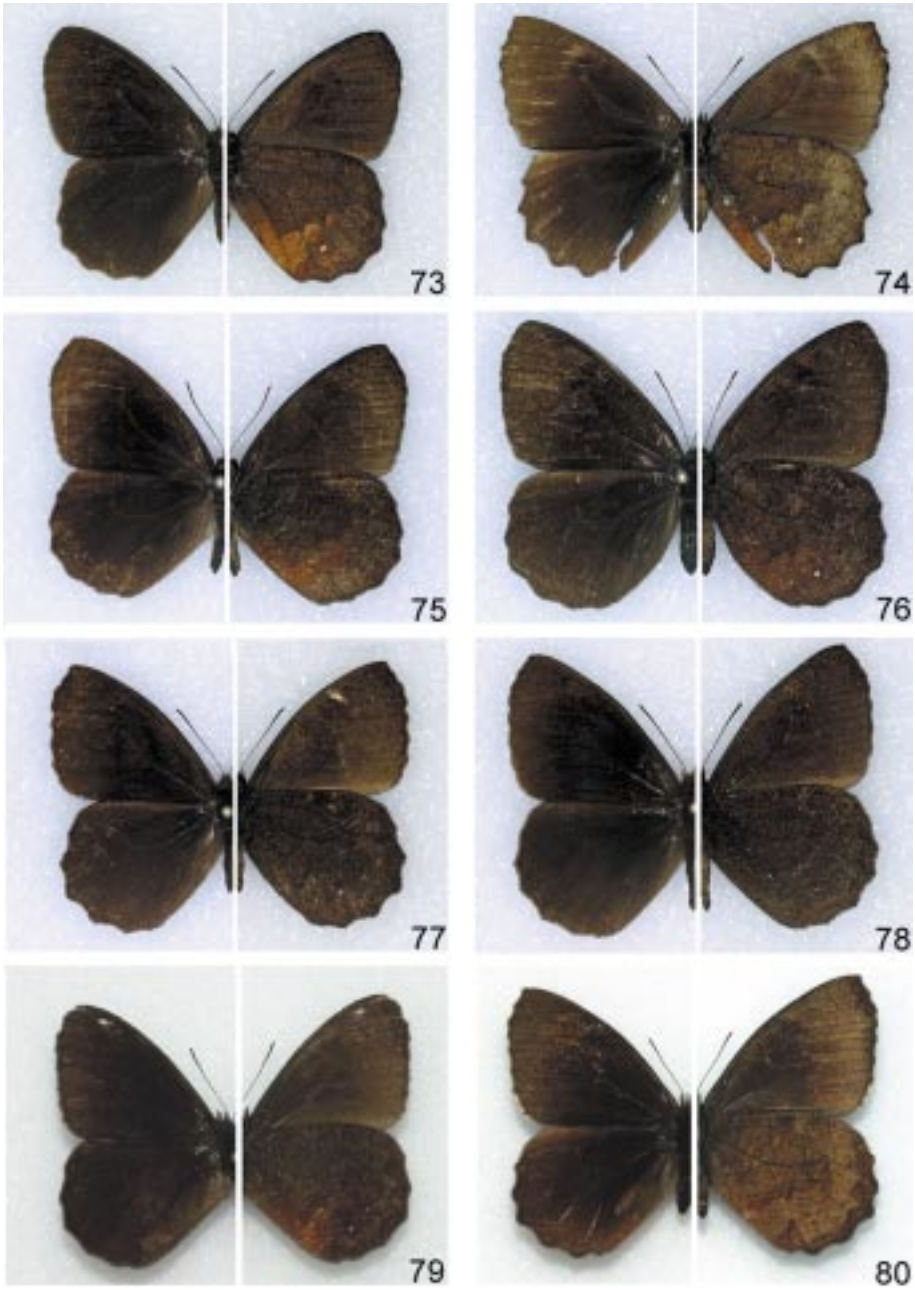



49-56. Adults: 49 - *Junea dorinda quasinegra* ♂; 50 - *J. dorinda quasinegra* ♀; 51 - *Daedalma boliviana peruviana* ♂; 52 - *D. boliviana peruviana* ♀; 53 - *D. fraudata* ♂; 54 - *D. fraudata* ♀; 55 - *D. vertex* ♂; 56 - *D. vertex* ♀

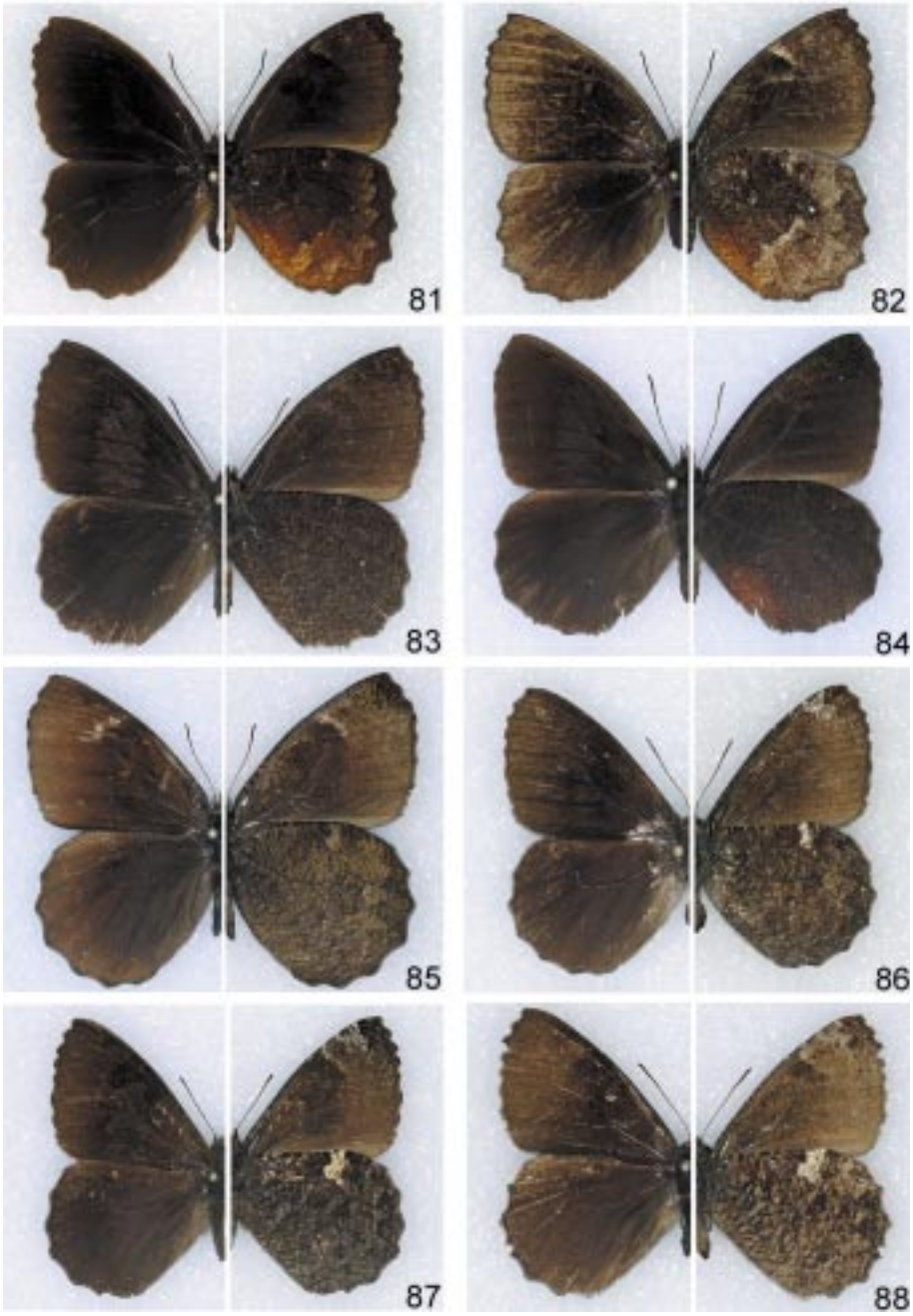

57-64. Adults: 57 - *Lasiophila cirta cirta* ♂; 58 - *L. cirta cirta* ♀; 59 - *L. cirta atropurpurea* ♂; 60 - *L. cirta atropurupurea* ♀; 61 - *Mygona poeania magalyae* ♂; 62 - *M. poeania magalyae* ♀; 63 - *Oxeoschistus iphigenia* ♂; 64 - *O. iphigenia* ♀




65-72. Adults: 65 - *Proboscis pomarancia* ♂; 66 - *P. pomarancia* ♀; 67 - *Pronophila tremocrata* ♂; 68 - *P. epidipnis perplexa* ♂; 69 - *P. bernardi* ♂; 70 - *P. bernardi* ♀; 71 - *Pseudomaniola mirabilis extrema* ♂; 72 - *P. mirabilis extrema* ♀

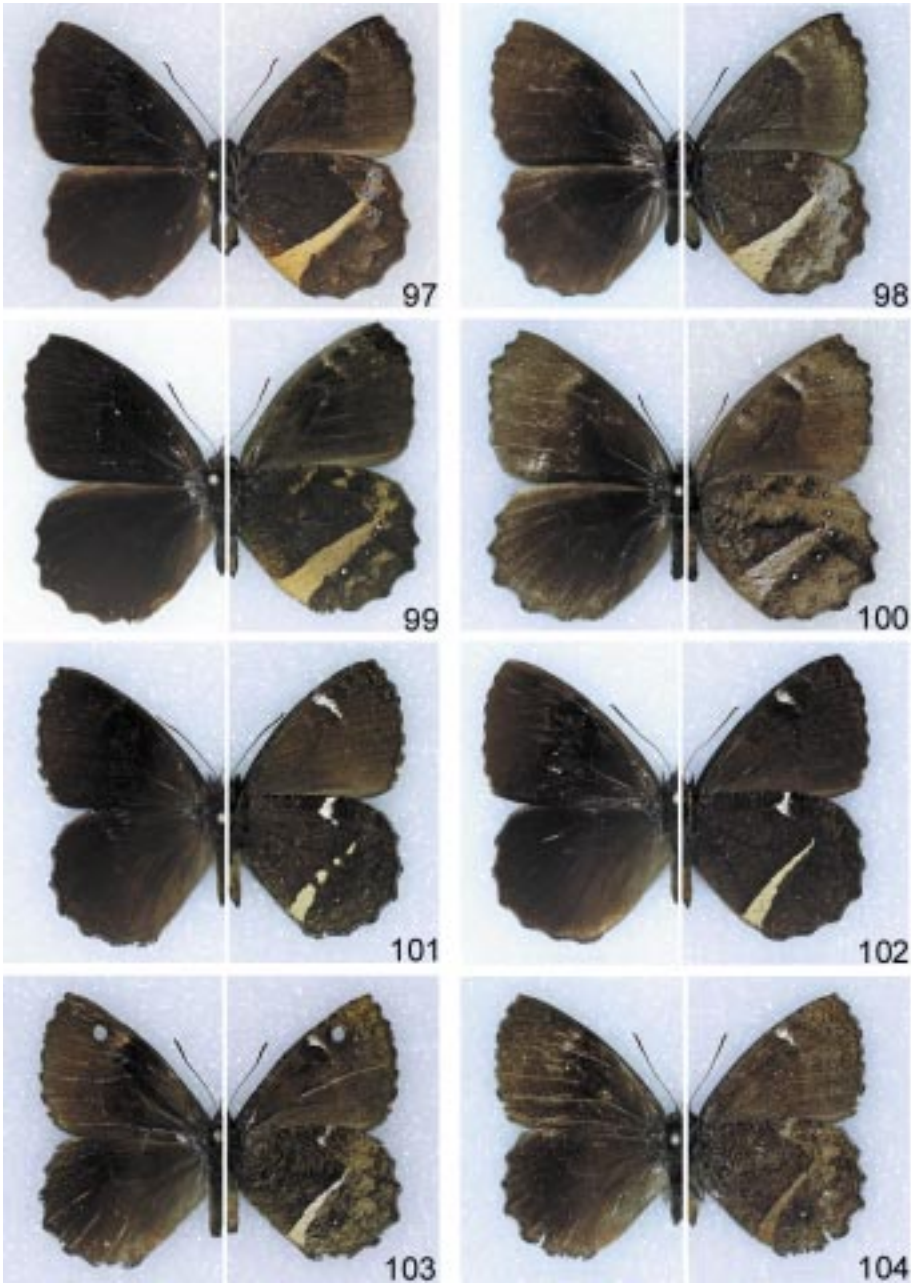



73-80. Adults: 73 - *Pedaliodes cledonia molesta* ♂; 74 - *P. cledonia molesta* ♀; 75 - *P. petri maasseni* ♂; 76 - *P. petri maasseni* ♀; 77 - *P. transmontana* ♂; 78 - *P. simplissima* ♂; 79 - *P. ferratilis* ♂; 80 - *P. ferratilis* ♀

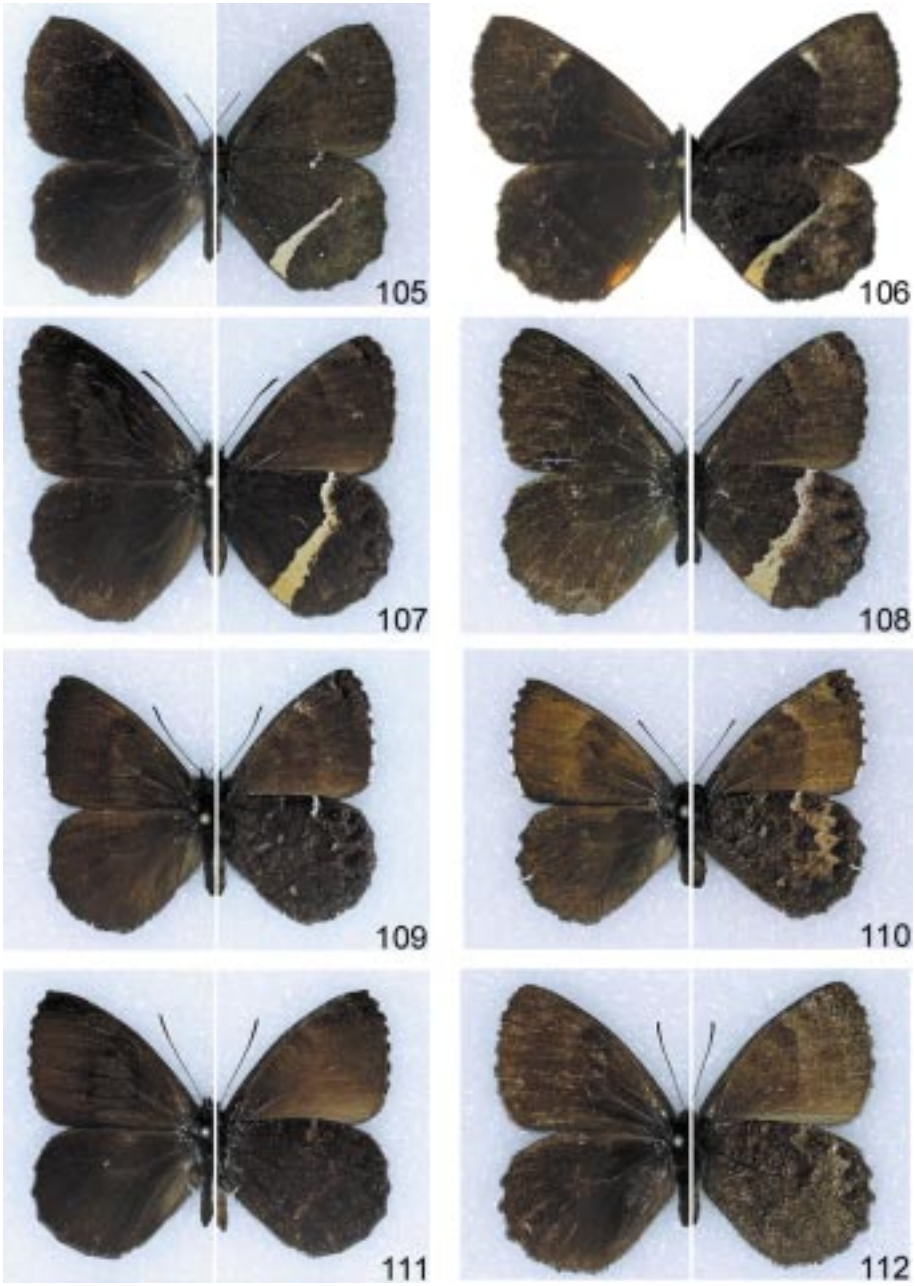



81-88. Adults: 81 - *Pedaliodes phrasicla rufa* ♂; 82 - *P. phrasicla rufa* ♀; 83 - *P. erschoffi* ♂ form 1; 84 - *P. erschoffi* ♂ form 2; 85 - *P. erschoffi* ♀; 86 - *P. boettgeri* ♂; 87 - *P. aureola* ♂; 88 - *P. aureola* ♀

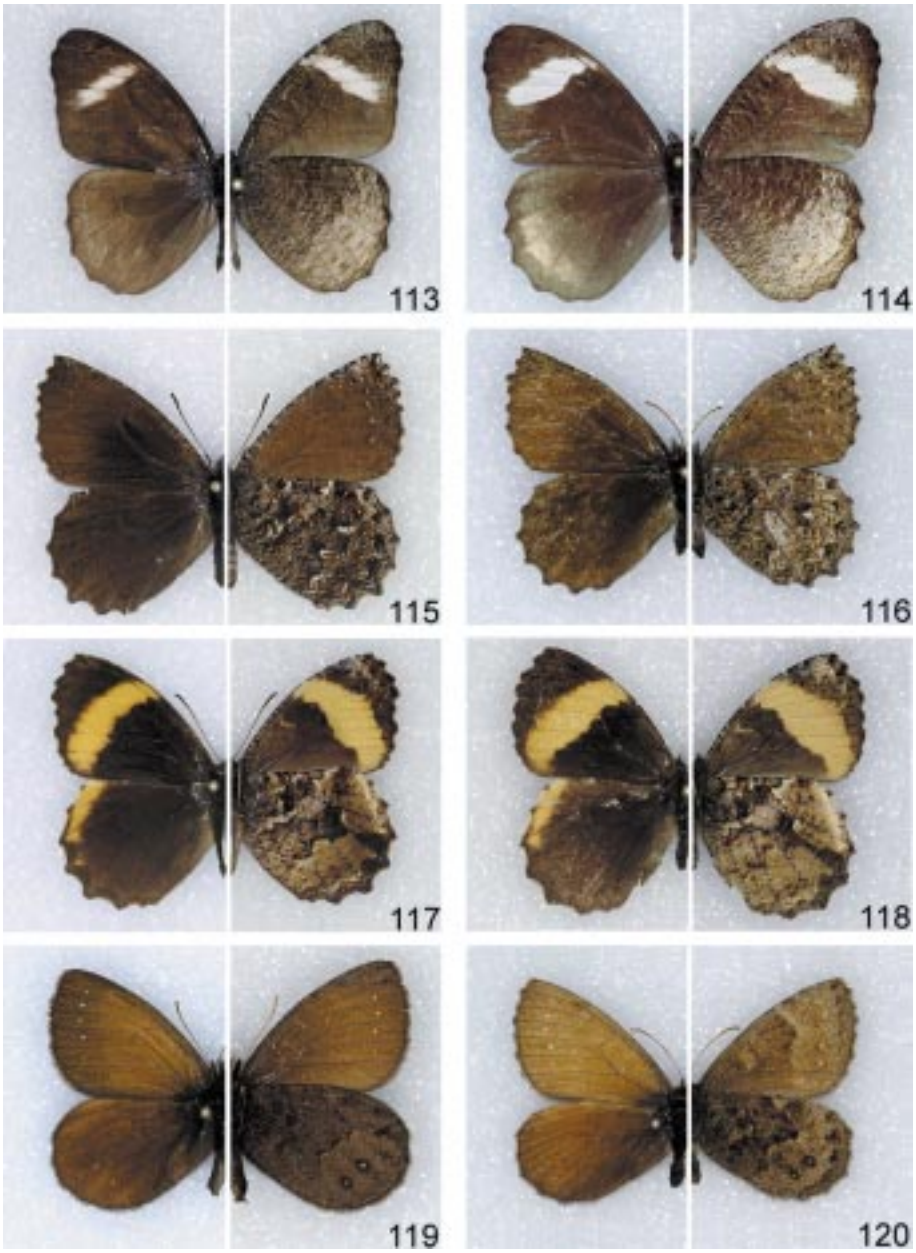

89-96. Adults: 89 - *Pedaliodes sophismata* ♂ form 1; 90 - *P. sophismata* ♂ form 2; 91 - *P. sophismata* ♀; 92 - *P. stuebeli* ♂; 93 - *P. maruda* ♂; 94 - *P. maruda* ♀; 95 - *P. uaniuna* ♂; 96 - *P. peruda* ♂



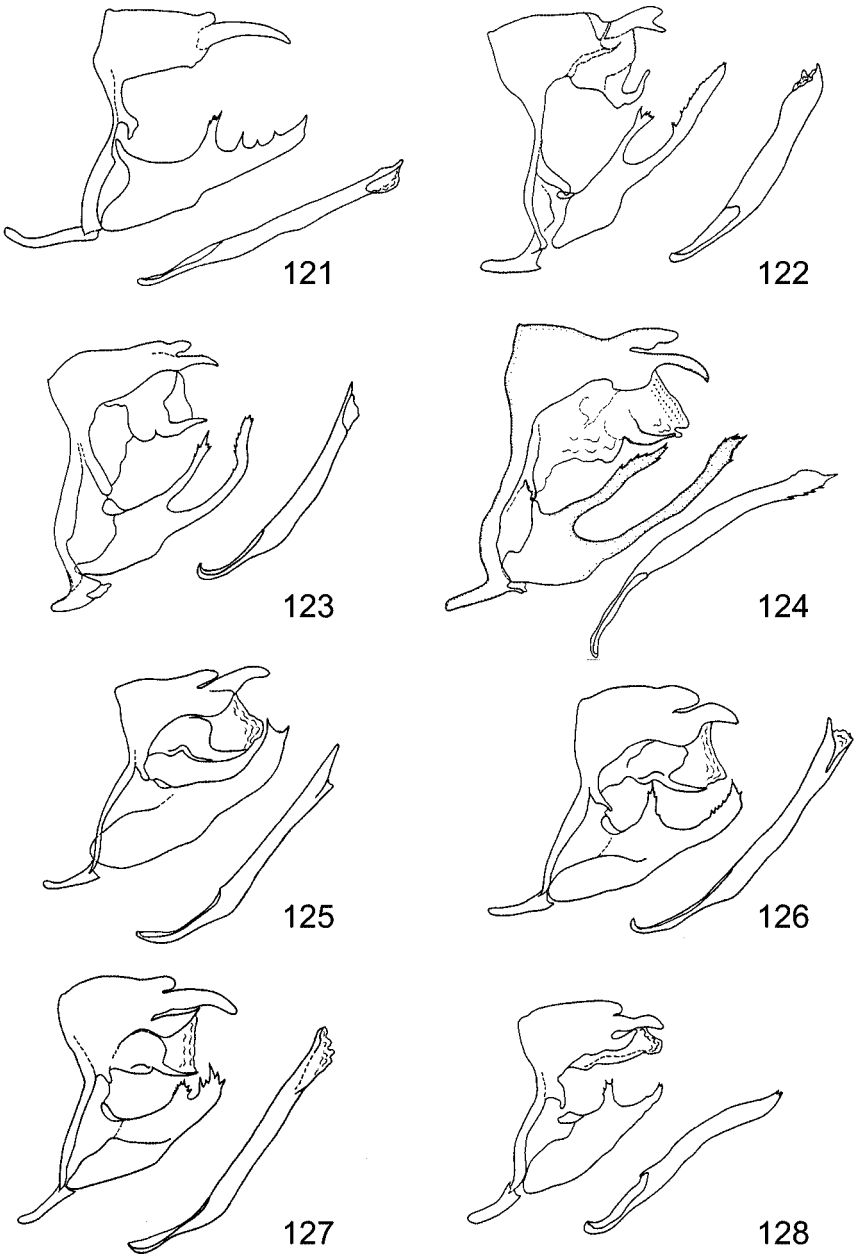

97-104. Adults: 97 - *Pedaliodes paneis* ♂; 98 - *P. paneis* ♀; 99 - *P. demathani* ♂; 100 - *P. demathani* ♀; 101 - *P. sztolcmani sztolcmani* ♂ (form 1); 102 - *P. sztolcmani sztolcmani* ♂ (form 2); 103 - *P. sztolcmani sztolcmani* ♀ (form 1); 104 - *P. sztolcmani sztolcmani* ♀ (form 2)



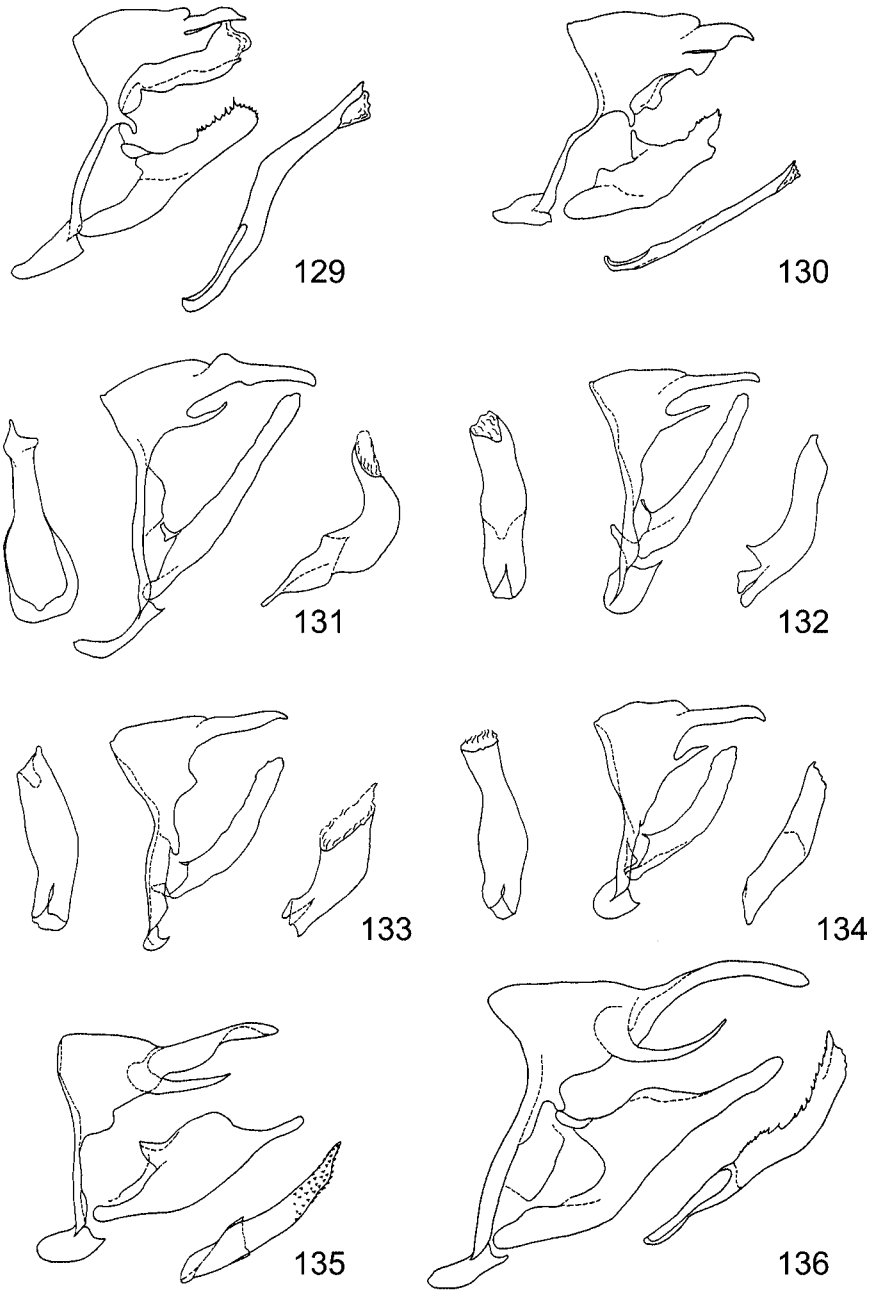

105-112. Adults: 105 - *Pedaliodes sztolcmani gilvaecosta* ♂; 106 - *P. sztolcmani gilvaecosta* ♀; 107 - *P. jelskii* ♂; 108 - *P. jelskii* ♀; 109 - *P. albicilia* ♂; 110 - *P. albicilia* ♀; 111 - *P. woytkowskii* ♂; 112 - *P. woytkowskii* ♀



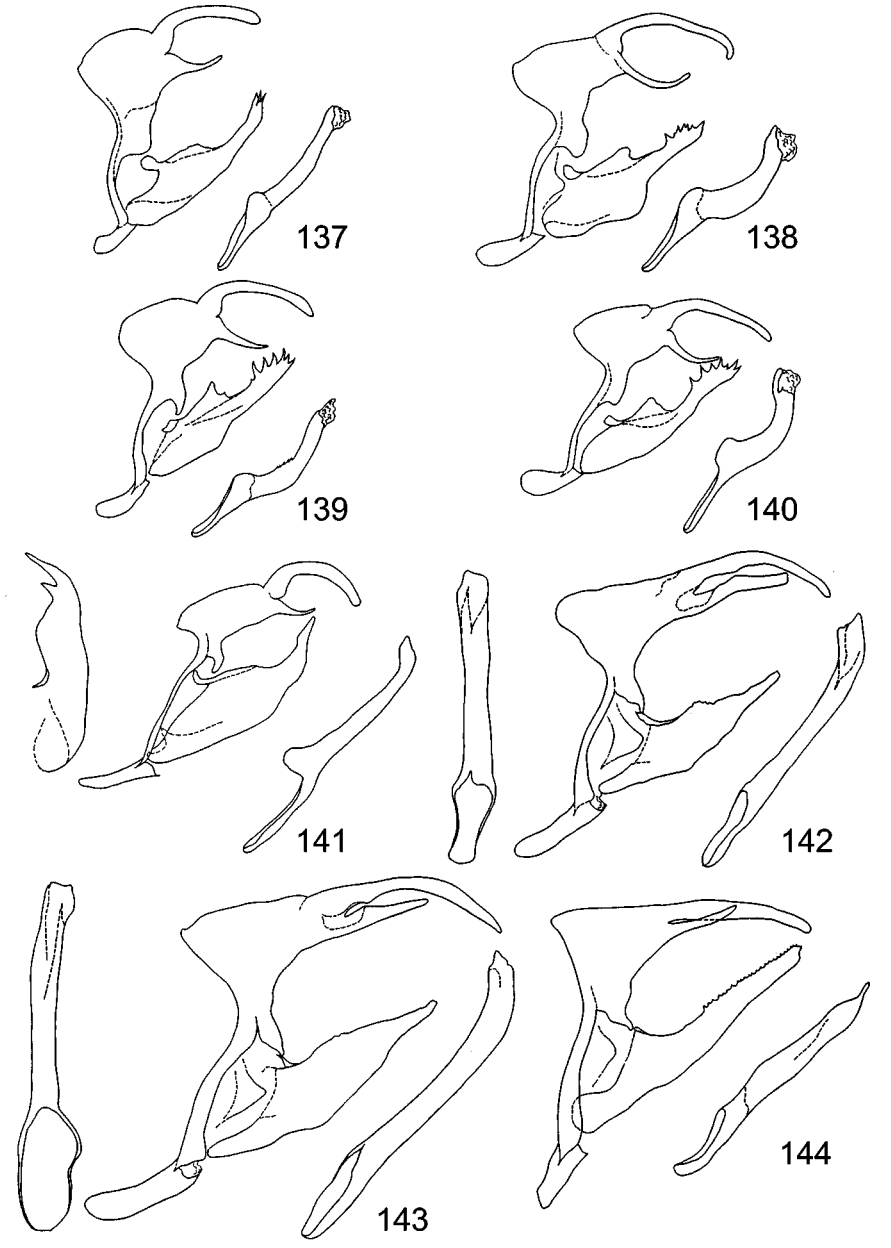

113-120. Adults: 113 - *Corderopedaliodes corderoi exornata* ♂; 114 - *C. corderoi exornata* ♀; 115 - *Panyapedaliodes stellata* ♂; 116 - *P. stellata* ♀; 117 - *P. phila certa* ♂; 118 - *P. phila certa* ♀; 119 - *Punapedaliodes flavopunctata minima* ♂; 120 - *P. flavopunctata minima* ♀



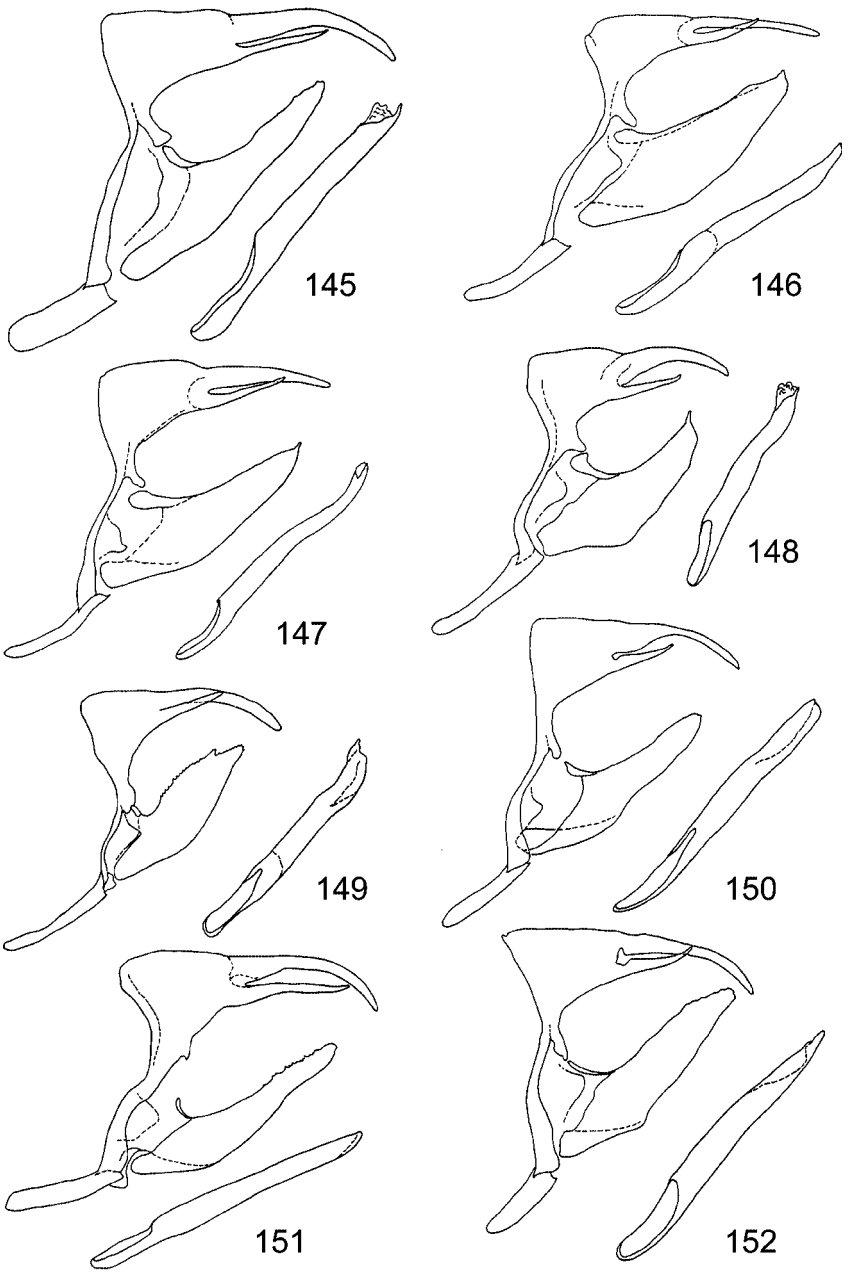

121-128. Male genitalia: 121 - *Lymanopoda acraeida chavezi*; 122 - *L. albocincta intermedia*; 123 - *L. obsoleta*; 124 - *L. magna*; 125 - *L. ferruginosa*; 126 - *L. rana*; 127 - *L. araneola*; 128 - *L. dyari*



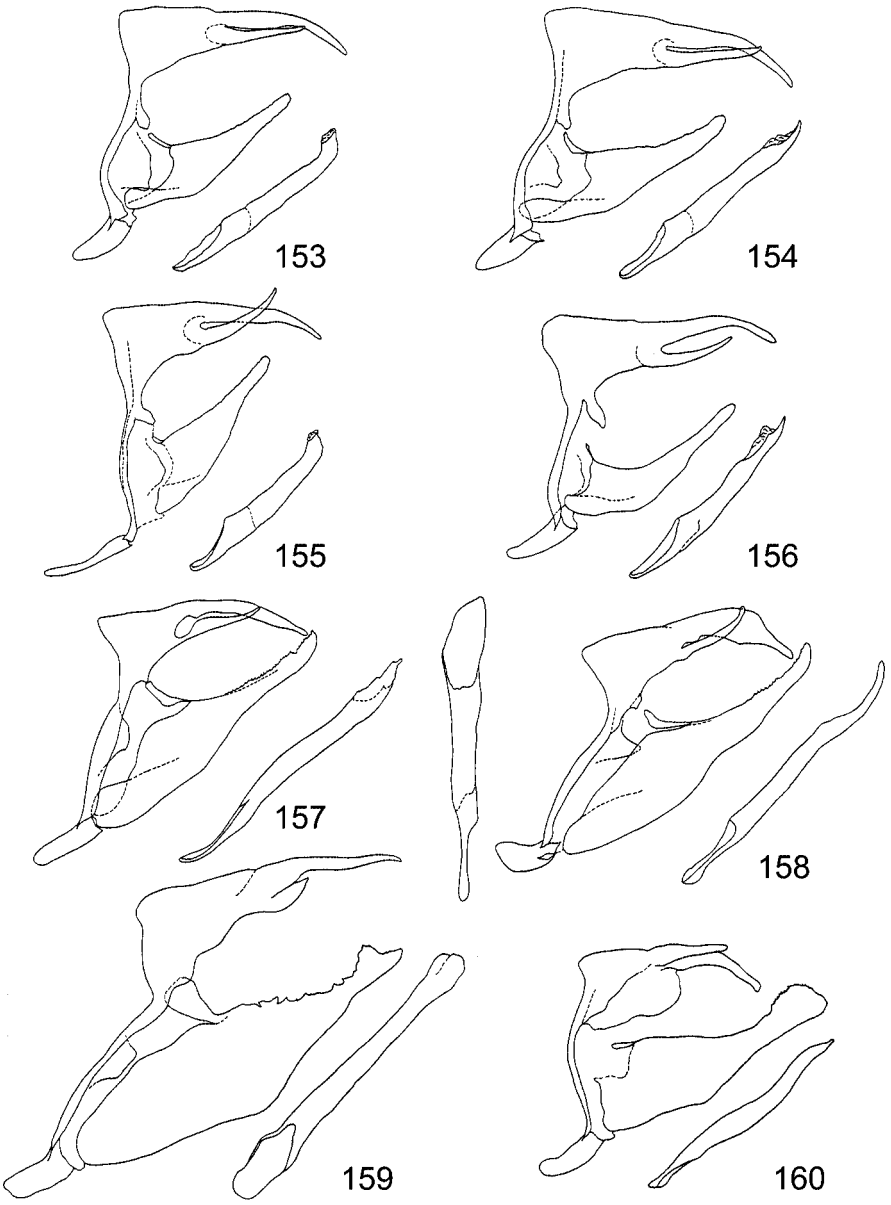

129-136. Male genitalia (Figs 131-134: aedeagus in lateral and dorsal view): 129 - *Lymanopoda ingasayana*; 130 - *L. inde*; 131 - *Eretris mendoza*; 132 - *E. porphyria transmaraniona*; 133 - *E. apuleina*; 134 - *E. truncatina*; 135 - *Steremnia agraulis agraulina*; 136 - *S. lucillae*



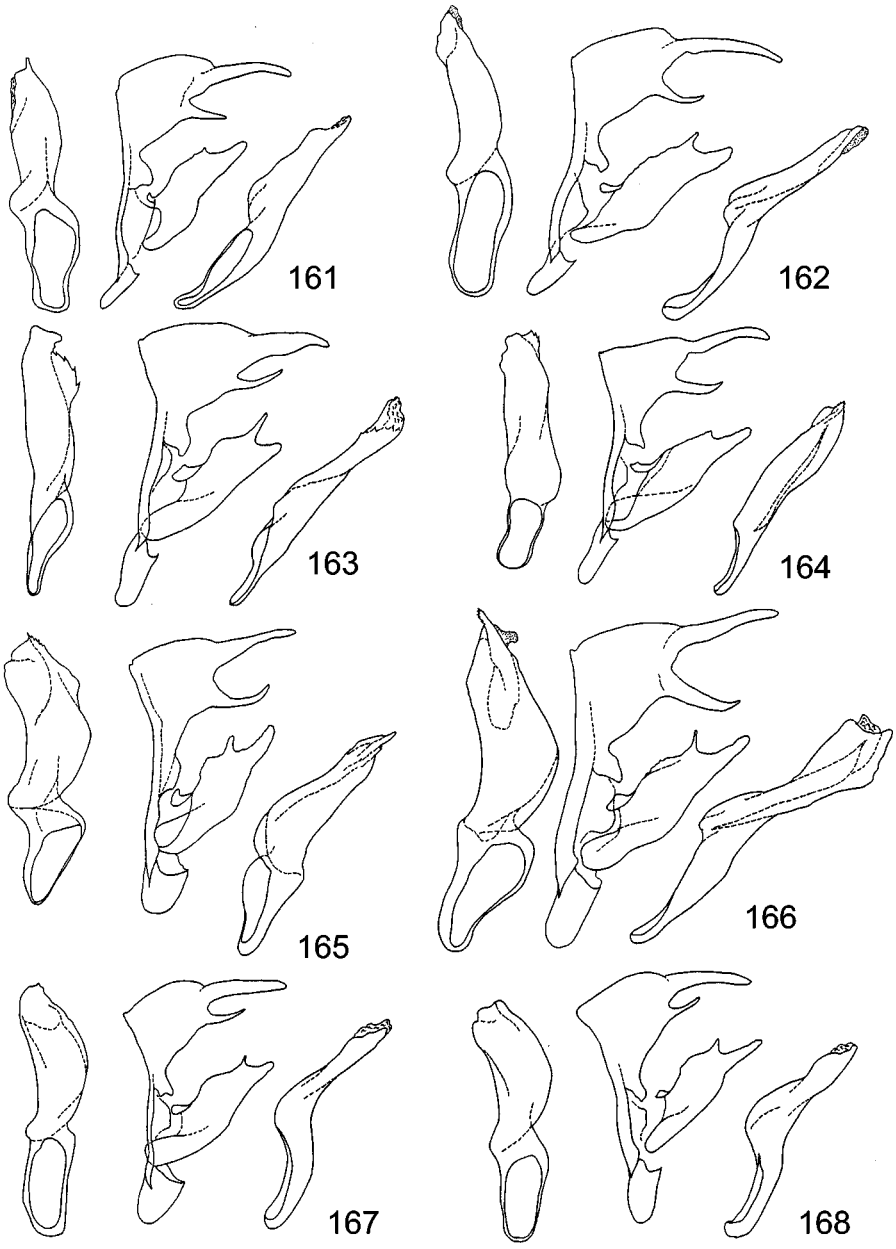

137-144. Male genitalia: 137 - *Manerebia trirufa*; 138 - *M. benigni benigni*; 139 - *M. diffusa*; 140 - *M. haywardi*; 141 - *M. ignilineata jalca*; 142 - *Apexacuta improvisa*; 143 - *A. superior*; 144 - *Corades tripunctata necrufa*



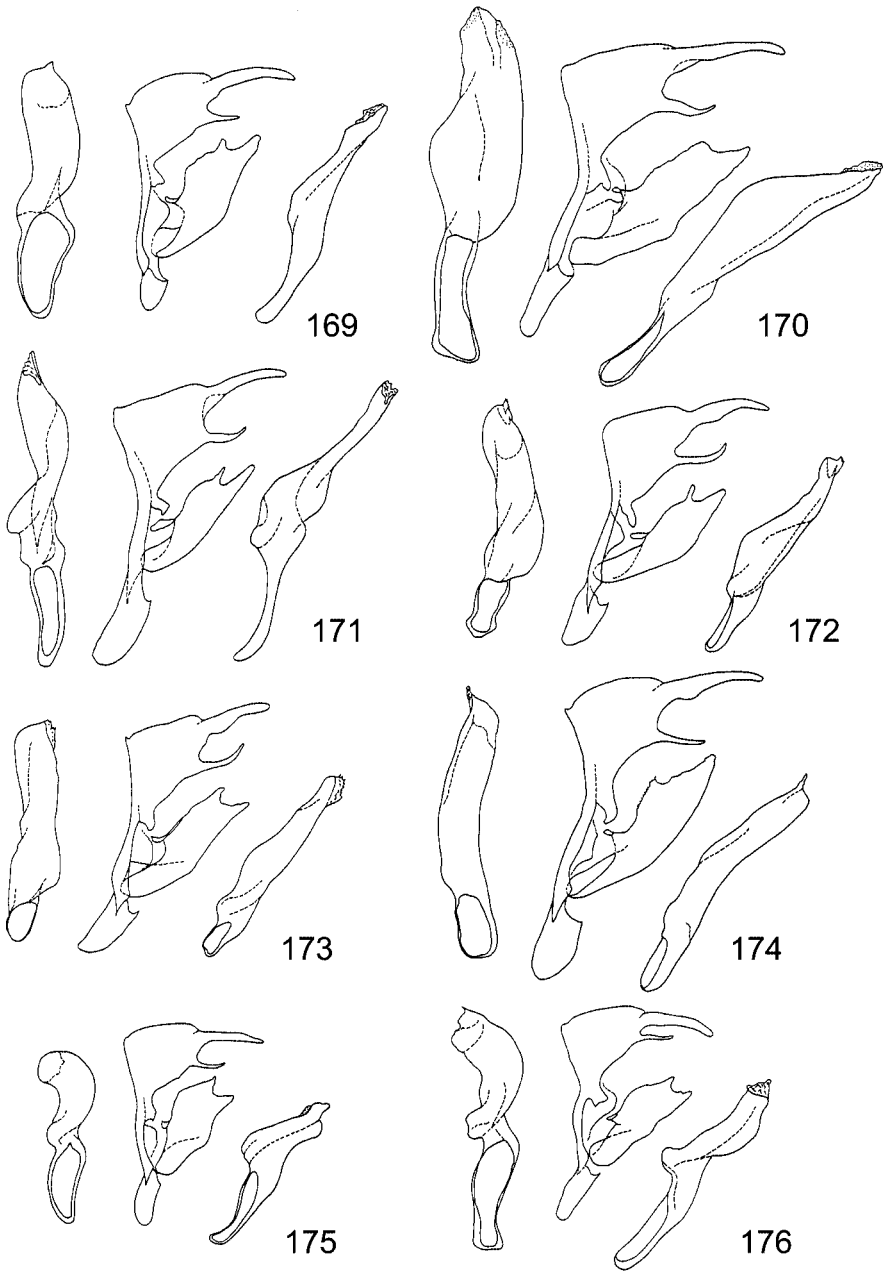

145-152. Male genitalia: 145 - *Junea dorinda quasinegra*; 146 - *Daedalma boliviana peruviana*; 147 - *D. fraudata*; 148 - *D. vertex*; 149 - *Lasiophila cirta atropurupurea*; 150 - *Mygona poeania magalyae*; 151 - *Oxeoschitus iphigenia*; 152 - *Proboscis pomarancia*



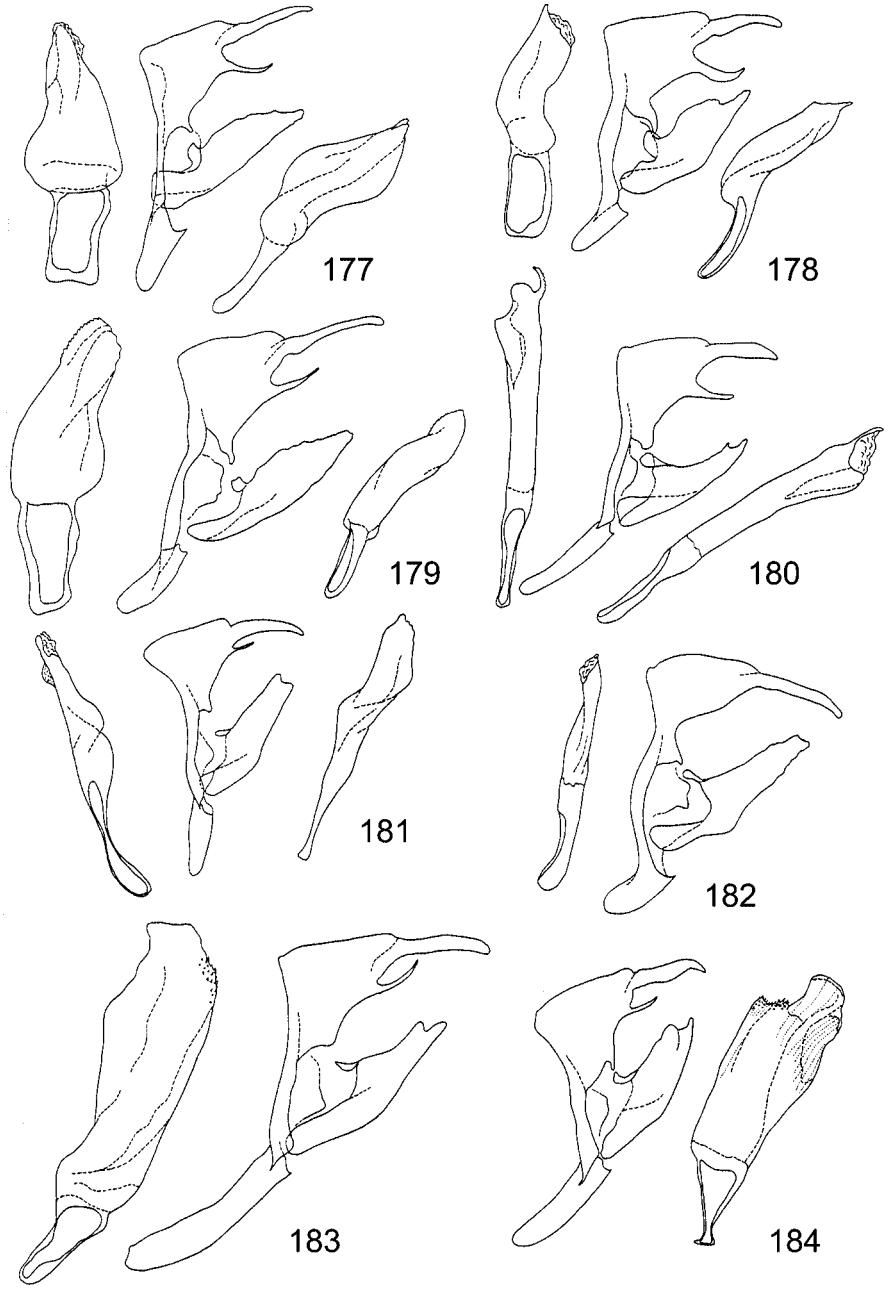

153-160. Male genitalia: 153 - *Pronophila tremocrata*; 154 - *P. epdidipnis perplexa*; 155 - *P. bernardi*; 156 - *P. rosenbergi puyango*; 157 - *Pseudomaniola clethra*; 158 - *P. mirabilis extrema*; 159 - *P. asuba*; 160 - *P. phaselis macasica*



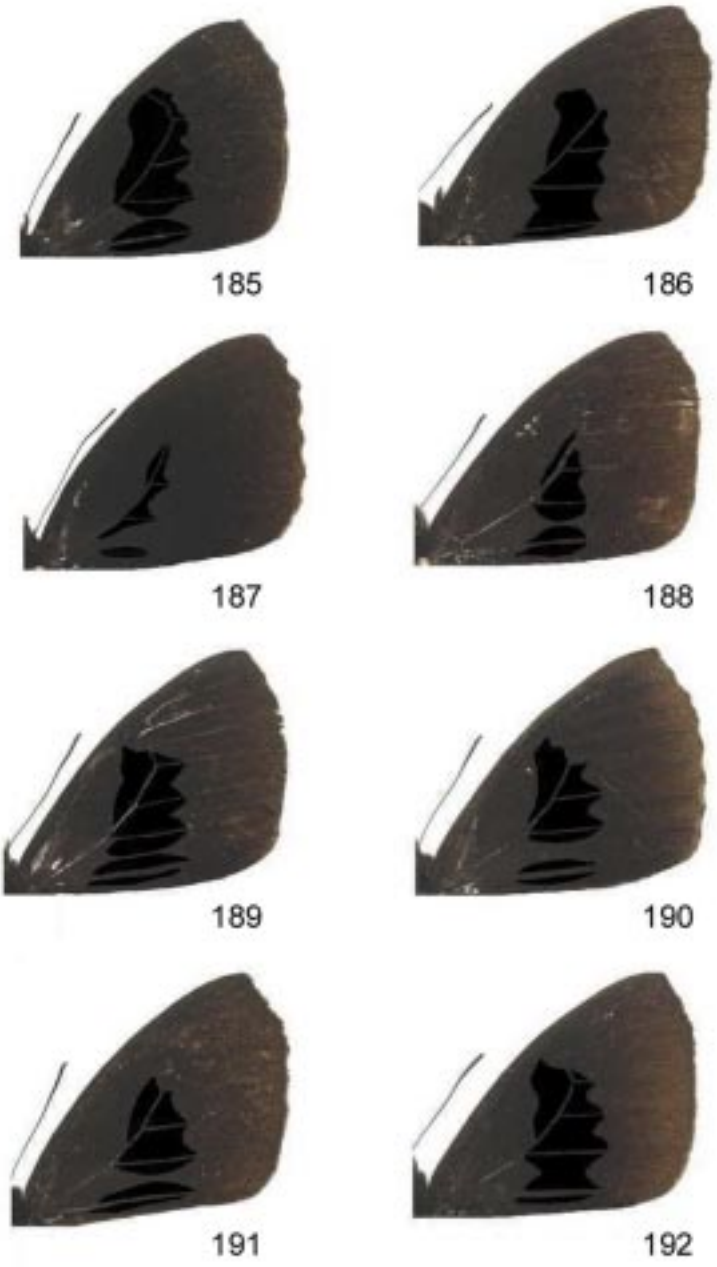

161-168. Male genitalia (aedeagus in lateral and dorsal view): 161 - *Pedaliodes cledonia molesta*; 162 - *P. petri maasseni*; 163 - *P. simplissima*; 164 - *P. phrasicla rufa*; 165 - *P. ferratilis*; 166 - *P. erschoffi*; 167 - *P. boettgeri*; 168 - *P. aureola*




169-176. Male genitalia (aedeagus in lateral and dorsal view): 169 - *Pedaliodes sophismata*; 170 - *P. stuebeli*; 171 - *P. uaniuna*; 172 - *P. peruda*; 173 - *P. maruda*; 174 - *P. demathani*; 175 - *P. sztolcmani sztolcmani*; 176 - *P. sztolcmani gilvaecosta*

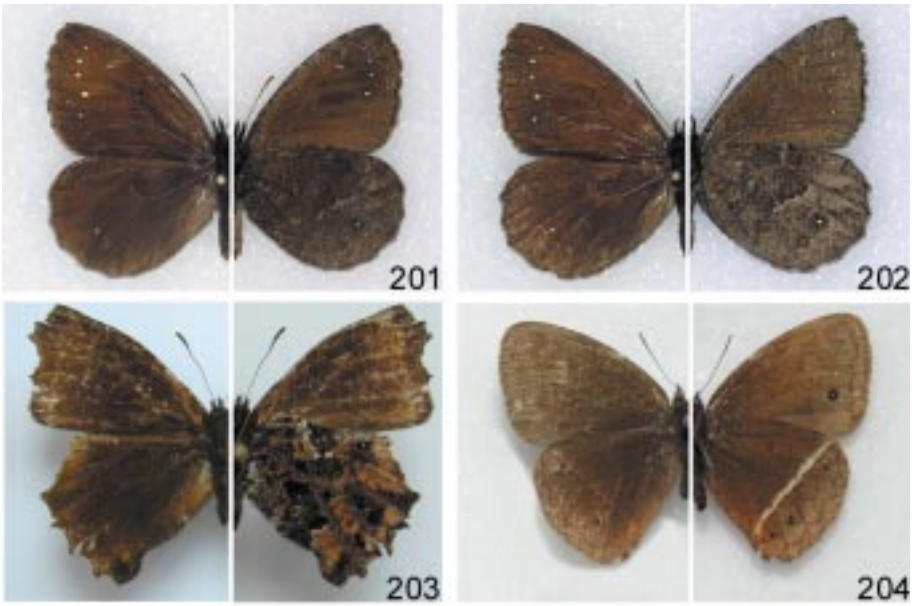


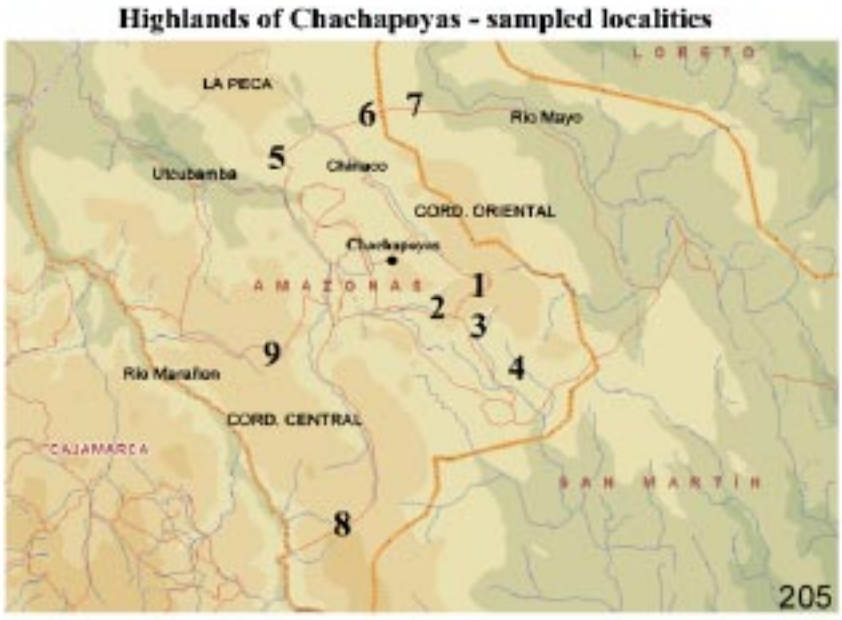

177-184. Male genitalia (Figs 177-181: aedeagus in lateral and dorsal view): 177 - *Pedaliodes jelskii*; 178 - *P. albicilia*; 179 - *P. woytkowskii*; 180 - *Corderopedaliodes corderoi exornat*a; 181 - *Panyapedaliodes phila certa*; 182 - *P. stellata*; 183 - *Punapedaliodes albopunctata*; 184 - *P. flavopunctata minima*




185-192. Androconia: 185 - *Pedaliodes asconia molesta*; 186 - *P. ferratilis*; 187 - *P. phrasicla rufa*; 188 - *P. petri maasseni*; 189 - *P. erschoffi*; 190 - *P. sophismata*; 191 - *P. transmontana*; 192 - *P. simplissima*


193-200. Androconia : 193 - *Pedaliodes aureola*; 194 - *P. boettgeri*; 195 - *P. uaniuna*; 196 - *P. maruda*; 197 - *P. peruda*; 198 - *P. stuebeli*; 199 - *P. woytkowskii*; 200 - *P. albicilia*



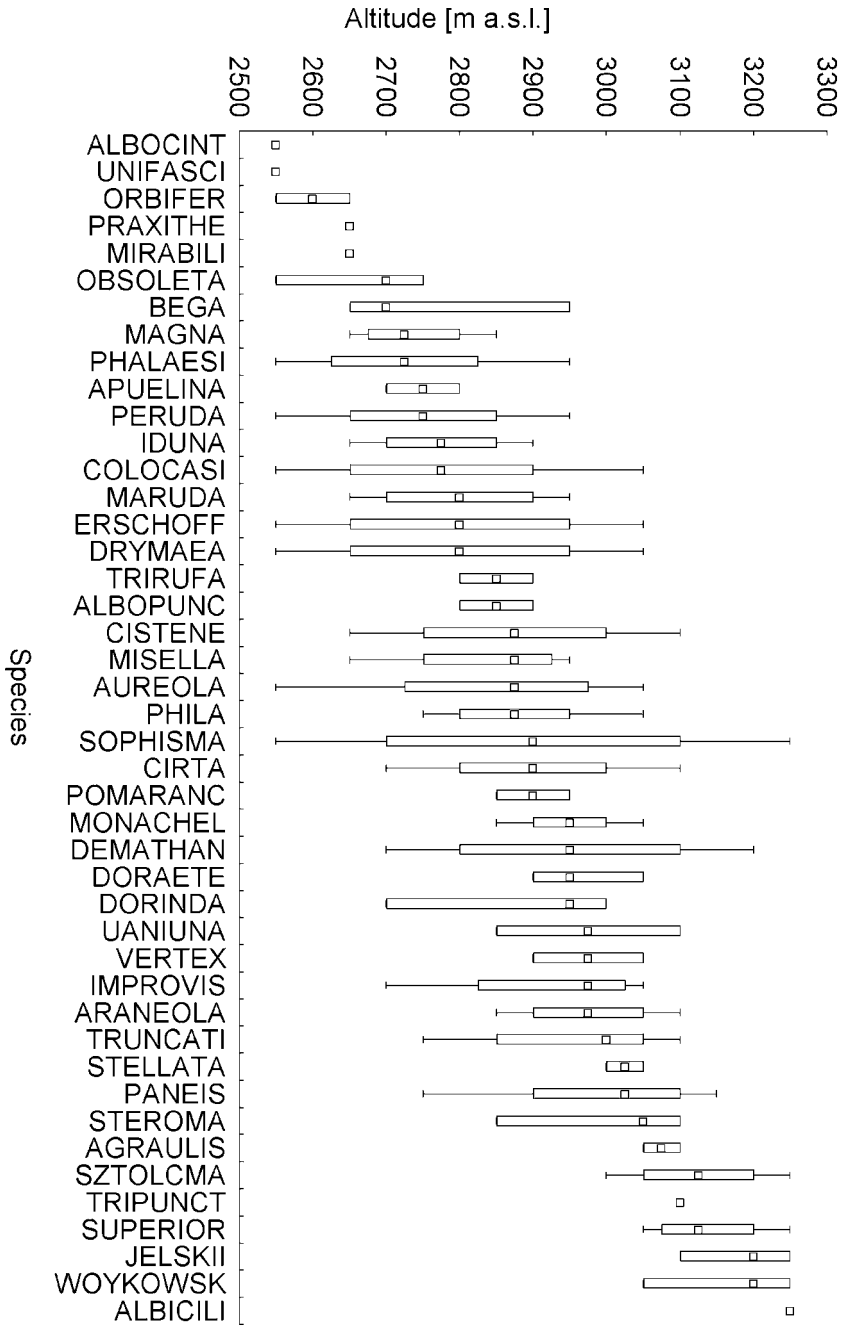

201-204. Adults: 201 - *Punapedaliodes albopunctata* ♂; 202 - *P. albopunctata* ♀; 203 - *Steremnia lucillae* ♀; 204 - *Manerebia benigni tessmanni* ♀; 205. Highlands of Chachapoyas - sampled localities (as specified on page 8)

Table 1. Diversity of the tribe Pronophilini along 10 potential altitudinal transects (*pat*)

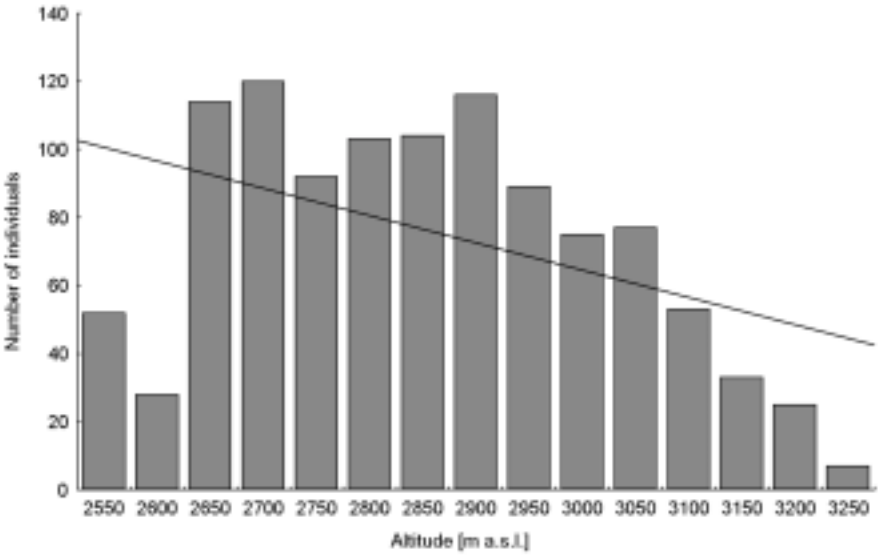
| Genera | San Lorenzo | Manaure | Colonia Tovar | La Culata | Betania | Choachi | Purace | Runtun | Zamora | Granada |
|---|---|---|---|---|---|---|---|---|---|---|
| Arhuaco | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cheimas | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Corades | 4 | 4 | 3 | 6 | 7 | 7 | 7 | 8 | 10 | 8 |
| Daedalma | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 3 | 3 |
| Drucina | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Junea | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 |
| Apexacuta | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 |
| Lasiophila | 1 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 4 | 4 |
| Mygona | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| Oxeoschistus | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 3 |
| Pseudomaniola | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 4 | 4 |
| Pronopohila | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 4 | 6 | 5 |
| Thiemeia | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Pedaliodes | 6 | 10 | 7 | 10 | 15 | 20 | 24 | 23 | 28 | 28 |
| Altopedaliodes | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 4 | 0 |
| Punapedaliodes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Paramo | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dangond | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Praepronophila | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pherepedaliodes | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 |
| Redonda | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Panyapedalidoes | 1 | 1 | 1 | 2 | 3 | 5 | 5 | 5 | 5 | 5 |
| Parapedaliodes | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 2 |
| Eretris | 1 | 3 | 1 | 2 | 3 | 6 | 5 | 5 | 5 | 5 |
| Lymanopoda | 2 | 6 | 2 | 5 | 6 | 10 | 9 | 10 | 10 | 11 |
| Manerebia | 1 | 2 | 1 | 2 | 4 | 4 | 3 | 4 | 7 | 5 |
| Steroma | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| Steremnia | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 3 | 5 | 5 |
| Diaphanos | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Idioneurula | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| Ianusiussa | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Tamania | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| **Species** | **22** | **36** | **24** | **38** | **56** | **75** | **78** | **82** | **105** | **104** |
| **Genus** | **12** | **14** | **14** | **17** | **19** | **19** | **19** | **18** | **18** | **18** |

pat co-ordinates and data source:

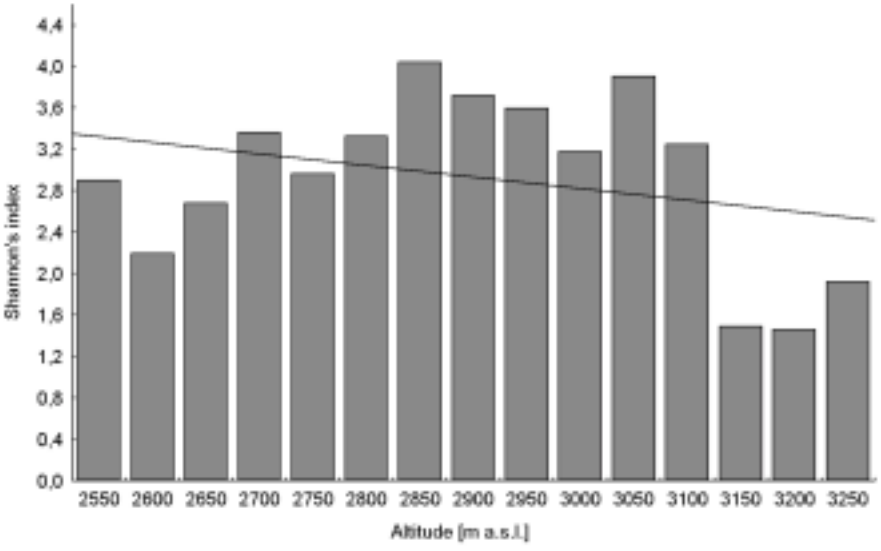
- San Lorenzo: Colombia, Sierra Nevada de Santa Marta, north slopes, 11°08'N 74°03'W (ADAMS & BERNARD 1977; PYRCZ unpubl.);
- Manaure: Colombia, Serranía de Perijá, west slopes, 10°23N 72°58'W (ADAMS & BERNARD 1979; VILORIA, Msc. thesis, unpubl.);
- La Culata: Venezuela, Cordillera de Mérida, Sierra de la Culata, southeast slopes, 8°41'N 71°08'W (ADAMS & BERNARD 1981; PYRCZ & WOJTUSIAK 2002; PYRCZ unpubl.);
- Colonia Tovar: Venezuela, Cordillera de La Costa, north slopes, 10°26'N 67°15'W (RAYMOND 1982; PYRCZ in prep.);
- Betania: Venezuela, Cordillera Oriental, Sierra del Tamá, north slopes, 7°27'N 72°26'W (PYRCZ & VILORIA in press);
- Choachi: Colombia, Cordillera Oriental, Cundinamarca, east slopes, 4°33'N 73°57'W (ADAMS 1986; PYRCZ 1999);
- Puracé: Colombia, Cordillera Central, Cauca, east slopes, 2°22'N 76°16'W (ADAMS 1986; PYRCZ 1999);
- Runtún: Ecuador, Cordillera Oriental, Tungurahua, north slopes, 1°25'S 78°25'W (PYRCZ et al. 1999; PYRCZ & VILORIA 1999, PYRCZ 2000 unpubl.);
- Zamora: Ecuador, Cordillera Oriental, Nudo de Sabanillas, east slopes, 3°58'S 79°03'W (PYRCZ et al. 1999; PYRCZ & VILORIA 1999; PYRCZ 2000 in prep.).



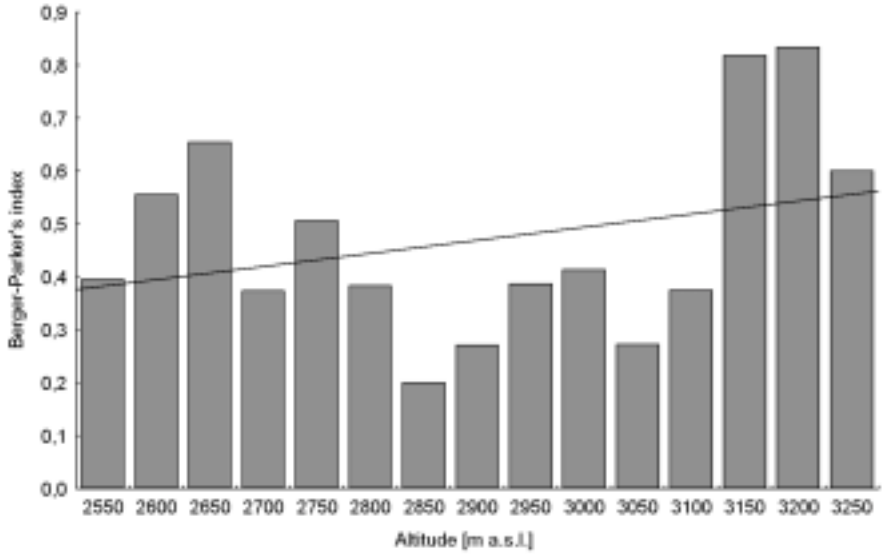

206. Altitudinal distribution pattern of Chachapoyas Pronophilini



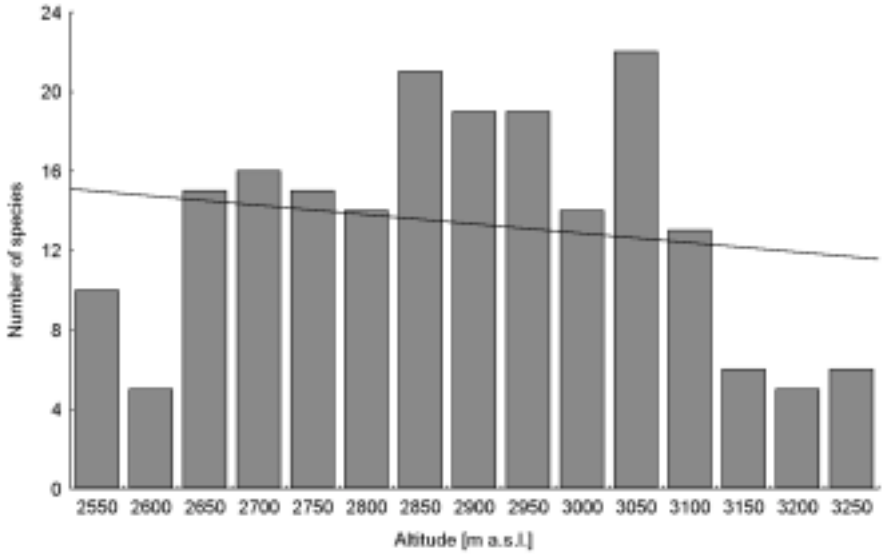

207. Molinopampa transect: abundance



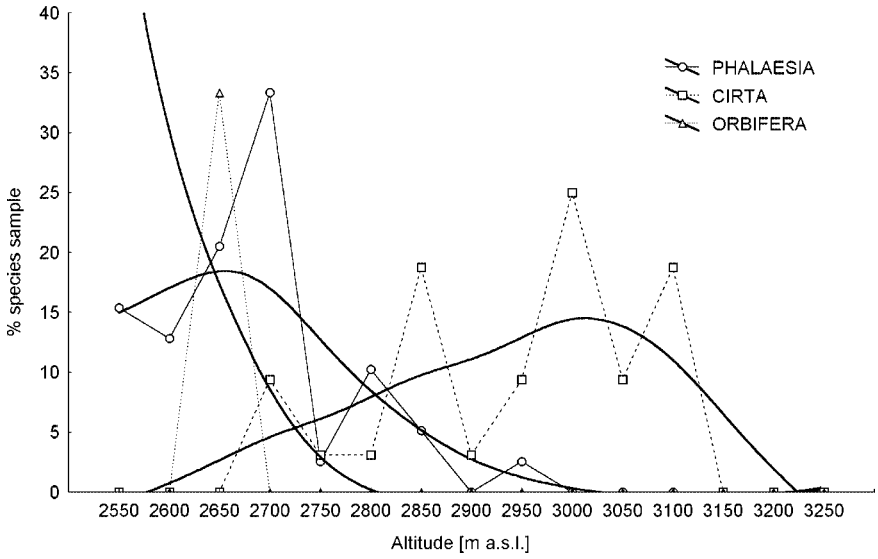

208. Molinopampa transect: Shannon diversity index



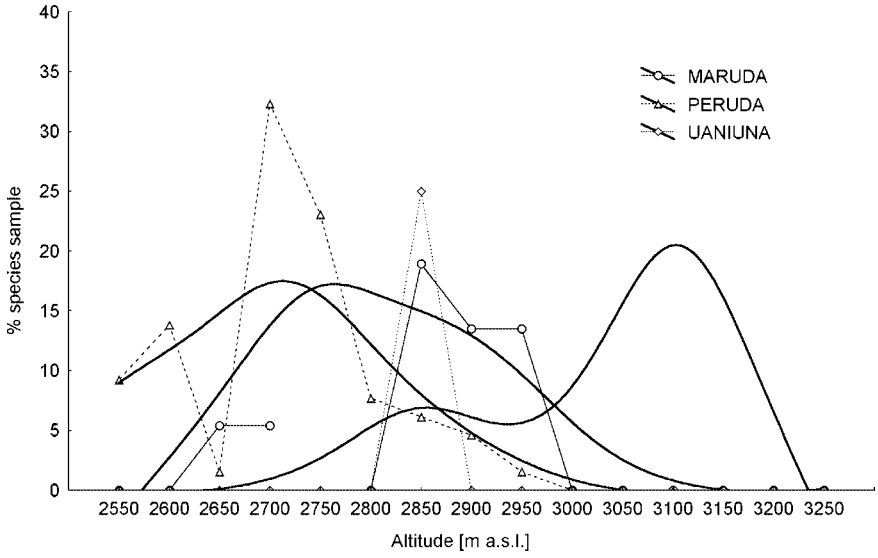

209. Molinopampa transect: Berger-Parker dominance index




210. Molinopampa transect: species richness




211. Molinopampa transect: parapatric distributions of *Lasiophila orbifera*, *L. phalaesia*, and *L. cirta*




212. Molinopampa transect: parapatric distributions of *Pedaliodes peruda*, *P. maruda*, and *P. uaniuna*

Molinopampa altitudinal transect - data matrix

| Species | Altitude [m a.s.l.] | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2550 | 2600 | 2650 | 2700 | 2750 | 2800 | 2850 | 2900 | 2950 | 3000 | 3050 | 3100 | 3150 | 3200 | 3250 |
| SOPHISMATA | 3 | 1 | 7 | 28 | 17 | 22 | 34 | 20 | 14 | 27 | 10 | 21 | 21 | 17 | 1 |
| IMPROVISA | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 5 | 1 | 0 | 0 | 0 | 0 |
| SUPERIOR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 0 | 2 |
| PHALAESIA | 6 | 5 | 8 | 13 | 1 | 4 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| CIRTA | 0 | 0 | 0 | 3 | 1 | 1 | 6 | 1 | 3 | 8 | 3 | 6 | 0 | 0 | 0 |
| CISTENE | 0 | 0 | 2 | 2 | 0 | 2 | 6 | 5 | 8 | 0 | 2 | 1 | 0 | 0 | 0 |
| IDUNA | 0 | 0 | 2 | 6 | 5 | 10 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ARANEOLA | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 4 | 9 | 3 | 0 | 0 | 0 |
| MAGNA | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APUELINA | 0 | 0 | 0 | 4 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TRUNCATINA | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 3 | 1 | 1 | 0 | 0 | 0 |
| COLOCASIA | 12 | 6 | 42 | 5 | 2 | 7 | 6 | 7 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
| UNIFASCIATA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OBSOLETA | 6 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AGRAULIS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 0 |
| MONACHELLA | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 6 | 1 | 2 | 0 | 0 | 0 | 0 |
| MISELLA | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| BEGA | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| PRONOPHILA | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 0 |
| STELLATA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 |
| MARUDA | 0 | 0 | 2 | 2 | 16 | 0 | 7 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERUDA | 6 | 9 | 1 | 21 | 15 | 5 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| UANIUNA | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |

Molinopampa altitudinal transect - data matrix (continuation)

| Species | Altitude [m a.s.l.] | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2550 | 2600 | 2650 | 2700 | 2750 | 2800 | 2850 | 2900 | 2950 | 3000 | 3050 | 3100 | 3150 | 3200 | 3250 |
| AUREOLA | 2 | 0 | 6 | 0 | 0 | 21 | 2 | 13 | 21 | 2 | 6 | 0 | 0 | 0 | 0 |
| DEMATHANI | 0 | 0 | 0 | 2 | 2 | 9 | 5 | 9 | 5 | 11 | 4 | 1 | 7 | 1 | 0 |
| JELSKII | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 1 |
| SZTOLCMANI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 6 | 2 | 2 | 1 |
| PANEIS | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 6 | 1 | 5 | 1 | 0 | 0 |
| ERSCHOFFI | 7 | 5 | 28 | 13 | 22 | 7 | 7 | 11 | 5 | 2 | 6 | 0 | 0 | 0 | 0 |
| PHILA | 0 | 0 | 0 | 0 | 3 | 5 | 3 | 7 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |
| DRYMAEA | 6 | 2 | 8 | 13 | 2 | 6 | 6 | 13 | 6 | 1 | 1 | 0 | 0 | 0 | 0 |
| TRIPUNCTATA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| VERTEX | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| DORAETE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 |
| DORINDA | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| ORBIFERA | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ALBOCINCTA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TRIRUFA | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| POMARANCIA | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| ALBICILIA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| ALBOPUNCTA | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WOYTKOWSKI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 1 |
| PRAXITHEA | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MIRABILIS | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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