

Genus	Vol. 10 (1): 117-150	Wrocław, 31 III 1999
-------	----------------------	----------------------

Contribution to the knowledge of Ecuadorian *Pronophilini*, Part 1;  
new pedalioidines  
(*Lepidoptera: Nymphalidae: Satyrinae*)

TOMASZ W. PYRCZ<sup>1</sup> & ANGEL L. VILORIA<sup>2</sup>

<sup>1</sup>Zoological Museum of the Institute of Zoology, Jagiellonian University, Ingardena 6,  
30-060 Kraków, Poland, e-mail: pyrcz@zuk.iz.uj.edu.pl

<sup>2</sup>Biogeography & Conservation Laboratory, The Natural History Museum, Cromwell Road,  
London SW7 5BD, UK, e-mail: alv@nhm.ac.uk

Permanent address: Museo de Biología, Facultad Experimental de Ciencias, La Universidad del  
Zulia, Apdo. 526, Maracaibo 4011, Zulia, Venezuela, e-mail: aviloria@luz.ve

ABSTRACT. *Altopedaliodes kurti* (Ecuador), *A. tena nucea* (Ecuador), *A. zsolti* (Ecuador), *Panyapedaliodes traceyannae* (Ecuador), *Pedaliodes balnearia* (Ecuador), *P. arturi* (Ecuador), *P. petri* (Ecuador), *P. rumba* (Ecuador), *P. sonata* (Ecuador), *P. dracula* (Ecuador), *P. tabaconas* (Ecuador, Peru), *P. morenoi pilaloensis* (Ecuador), *P. peucestas restricta* (Ecuador) and *Pherepedaliodes nubilia* (Ecuador, Peru), new to the science, are described and illustrated.

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

#### INTRODUCTION

Based on male genitalic morphology and colour pattern, FORSTER (1964) removed several smaller taxa from the species-rich genus *Pedaliodes* BUTLER (1867). Some of the FORSTERIAN genera were later sunk by ADAMS & BERNARD (1981), ADAMS (1986) and LAMAS [1997] as unjustified. Some others seem to stand as monophyletic entities separable on morphological and/or ecological grounds. The species of *Pedaliodes* (*sensu lato*) occur in cloud forests and páramo habitats. They are particularly well represented at elevations between

2500 and 3000 m (ADAMS 1985) in the central Andes of Colombia, Ecuador and Peru. A current survey carried out in the Parque Nacional Podocarpus in southern Ecuador (PYRCZ unpublished) found 31 species of the *Pedaliodes* group, which is the highest local diversity recorded to date for this section of the satyrine tribe *Pronophilini* (REUTER).

Recent collecting came up with an impressive number of new taxa of Ecuadorian pedalioidines, at specific and subspecific levels, found in localities which have been investigated for over a century (see HEWITSON 1869, DOGNIN 1887, 1893, BROWN 1943, 1944, HAYWARD 1968), such as the upper Río Zamora and the valley of the Río Pastaza, and also remote areas sampled for high Andean butterflies for the first time recently, such as the Cordillera de Lagunillas situated on the south-western Peruvian border; the uppermost forests on the western slopes of Chimborazo, and the valley of Upano.

ACRONYMS:

- AME: Allyn Museum of Entomology, Sarasota, Florida, USA.  
 BMNH: The Natural History Museum, London, UK.  
 JFLC: Collection of Jean François LE CROM, Bogotá, Colombia.  
 KWJH: Collection of Keith R. WILLMOTT and Jason P. W. HALL, currently at Gainesville, USA.  
 MALUZ: Museo de Artrópodos, Facultad de Agronomía, La Universidad del Zulia, Maracaibo, Venezuela.  
 MNCN: Museo Nacional de Ciencias Naturales, Quito, Ecuador.  
 MZUJ: Zoological Museum, Jagiellonian University, Cracow, Poland.  
 MUSM: Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru.  
 PB: Collection of Pierre BOYER, Le Puy Sainte Réparate, France.  
 TWP: Collection of Tomasz Wilhelm PYRCZ, Warsaw, Poland.  
 UCP: Universidad Católica Pontificia, Quito, Ecuador.  
 ZSBS: Zoologisches Staatssammlung München, Germany.

***Altopedaliodes* FORSTER, 1964:148.**

Type-species: *Pronophila tena* HEWITSON, 1869: 98, by original designation.

As currently arranged (vide LAMAS 1997), the genus *Altopedaliodes* is clearly paraphyletic. Ten species and two subspecies are known to occur in the high elevation orcal biomes from Venezuela to Bolivia. Two new species and one subspecies are added here to this genus. They are assigned to *Altopedaliodes* because their features of genitalic morphology are synapomorphic with *A. tena* (HEWITSON), the type species of the genus.

*Altopedaliodes kurti* PYRCZ et VILORIA n. sp.

(Figs. 1, 24)

## ETYMOLOGY

This species is dedicated to our colleague, the American lepidopterist Kurt JOHNSON, who specialises in Neotropical theclines (*Lycaenidae*).

## DIAGNOSIS

Upperside uniform ashy-brown, much lighter than *A. perita* (HEWITSON). Hindwing underside markings faint, showing little differences from the ground colour, in contrast to other congeners which always have a well defined postmedian band. Male genitalia similar to that of *A. tena*. However, the latter species normally possesses the main dorsal process of the valva almost in apical position, whereas it is pre-apical in *A. kurti*. *Altopedaliodes tena* also shows a slight lateral compression near the basal extremity of the aedeagus, which is absent in the new species. It seems likely that *A. kurti* is the local south Ecuadorian replacement of the more widely distributed *A. tena*.

## DESCRIPTION

Male (Fig. 1). **Head:** labial palpi covered with sparse, ashy-brown hair. Eyes chocolate-brown, covered with sparse, very short setae. Antennae 4/7 length of costa, russet, club formed gradually. **Thorax:** blackish-dark brown, hairy; walking legs basally hairy. **Abdomen:** dorsally blackish-brown, ventrally slightly lighter. **Wings:** forewing length 22 mm (n = 1), apex acute; fringes of both wings brown and short. Forewing and hindwing upperside uniform dark ashy-brown; scent patch similar to that of *A. tena*. Forewing underside ashy-brown, slightly lighter than upperside in distal half, except on apex. Hindwing underside brown, same colour as on upperside, liberally speckled with lighter scales; postmedian band paler than ground colour. **Genitalia:** Uncus stout, subunci short, process on the costa valvae reduced, aedeagus short and straight (Fig. 24); *A. perita* (Fig. 26).

Female. Unknown.

Immature stages and host plants. Unknown.

## TYPES

**Holotype** male: Sector Yangana, Parque Nacional Podocarpus, Loja, Ecuador, above (?) 2850 m, 27.X.1994, EXPEDITION PARROTS IN PERIL leg. [BMNH]; 3 males, Ecuador, Loja Province, km 21 Jimbura-San Andrés rd., 3400 m, 22.IX.1997, K. R. WILLMOTT leg. [KWJH].

## REMARKS

According to K. R. WILLMOTT (pers. comm.) males of this species observed in the road from Jimbura to San Andrés, were common flying low over boggy páramo during bright sun, from 10 AM onwards. The species behaved like *A. tena*.

***Atopedaliodes tena nucea* PYRCZ et VILORIA n. ssp.**

(Figs. 2, 25)

## ETYMOLOGY

*nucea* (adj.f.) - chestnut; pointing out the distinctive upperside chestnut colour of this subspecies.

## DESCRIPTION

Male. (Fig. 2) Differs from individuals of other populations by its wider wingspan (forewing length of *nucea*: 22-26 mm, mean = 23.6, n = 11; nominate subspecies: 18-23 mm, mean = 21 mm, n = 52), upperside colour, lustrous ashy-chestnut, instead of dull grey-brown, forewing milky spots smaller, as four to five very small dots of about same size, aligned in parallel to outer margin (arched in other populations). **Genitalia**: (Fig. 25).

Female. Forewing length 26 mm (n = 1). Similar to male, from which it differs only in lacking androconial patch on forewing upperside.

Immature stages and host plants. Unknown.

## TYPES

**Holotype** male: Nabón, Azuay, Ecuador, 03.III.1997, S. ATTAL *leg.* [MZUJ]; **Allotype** Female: same data as holotype; **Paratypes** 6 males, same data as holotype; 2 males, Barabón, Azuay, 01.V.1994, F. PIÑAS *leg.*; 12 males, Azuay, Jima, 4300 m, X.1997, I. ALDAS *leg.*. [TWP and UCP]; 2 males, Ecuador, Provincia de Azuay, W of Cuenca, Río Mazán, 3450 m, 14.VIII.[19]86, M. J. & J. ADAMS *leg.* Brit. Mus. 1986-344 (genit. preps. ALV031/032-96) [BMNH]; 2 males, Cuesta N of Azogues nr. Cuenca, [Azuay], Ecuador, 9.II.[19]72, W. HOVANITZ *leg.* Allyn Museum acc. 1981-25 [AME]; 1 male, Ecuador, Morona-Santiago Province, Gualaceo-Chiguinda rd., east of pass, 3400 m, 20.XI.1997, K. R. WILLMOTT *leg.* [KWJH]; 23 males, Jima, Azuay, 4300 m, X 1997, I. ALDAS *leg.* [TWP].

## REMARKS

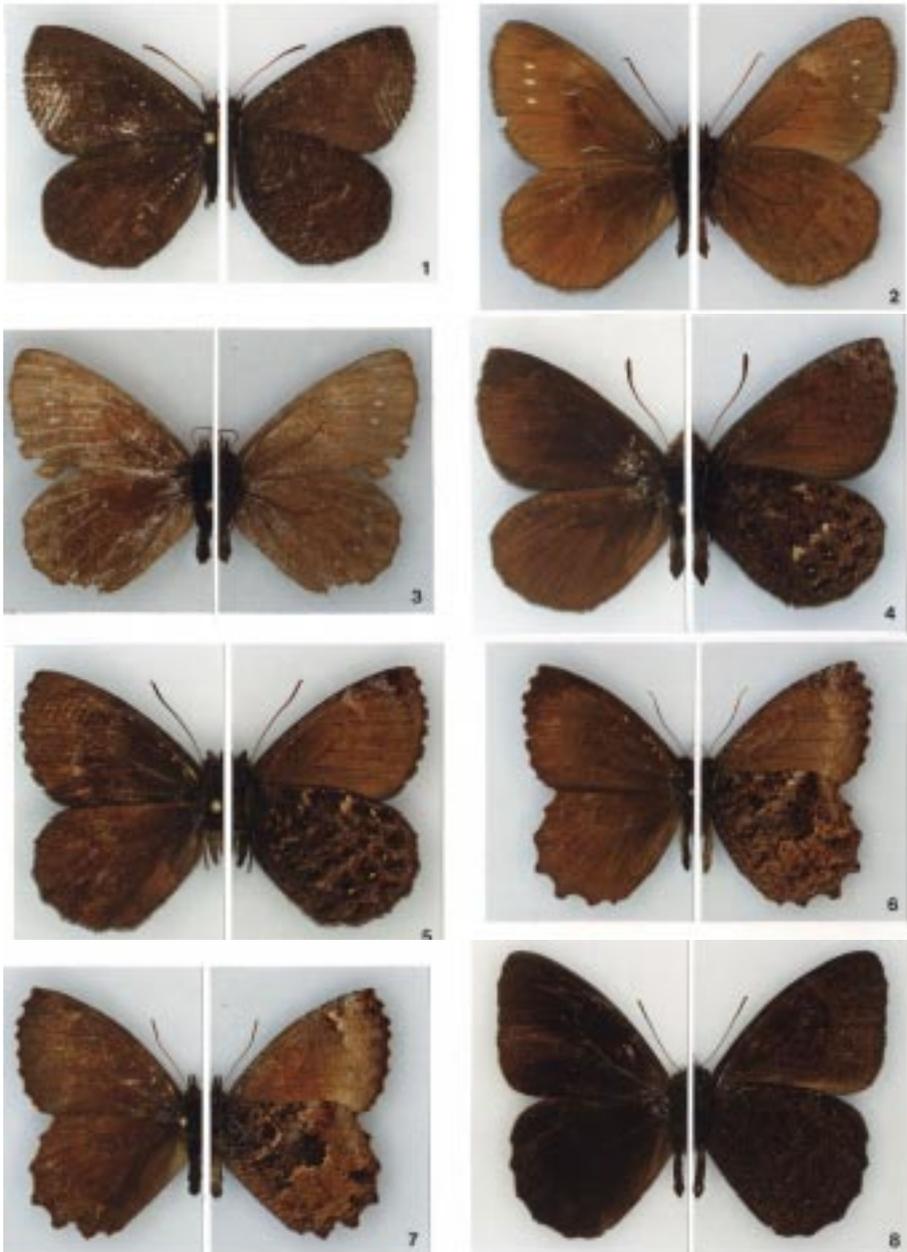
Even though *A. tena* exhibits notable variation in size and shape of the forewing milky white patches, between and within populations, the population found in the area of Cuenca stands well apart for the referred series of characters, the stability of which fully justifies its separate subspecific status. It is also the southernmost and the most isolated population of *A. tena*. Its exact range limits are unknown as yet.

***Atopedaliodes zsolti* PYRCZ & VILORIA n. sp.**

(Figs. 5, 26)

## ETYMOLOGY

This species is dedicated to the Hungarian entomologist Zsolt BÁLINT, who has significantly contributed to the knowledge of the Andean polyommata (*Lycaenidae*).



1-8. Adults, left upperside, right underside: 1 - *Altopedaliodes kurti* n. sp., male holotype; 2 - *A. tena nucea* n. spp., male holotype; 3 - *A. tena nucea* n. ssp., female allotype; 4 - *A. perita* (HEWITSON) male; 5 - *A. zsolti* n. sp., male holotype; 6 - *Panyapedaliodes traceyannae* n. sp., male holotype; 7 - *P. traceyannae* n. sp., female allotype; 8 - *Pedaliodes balnearia* n. sp., male holotype



9-16. Adults, left upperside, right underside: 9 - *Pedaliodes balnearia* n. sp., female allotype; 10 - *P. arturi* n. sp., male holotype; 11 - *P. petri* n. sp., male holotype; 12 - *P. rumba* n. sp., male holotype; 13 - *P. rumba* n. sp., female allotype; 14 - *P. sonata* n. sp., male holotype; 15 - *P. arturi* n. sp., female paratype; 16 - *P. dracula* n. sp., male holotype



17-23. Adults, left upperside, right underside: 17 - *Pedaliodes dracula* n. sp., female allotype; 18 - *P. tabaconas* n. sp., male holotype; 19 - *P. tabaconas* n. sp. female allotype; 20 - *P. morenoi pilaloensis* n. ssp., male holotype; 21 - *P. peucestas restricta* n. ssp, male holotype; 22 - *P. peucestas restricta* n. ssp., female allotype; 23 - *Pherepedaliodes nubilia* n. sp., male holotype

## DIAGNOSIS

Similar in appearance to *A. perita* (HEWITSON) (Figs. 4, 27), but smaller and with lighter brown upperside. Larger than *Altopedaliodes kurti* new sp., with distinct white chequered forewing fringes and darker, relatively well marked, postmedian line on hindwing underside.

## DESCRIPTION

Male: (Fig. 5) **Head**: labial palpi covered with ashy dark-brown hair. Eyes blackish-brown, covered with dense, short setae. Antennae  $4/7$  length of costa, dorsally blackish-brown, ventrally russet, club formed gradually. **Thorax**: blackish-dark brown, hairy. Femur and base of walking legs densely hairy. **Abdomen**: dorsally dark brown, ventrally slightly lighter. **Wings**: Forewing length 23.5 mm ( $n = 1$ ), apex acute, outer margins convex, fringes long, dark brown and white in interspaces. Hindwings rounded, fringes long, dark brown. Upperside of both wings uniform, dark brown. Forewing underside pale brown, costa dark brown, with dark chocolate brown and silver-blue scales on apex; faint silver-blue postdiscal costal streak; chocolate dark-brown submarginal line from costa to vein M2. Hindwing ground colour brown, with blackish-brown median, postmedian and submarginal lines; short, dusty yellow costal streak; row of yellowish submarginal dots in interspaces. **Genitalia**: Tegumen stout, valvae elongated, process on costa valvae short and pointed, ampulla dentate, saccus capacious (Fig. 26).

Female. Unknown.

Immature stages and host plants. Unknown.

## TYPES

**Holotype** male: Sector Yangana, Podocarpus National Park, Loja, Ecuador, above (?) 2850 m, 27.X.1994, EXPEDITION PARROTS IN PERIL *leg.* [BMNH]; 1 male, Ecuador, Loja Province, km 21 Jimbura-San Andrés rd., 3400 m, 22.IX.1997, K. R. WILLMOTT *leg.* [KWJH].

## REMARKS

Habitus and general aspect of the male genital armature of this species are those of the genus *Altopedaliodes* but the very long aedeagus is unique within the genus; eventually reminiscent of that of another forest-páramo ecotone species, *Pedaliodes puracana* KRÜGER.

WILLMOTT (pers. comm.) captured one specimen while it was flying together with several individuals of *A. kurti*. Males of both species are similar in behaviour, but *A. zsolti* appears to be much rarer.

***Panyapedaliodes* FORSTER, 1964:157.**

Type-species: *Pronophila panyasis* HEWITSON, 1862: 7, pl. 3, fig. 22, by original designation.

Nine species are currently placed within this genus (from these, *P. phila* (HEWITSON) has at least three recognised subspecies). The genus is probably paraphyletic, and the validity of other genera created by FORSTER, but later synonymised with *Panyapedaliodes*, has to be revised. One new species, proposed in this paper, is very close to the type species of the genus *Panyapedaliodes panyasis* (HEWITSON).

***Panyapedaliodes traceyannae* PYRCZ et VILORIA, n. sp.**

(Figs. 6, 7, 28)

ETYMOLOGY

This species is dedicated to Miss Tracey Ann HOOLEY, a British-Australian ornithologist, member of the ICBP expeditions to the Parque Nacional Podocarpus.

DIAGNOSIS

Differs from *P. panyasis* in having slightly more acute forewing apex, and more rounded hindwing. Underside pattern similar, but brighter than in *P. panyasis*; broader chocolate brown and yellow scaling on postmedian band. Male genitalia of *P. traceyannae* differs from that of *P. panyasis* in the following aspects: aedeagus robust, fusiform and thick in the middle (thin, more or less tubular in *P. panyasis*); extremity of the valvae bifid (simple in *P. panyasis*); saccus conical, spaciose (sub-conical and notably thinner in *P. panyasis*); subunci about half length of uncus (a quarter or less in *P. panyasis*). Another closely related, and very similar species *Panyapedaliodes mara* (THIEME) has a considerably longer, straight, and stylised aedeagus, which is characteristically compressed at the base and shows a more conspicuous spiny process at the tip.

DESCRIPTION

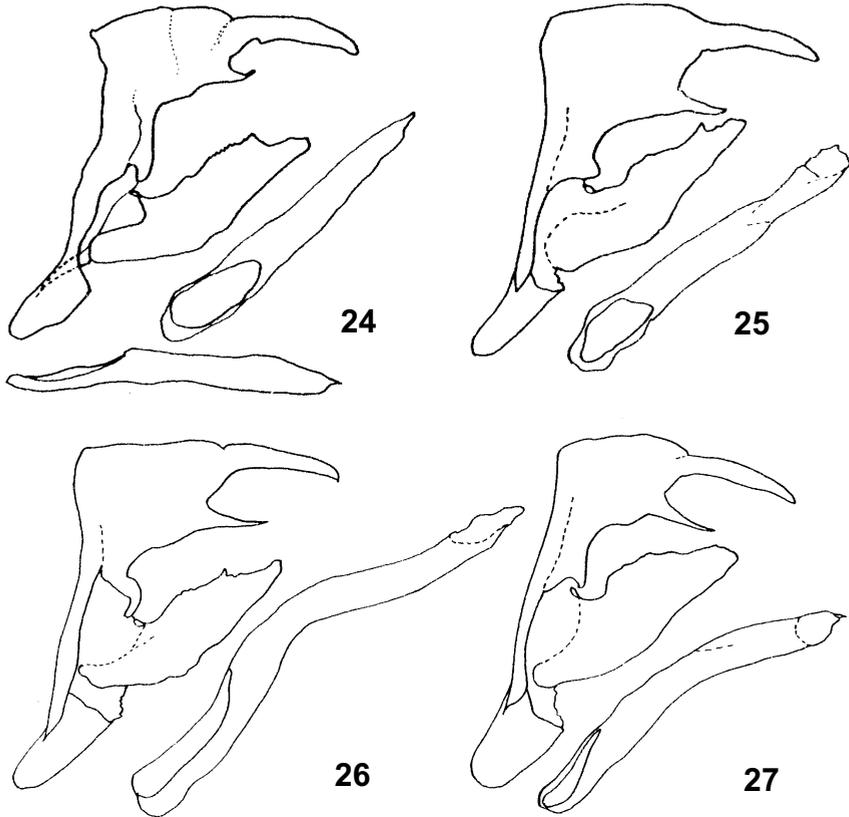
Male. (Fig. 6) **Head:** eyes brown, sparsely hairy, palpal hair brown and chestnut, antennae half length of costa, chestnut, distally brown, club gradual; **Thorax:** dorsally brown, first pair of legs covered with brown hair, walking legs with femur hairy at base; **Abdomen:** dorsally and ventrally brown; **Wings:** forewing (length: 27-30 mm; mean = 29.1 mm, n = 6) outer margins slightly scalloped, produced at vein M1; hindwing margins more scalloped; fringes brown and yellow; upperside colour of both wings shiny golden-brown, scent patch slightly darker than ground colour, little marked, large, covering median third of wing; forewing underside ground colour chestnut, discal cell chocolate brown, faint, sinuate yellow subapical band from R5 to Cu1, black, silver and chocolate scales at apex, and along outer margin; hindwing underside, basally from postmedian line, and from submarginal line to outer margin, dark brown suffused with silver scales; distally from postmedian, and basally from submarginal line chestnut suffused with chocolate-brown and yellow scales, particularly along inner edge, and on costa. **Genitalia:** Uncus short and thin, humped process on the costa valvae, saccus very capacious (Fig. 28).

Female. (Fig. 7) Similar to male but slightly larger (forewing length: 31 mm, n = 1), underside pattern paler and less contrasting.

Immature stages and host plants. Unknown.

#### TYPES

**Holotype** male: Yangana area, Parque Nacional Podocarpus, 27.X.1994, no altitude, „PARROTS IN PERIL” leg. [BMNH]; **Allotype** Female: Road Limón-Gualaceo, Morona-Santiago, 2800 m, 03-04.XI.1996, A. NEILD leg. [TWP]; **Paratypes** 2 males, same data as the holotype [BMNH and TWP]; 1 male, Environs de Loja, [Ecuador], Dognin Coll., JOICEY Bequest, Brit. Mus. 1934-120; 1 male, Ecdr., Ex GROSE SMITH, JOICEY Bequest, Brit. Mus. 1934-120 (genit. prep. ALV044-96) [BMNH]; 1 male, Ecuador, Morona-Santiago Province, Gualaceo-Chiguinda rd., east of pass, 2800-3000 m, 20.XI.1997, K. R. WILLMOTT leg.; 2 males, 1 female, Ecuador, Zamora-Chinchipe Province, km 29 Jimbura-San Andrés rd., 3100 m,



24-27. Male genitalia, only one valva is shown, aedeagus removed from natural positions: 24 - *Altopedaliodes kurti* n. sp.; 25 - *A. tena nucea* n. ssp.; 26 - *A. zsolti* n. sp.; 27 - *A. perita* (HEWITSON)

22.IX.1997, K. R. WILLMOTT *leg.*; 1 male, Ecuador, Zamora-Chinchipe Province, km 34 Jimbura-San Andrés rd., 2900 m, 23.IX.1997, K. R. WILLMOTT *leg.* [KWJH]; 1 male, Ecuador, Loja Province, 2950 m, 15.VII.1998, T. PYRCZ *leg.* [MZUJ].

#### REMARKS

*Panyapedaliodes traceyannae* is most closely related to *P. panyasis* which occurs in Colombia and Venezuela, but apparently at lower elevations (2000-2500 m, PYRCZ & WOJTUSIAK, MS). *P. traceyannae* has been reported so far from the upper cloud forests of the eastern slopes of the Andes, in southern Ecuador (Zamora valley, ca. 2700-3000 m). *Panyapedaliodes mara*, from Bolivia and Peru, is structurally very distinct from both *P. panyasis* and *P. traceyannae*. G. LAMAS (pers. comm.) has recently found *P. mara* flying sympatrically with a species similar to *P. panyasis* in northern Peru. Although we have not examined the Peruvian specimens of the latter yet, we strongly suspect they belong to *P. traceyannae*.

#### ***Pedaliodes* BUTLER, 1867: 267, fig. 1 (venation).**

Type-species: *Pronophila poesia* HEWITSON, 1862: 6, pl. 3, fig. 19, by original designation.

This is the most diverse genus of satyrid butterflies in America; it contains 127 species and seven subspecies, most of them from the tropical Andes (VILORIA unpublished), but many taxa remain to be described. We propose here four additional new species and two subspecies, all distributed in the Andean mountains of Ecuador and northernmost Peru.

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

(Figs. 8, 9, 29)

*Pedaliodes phrasis* GROSE-SMITH; THIEME, 1905: 67 (in part); D'ABRERA, 1988: 850 fig. (misidentifications).

#### ETYMOLOGY

*balnearia* - derived from balneario, a Spanish synonym of Baños (the type locality), which means spa.

#### DIAGNOSIS

Larger than other similar, barely marked, brown species of the genus, in particular the female. Hindwing underside most similar to *P. phrasiclea* GROSE-SMITH and *P. montagna* ADAMS & BERNARD, but without any trace of reddish or rufous. Also, not unlike *P. proerna* (HEWITSON) but without any concentration of white scales on the anal margin, and *Pedaliodes* sp. nov. (PYRCZ & VILORIA, in

press) from Colombia, which has an acute forewing apex. The genitalia of *P. balnearia* does not have a bifid extremity in the valvae as in the Colombian species; what is more, the aedeagus of *P. balnearia*, although similarly contorted, does not show any constriction throughout its length as is clearly seen in the Colombian taxon. On the other hand, *P. phrasis* GROSE-SMITH, a taxon from Peru and Bolivia, that has been commonly confused with the present new species, not only has a very different wing shape and androconia, but also a remarkably large and sinuous aedeagus, almost twice as long as that of *P. balnearia*.

#### DESCRIPTION

Male. (Fig. 8) **Head:** labial palpi creamy-yellow, covered with brown hairs. Eyes dark chocolate-brown, lustrous, covered with short setae. Antennae 2/5 length of costa, dorsally dark brown, ventrally chestnut, club formed gradually. **Thorax:** dorsally and ventrally blackish brown. Walking legs grey, femur covered with blackish hair-like scales. **Abdomen:** blackish brown. **Wings:** forewing (length: 27-31 mm, mean: 27.5 mm, n = 119) triangular, apex subacute, outer margins straight; fringes short, blackish-brown; androconial patch small, broken in cell A2. Hindwing rounded, outer margins very slightly wavy; fringes as on forewing. Upperside of both wings uniform blackish brown. Forewing underside dull, dark brown, slightly lighter distally from postmedian line; series of faint, barely visible, submarginal lighter dots. Hindwing underside blackish brown with slightly lighter band between postmedian and submarginal lines; series of faint, submarginal lighter dots (similar in size), visible in all cells. **Genitalia:** Tegumen dome-like, uncus shorter than tegumen; subunci reduced, valvae heavily processed, with prominent subapical tooth; saccus subglobular, aedeagus long, moderately contorted (Fig. 29).

Female. (Fig. 9) Larger (forewing length: 27.5-32 mm, mean = 29.95 mm, n = 23) and lighter than male; dark brown, with lighter outer and apical areas of forewing upperside.

Immature stages and host plants. Unknown.

#### TYPES

**Holotype** male: Tungurahua Volcano near Baños, Tungurahua, Ecuador, 08.V.1996, 2300-2600 m, A. JASIŃSKI *leg.* [MZUJ]; **Allotype** Female: same data as holotype; **Paratypes** 13 males and 2 females, same data as holotype; 1 male and 1 female, same locality and collector as holotype except 06-07.V.1996; 14 males and 2 females, Baños, Tungurahua, 2000-2300 m, VI.1996, local collector *leg.*; 3 males, Ecuador; 2 males, Baños, Ecuador, local collector *leg.*; 1 male, Machay, Tungurahua, VII.1995, I. ALDAS *leg.*; 1 male, Baños, Tungurahua, 1700-2000 m, A. JASIŃSKI *leg.*; 2 males, Baños, Tungurahua, 16-17.XI.1994, A. JADWISZCZAK *leg.*; 1 female, Tungurahua; 1 male, Río Verde Chico, Tungurahua, 2100 m, 24.IX.1995, A. NEILD *leg.*; 1 male, Calacali, Tungurahua, VII.1993; Baeza environs, Napo, 2050-2200 m, 13.IX.1995, A. JASIŃSKI *leg.*; 2 males,

Camino Charape-Rumipite, Peru, IX.1997, I. ALDAS *leg.*; 1 male, Charape, Peru, IX.1997, I. ALDAS *leg.*; 1 male, Tabaconas, Peru, VIII.1996, I. ALDAS *leg.*; 1 male, Tungurahua, Tungurahua Volcano, 2800 m, 17.IV.1998, A. JASIŃSKI *leg.* [TWP]; 1 male, Equateur, (Rhop. slide No. 29537), Ex OBERTHÜR Collection, Brit. Mus. 1927-3; 3 males, 1 female, E Ecuador, Rio Pastaza, Baños, 5-7000 feet, M. G. PALMER, JOICEY Bequest, Brit. Mus. 1934-120; 1 male, E Ecuador, Rio Pastaza, Rio Verde, 5000 feet, M. G. PALMER, JOICEY Bequest, Brit. Mus. 1934-120; 9 males, 5 females, Env. d'Ambato, R. P. Irenée BLANC, Ex OBERTHÜR Collection, Brit. Mus. 1927-3; 1 male, 1 female, Ecuador, (male genit. prep. ALV310-97), Adams Bequest, Brit. Mus. 1912-399; 1 male, Provincia de Tungurahua, NE of Baños, Río Blanco, 2000 m, 23.VIII.1986, M. J. & J. ADAMS, Brit. Mus. 1986-344; 1 male, E Ecuador, Rio Pastaza, Baños, 5000-7000 ft., X/XII.'10, ROTHSCHILD Bequest, Brit. Mus. 1939-1; 12 males, 1 female, E. Ecuador, Banos [*sic*], 9000 ft., III.1912, M. G. PALMER, Brit. Mus. 1950-372; 1 male, 1 female, same data, 7000 ft., IV.1912; 6 males, 3 females, same data, 6800 ft., IV/V.1912 [BMNH]; 2 males, Ecuador, Tungurahua, Baños, 2299 m, X.1938, F. M. & H. H. BROWN *leg.*; 5 males, same locality and collectors, 1800 m, I.1939; 19 males, same data, II.1939; 2 males, same data, 2400 m, III.1939; 1 male, same data, 1850 m, 3.IV.[19]39; 2 males, same locality and collectors, 1900 m, 9.XI.[19]38; 2 males, Ecuador, Tungurahua, Pundoa, nr. Baños, 2200 m, 1.XII.[19]38, F. M. & H. H. BROWN *leg.*; 1 male, Chaupe, nr. Baños, 2500 m, 1.III.[19]39, F. M. & H. H. BROWN *leg.*; 1 male, same data, 18.III.[19]39; 1 male, El Tablón, nr. Baños, 2500 m, 2.VIII.[19]38, F. M. & H. H. BROWN *leg.*; 1 male, Runtún, Baños, 2200 m, 8.II.[19]39, F. M. & H. H. BROWN *leg.*; 3 males, Runtún, Baños, 1950 m, 26.XI.[19]38, F. M. & H. H. BROWN *leg.*; 1 male, Runtún, Baños, 2000 m, 29.II.[19]39, F. M. & H. H. BROWN *leg.*; 1 male, same data, 2400 m, III.[19]39; 1 male, same data, 2100 m, 16.XI.[19]39; 2 males, same data, 2000 m, 7.XII.[19]38; 9 males, same data, 2200 m, 22.XI.[19]38; 3 males, same data, 2000 m, 17.XI.[19]38; 1 male, same data, 2000 m, 24.XI.[19]38; 2 males, same data, 2100 m, 26.XI.[19]38; 1 male, same data, 1900 m, 13.XI.[19]38; 1 male, same data, 2200 m, 15.X.[19]38; 3 males, same data, 2000 m, X.[19]38; 1 male, same data, 2200 m, VII.[19]38; 3 males, same data, 2200 m, 1.XII.[19]38; 1 male, same data, 2000 m, 1.V.[19]39; 1 male, Tungurahua, Baños, 1900 m, 27.IV.[19]38, F. M. & H. H. BROWN *leg.*; 2 males, same data, 2200 m, X.[19]38; 1 male, same data, 1900 m, 5.I.[19]39; 1 male, same data, 1800 m, 6.VI.[19]39; 1 male, same data, 1900 m, 19.IV.[19]39; 1 male, same data, 1800 m, 10.I.[19]39; 1 male, San Pablo, nr. Baños, 2200 m, 15.X.[19]38, F. M. & H. H. BROWN *leg.*; 1 male, Yungilla, nr. Baños, 1700 m, 2.VI.[19]39; F. M. & H. H. BROWN *leg.*; 1 male, Tungurahua, Baños, 1900 m, 16.III.[19]39, F. M. & H. H. BROWN *leg.*; 1 male, same data, 2200 m, 1.XII.[19]38; 1 male, same data, 1900 m, 10.IV.[19]39; 1 female, Runtún, Baños, 2100 m, 26.IX.[19]38, F. M. & H. H. BROWN *leg.*; 1 female, same data, 2300 m, 10.V.[19]39; 1 female, same data, 2800 m, 21.XI.[19]38; 1 female, same data, 2000 m, 17.XI.[19]38; 6 females, Tungurahua, Baños, 2000 m, II.[19]39, F.

M. & H. H. BROWN *leg.*; 1 female, same data, 2000 m, I.[19]39; 1 female, same data, 1800 m, I.[19]39; 1 female, same data, 1800 m, IX.[19]38; 1 female, Vizcaya, nr. Baños, 3000 m, 8.V.[19]39, F. M. & H. H. BROWN *leg.*; 1 female, Runtún, Baños, 3000 m, II.[19]39, F. M. & H. H. BROWN *leg.*; 1 female, Pundoa, nr. Baños, 2200 m, I.XII.[19]38, F. M. & H. H. BROWN *leg.* [all Allyn Museum acc. 1972-1] [AME, some specimens to be deposited in UCP and MALUZ]; 1 male, Ecuador, Napo, Baeza, 2000 m, 14.IX.1993, J. P. W. HALL *leg.*; 1 male, Ecuador, Morona-Santiago Province, km 14 Limón-Gualaceo rd., 1950 m, 30.IX.1997, K. R. WILLMOTT *leg.* [KWJH].

#### REMARKS

*Pedaliodes balnearia* is one of the many brown, barely marked, superficially very similar, yet not always closely related, species of *Pedaliodes*. *P. balnearia* has been confused more often with *P. phrasis* GROSE-SMITH, described from Bolivia, and indeed illustrated as such by D'ABRERA (1988: 850). THIEME (1905) guessed well that his "*P. phrasis*" from Baños may represent a different species. The male genitalic differences rule out any closer affinity of *P. balnearia* with *P. phrasis* or *P. pisonia* (HEWITSON), and suggests *P. pimienta* ADAMS (1986) described from the Colombian Cordillera as the more likely sister species, although they are easily distinguishable from each other in their facies. Most known individuals of *P. balnearia* come from the area of Baños, where it is perhaps the commonest species of *Pedaliodes*, flying in cloud forests and secondary habitats, but it is also known from single specimens collected in Baeza (Napo) and Nanegalito (Pichincha, western slopes of the Andes). The Nanegalito specimen is smaller (26 mm) but otherwise does not differ from typical *P. balnearia* (nevertheless, it was excluded from the type series).

#### ***Pedaliodes arturi* PYRCZ et VILORIA, n. sp.**

(Figs. 10, 30)

#### ETYMOLOGY

This species is dedicated to its discoverer Artur JASIŃSKI, a lepidopterist from Warsaw, in gratitude for his friendship and cooperation.

#### DIAGNOSIS

This species shares the same colour of postmedian band with *P. thiemei* STAUDINGER, from the Colombian Cordillera Central (Tolima) and *P. amafania* Thieme, from southern Peru. In *P. thiemei* the band is narrower, reaching the costal margin on forewing, and does not bend as sharply as in *P. arturi* in M1/M3 region of hindwing, but their genitalia are different enough as to regard any close affinity with reserve. In *P. amafania* the band is wider with a more diffused distal edge on forewing, and the aedeagus short and much thicker than that of *P. arturi*, but they have similar valvae. The shape of postmedian band of *P. arturi* is most similar to that of *P. phaea ochrotaenia* (C. & R. FELDER) from the eastern slopes

of the Colombian Cordillera Oriental (Cundinamarca), but in the latter species it is pale orange. The structural affinities between *P. arturi* and *P. phaea ochrotaenia* are less evident than those between the former and other species mentioned. The north Colombian taxon has deeper valvae and a characteristically broad aedeagus, especially around the basal contortion.

#### DESCRIPTION

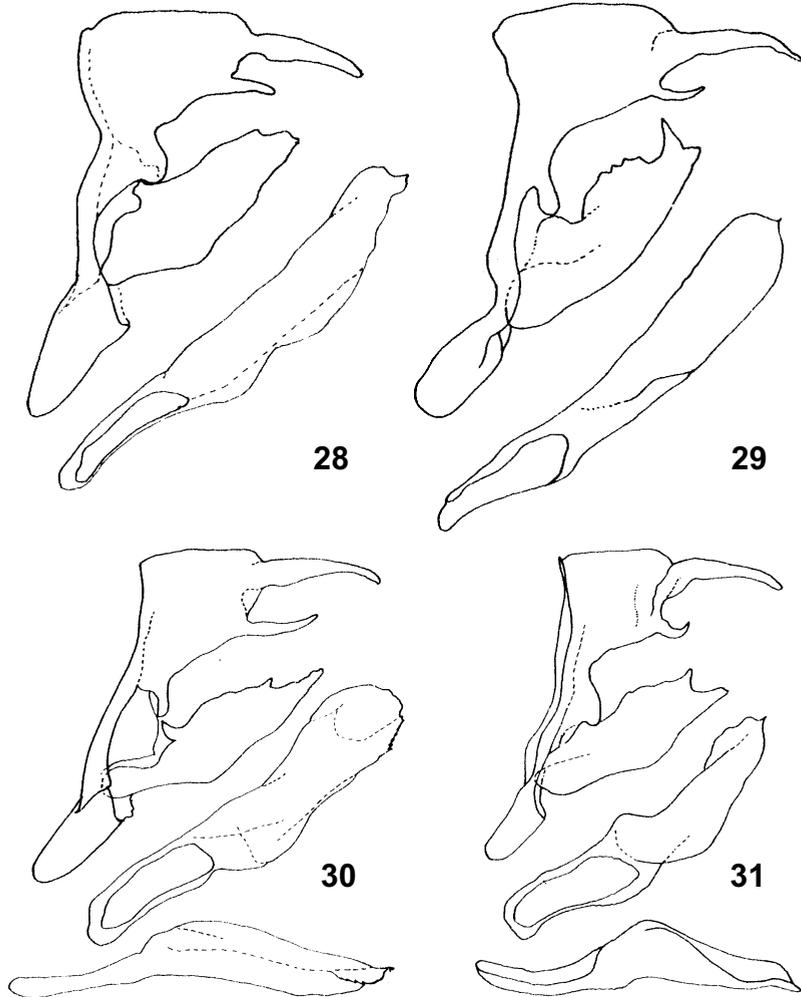
Male. (Fig. 10) **Head:** labial palpi dark brown, covered with long, but rather sparse, brown hairs, last palpal segment naked. Eyes brown, lustrous, covered with short setae. Antennae half length of costa, dorsally dark brown, ventrally brown. **Thorax:** dorsally and ventrally dark brown, hairy. Femur of walking legs covered with brown hair-like scales, longer on first pair. **Abdomen:** dorsally and laterally dark brown, ventrally beige. **Wings:** forewing (length: 23-26 mm, mean: 24.8 mm, n = 27) apex acute, outer margin slightly incised below apex. Fringes short (less than 0.5 mm) pale yellow in centre of each interspace, elsewhere dark brown. Dorsum: scent patch large, entering discal cell, extending to postmedian band, broken in cell Cu1 and on vein 1A. Ground colour dark brown in basal and medial areas, and lighter brown in submarginal and marginal areas; russet postmedian band dusted in distal half with light russet-brown, extending from vein R5 to inner margin, which is narrowly edged in dark brown, parallel to outer margin, constant, approximately 4 mm wide, inner and outer edge sharply defined, inner edge indented along vein M3 into russet. Hindwing outer margin rounded, slightly sinuate; fringes dark brown, each interspace with pale yellow centre, barely visible on tornus. Basal and anal areas covered with lustrous hair-like scales. Ground colour dark brown in basal, medial, submarginal and marginal areas; russet postmedian band from costa to over vein Cu2, at its narrowest on vein M2, (4 mm), at its widest on vein Cu1 (7 mm), basally straight-edged throughout its length, but sharply angled in cell M3, so that anterior edge points towards margin of vein Cu1, while posterior edge points basad of tornal angle. Venter: forewing colour pattern mirroring upperside, postmedian band orange, dusted with russet and beige on costa and subapical area, and along upper third of outer margin; row of four submarginal small whitish dots in cells R5 to M3, respectively, first and last smaller and barely visible. Hindwing pattern mirroring upperside, ground colour chestnut brown, speckled with lighter, beige scales, postmedian band pale creamy-yellow, heavily dusted with chestnut and brown in outer half; row of five whitish postmedian dots, three of them, in cells M2, M3 and Cu2, ringed with black, the most prominent in M2. **Genitalia:** Tegumen low-domed, uncus as long as tegumen, basally expanded, subunci shorter than uncus, but well developed; valvae subfusiform, with a tooth-like preapical process; saccus moderately deep; aedeagus thick, long and contorted, spiny at distal extremity (Fig. 30).

Female. Forewing length: 24-25 mm, mean = 24.3 mm, n = 3. Differs from male in paler upperside colour. Upperside medial band more brownish.

Immature stages and host plants. Unknown.

## TYPES

**Holotype** male: Ecuador, Loja Province, Cordillera de Lagunillas, south from Amaluza, 2600-3200 m, 03.V.1997, A. JASIŃSKI *leg.* [MZUJ]; **Allotype** Female: Cordillera de Lagunillas (west slopes), carretera Jimbura-El Calvario, 3000 m, 15.V.1998, A. JASIŃSKI & K. ŁOŚ *leg.* [TWP]; **Paratypes**: 4 males and 1 female: same data as holotype [UCP (1 male), AJ (1 male and 1 female), TWP (2 males)]; 22 males, 2 females, same data as allotype [JFLC (1 male); MALUZ (1 male), MUSM (1 male); UCP (1 male); TWP]; 2 males, Ecuador, Loja, km 14 Jimbura-San Andrés rd., 3000 m, 22.IX.1997, K. R. WILLMOTT *leg.* [KWJH].



28-31. Male genitalia, only one valva is shown; aedeagus removed from natural positions: 28 - *Panyapedaliodes traceyannae* n. sp.; 29 - *Pedaliodes balnearia* n. sp.; 30 - *Pedaliodes arturi* n. sp.; 31 - *Pedaliodes petri* n. sp.

## REMARKS

The discovery of this species in the Cordillera de Lagunillas raises interesting zoogeographical issues. As shown by its colour pattern, *P. arturi* seems to be a link between *P. amafania* Thieme occurring in southern Peru and a group of species richly represented in the Colombian Cordilleras: Oriental (*P. phaea* (HEWITSON) and its subspecies, *P. fuscata* (C. & R. FELDER), and *P. phaeina* STAUDINGER), Central (*P. thiemei* STAUDINGER and *Pedaliodes* new sp. PYRCZ, in press), and the Cordillera de Mérida in Venezuela (*P. ornata* GROSE-SMITH & KIRBY), although structurally it is less evident. In the Cordillera Oriental, this group embraces up to three parapatric species, replacing each other along an elevational gradient (ADAMS 1985). However, the “*phaea*-like” group was hitherto unknown in Ecuador. Although, we could assume that this may partly be due to insufficient sampling of the highest elevation cloud forest where the group of *P. phaea* occurs, it still seems unlikely that such conspicuous species would escape the attention of lepidopterists in heavily sampled areas such as Baños (Tungurahua) or Baeza (Napo). Therefore, there is seemingly an enormous disjunction in the distribution pattern of this particular group of high elevation *Pedaliodes*. More significantly, *P. arturi* has not been collected in the neighbouring highlands of Loja - Zamora. Recent captures in Lagunillas produced other species of *Pronophilini* apparently restricted to this area (PYRCZ, MS) which are replaced in the Zamora region by allopatric allies. It seems that the Cordillera de Lagunillas represents a centre of local endemism. If further collecting in this area confirm this assumption, it would be a point in favour of including the cloud forests of the Cordillera de Lagunillas within protected areas of the adjacent Parque Nacional Podocarpus.

The known closest relative of this species appears to be the Peruvian endemic *Pedaliodes amafania*.

***Pedaliodes petri* PYRCZ et VILORIA n. sp.**

(Figs. 11, 31)

*Pedaliodes proerna* (HEWITSON); D'ABRERA, 1988: 850, fig. (misidentification).

## ETYMOLOGY

This species is dedicated to Pierre BOYER, a French lepidopterist who contributed to this study with excellent material and data.

## DIAGNOSIS

This species can be easily confused with other little marked congeners. Its diagnostic feature are short, wavy lines (ripples) covering regularly the whole of the hindwing underside. Otherwise this species looks superficially similar to *P. manis* (C. & R. FELDER) or *P. montagna* ADAMS et BERNARD, including the

russet suffusion on the hindwing underside anal area. The latter two taxa are structurally dissimilar to *P. petri*, which instead has a male genitalic structure reminiscent of that of *P. peruviana* BUTLER.

#### DESCRIPTION

Male. (Fig. 11) **Head**: antennae dorsally chestnut, ventrally light chestnut; club (three terminal segments) dark brown; eyes hairy; palpal hairs grey. **Thorax**: dorsally and ventrally dark brown, dorsally covered with dense hair; legs brown, first pair hairy. **Abdomen**: brown, lighter ventrally. **Wings**: forewing (length: 27-29 mm, mean: 27.43 mm, n = 7) apex blunt, outer margin straight; hindwing outer margin slightly scalloped; fringes of both wings brown and beige in interspaces; upperside of both wings brown, slightly lighter in distal half of forewing; forewing upperside scent patch 3-4 mm wide, not extending noticeably along veins, Cu2 area connected to 1A; forewing underside brown, lighter between postmedian and submarginal line; hindwing underside brown, densely speckled on entire surface, with short sinuate dark brown lines, slightly lighter between postmedian and submarginal line in some specimens; rufous area at anal angle; marginal area slightly darker brown; white anal dot in cell Cu2.

VARIATION: specimens from Baeza with red anal wedge tending to extend into medial area. Specimens from Baños look similar to those from Podocarpus. **Genitalia**: Tegumen low-domed; uncus as long as tegumen, strong; subunci two thirds as long as uncus; valvae distally double-processed; saccus subconical; aedeagus moderately long, strongly contorted with a fine apical process (Fig. 31).

Female. Known only from one specimen (not measured), similar to male.

Immature stages and host plants. Unknown.

#### TYPES

**Holotype** male: Valladolid area, Zumba road, Zamora-Chinchipec, 1900 m, 14.II.1993, B. MÉRY & S. ATTAL *leg.* [MZUJ]; **Paratypes** 2 males, Road Loja-Zamora Km 23 (bridge), 2100 m, 30.VIII.1990, P. GROS & S. ATTAL *leg.*; 3 males, Tena-Baeza Road, 2000 m, 19.IX.1995, A. NEILD *leg.*; 1 male: Baños area, 1995, A. JASIŃSKI *leg.*, [TWP (5 males), UCP (1 male)]; 1 male, Equateur Or., de Banos [*sic*] a Canelos, IX-X.1894, M. DE MATHAN, Ex OBERTHÜR Coll. 1927-3 [specimen illustrated by D'ABRERA, 1988] [BMNH]; 1 male, Ecuador, Morona-Santiago Province, Río Abanico, km 20 Macas-Nueve de octubre rd., 1600 m, 1.XI.1996, K. R. WILLMOTT *leg.* [to be deposited in MNCN]; 1 male, same data, 12/13.XI.1996; 1 male, Ecuador, Morona-Santiago Province, km 14 Limón-Gualaceo rd., 1950 m, 11.XI.1996, K. R. WILLMOTT *leg.*; 1 male, Ecuador, Tungurahua Province, Río Machay, 1700 m, 4/5.VII.1993 J. P. W. HALL *leg.*; 1 female, Ecuador, Sucumbíos Province, El Higuierón, km 9 La Bonita-Tulcán rd., 2200 m, 24.XI.1996, K. R. WILLMOTT *leg.* [KWJH]

## REMARKS

*P. petri* occurs in lower to middle cloud forest strata on the eastern slopes of the Andes in Ecuador, from the upper valley of Coca (Baeza) and Pastaza (Baños area) to Zamora (Parque Nacional Podocarpus). It possibly ranges further south into northern Peru (Río Tabaconas valley). Available data for this species indicate wide elevational distribution, from 1600 to 2200 m. It is also commonly found in both primary and secondary forest (WILLMOTT & HALL pers. comm.).

***Pedaliodes rumba* PYRCZ et VILORIA n. sp.**

(Figs. 12, 13, 32)

## ETYMOLOGY

Similarly to the allied species from the Colombian Cordillera Occidental, *P. parranda* ADAMS (1986), this specific name *rumba* also refers to a Latinamerican dance party. The name is originally derived from rumba or rhumba, a rhythmic and syncopated popular Cuban dance.

## DIAGNOSIS

This species has approximately the same size and wing shape as its Colombian allopatric replacements, *P. polusca* (HEWITSON) and *P. parranda* ADAMS, but its hindwing underside is marked by a wide yellowish wedge scalloped along the inner margin, and dusted with chestnut scales, more reminiscent of another closely related but much smaller species, *P. asconia* THIEME. There are subtle but consistent differences between the genitalia of typical specimens of *P. polusca* and *P. parranda* from the Colombian Andes and that of *P. rumba*. In particular, the latter species has a smaller and less contorted aedeagus, while the single small dorsal process of the valva is clearly digitiform.

## DESCRIPTION

Male. (Fig. 12) **Head**: antennae dorsally chestnut, ventrally light chestnut; club (three terminal segments) dark brown; eyes hairy; palpal hairs brown. **Thorax**: dorsally and ventrally dark brown, dorsally covered with dense hair; legs pale light-brown. **Abdomen**: brown, lighter ventrally. **Wings**: forewing (length: 25-31 mm; mean: 28.6; n = 36;) apex acute; outer margin slightly truncate below apex; fringes white between veins; scent patch rather small, compact, entering discal cell, divided in cell Cu2; hindwing outer margin moderately scalloped, fringes white between veins. Upperside of both wings blackish brown, lustrous; in some specimens hindwing anal margin dusted with rusty scales. Forewing upperside dull greyish brown, lighter along costa; short whitish postdiscal costal streak; apex rusty-brown. Hindwing rusty-brown, liberally speckled with blackish brown; wide rusty-orange wedge from anal margin to median area, basally scalloped; two spots of same colour in cells M3 and Cu1.

VARIATION: in some smaller specimens, particularly from Pichincha and Azuay, hindwing underside pattern tends to be lighter, yellowish. **Genitalia:** Tegumen moderately domed, strongly convex; uncus strong, longer than tegumen; subunci thin, half length of uncus; valvae broad, with dorsal row of small teeth and a prominent preapical tooth; saccus subglobular, aedeagus relatively short and broad, moderately contorted (Fig. 32).

Female. (Fig. 13) Larger than male (forewing length: 27-32 mm; mean: 28.83 mm; n = 6), dorsally lighter, dull brown, always dusted with rusty on hindwing anal margin; ventrally, forewing with medial reddish sheen; occasionally with series of subapical whitish dots; hindwing rusty and beige, wedge less contrasting, but creamy-yellow dots in M3 and Cu1 well marked.

Immature stages and host plants. Unknown.

#### TYPES

**Holotype** male, Ecuador, Cotopaxi, Pilaló, 2500-3000 m, VII.1996, I. ALDAS *leg.* [MZUJ]; **Allotype** Female, same data as holotype [TWP]; **Paratypes** 21 males, same data as holotype, 1 male, Ecuador, Pichincha, Pasochoa, 3000-3200 m., 07.X.1997, A. NEILD *leg.*; 3 males, 1 female, Ecuador, Pichincha, Aloag, 3000 m., 25.IX.1995, A. JASIŃSKI *leg.*; 1 male, Ecuador, Ilaló, 20.IX.1995, F. PIÑAS *leg.*; 1 male, Ecuador, Bolívar, Guaranda, VIII.1997; 1 male, Ecuador, Pichincha, Calacali, VII.1995; 2 females, Ecuador, Azuay, Girón, 3000 m, V.1997, S. ATTAL *leg.*; 2 females, Ecuador, Bolívar, Balzapamba, Río Alcácer, 2700 m, 04.XI.1996, S. ATTAL *leg.* [TWP and UCP]; 2 males, Ecuador, Bolívar, Alusana, 3000 m, X.1975, R. DE LAFEBRE *leg.*, A. C. ALLYN Acc. 1976-2; 1 male, Ecuador, Bolívar, Hda. Talahua, 3100 m, 26.IV.1939, F. M. & H. H. BROWN *leg.*, ALLYN Museum Acc. 1972-1; 2 males, same data, collectors and accession as above, but 4.V.1939; 1 male, same data, collectors and accession as above, 3.V.1939; 1 male, Ecuador, Bolívar, San Pablo, 3200 m, X.1975, R. DE LAFEBRE *leg.*; A. C. ALLYN Acc. 1976-2 [AME]; 1 male, Ecuador, Pichincha, Aloag-Sto. Domingo rd., 3000 m, 13.VI.1994, J. P. W. HALL *leg.*; 1 male, Ecuador, Pichincha, Quito-Sto. Domingo rd., 3200 m, 12.VIII.1993, J. P. W. HALL *leg.*; 2 males, Ecuador, Pichincha, Quito-La Victoria rd., 3300 m, 29.XI.1997, K. R. WILLMOTT *leg.* [one to be deposited in MNCN]; 1 male, Ecuador, Yanacocha, Volcán Pichincha, 3500 m, 18.IX.1997, K. R. WILLMOTT *leg.*; 1 male, Volcán Pasochoa, nr. Amaguaña, 3500 m, 7.X.1997, K. R. WILLMOTT *leg.* [KWJH].

#### REMARKS

The taxonomy of the *Pedaliodes polusca*-complex is difficult because there seems to be a number of sibling species between Colombia and Ecuador. They all fly at high elevations in highly disjunct populations. Typical *P. polusca* comes from the Bogotá region and is probably not the same Ecuadorian taxon to which its name has been associated. The type of *P. polusca* was lost for some time and it was not available to M. J. ADAMS during the time he was studying the pronophiline

butterflies of the Colombian Andes. However, his identifications of this species are correct, which eventually allowed him to describe another related but completely distinct Colombian taxon *P. parranda*. After locating and examining the type of *P. polusca* in one of the accessions of the BMNH we think that Ecuadorian populations of "*P. polusca*" are not representative of the typical species, therefore we prefer to give specific rank to *P. rumba* instead of naming it as a subspecies of *P. polusca*. Genitalic differences although apparent, are very difficult to interpret. This is also the case for many sections of the genus *Pedaliodes* (e. g., *P. asconia*-*P. polla* complex, *P. empusa*-complex, *P. ferratilis*-complex), and evaluation of other characters is badly needed to successfully discriminate a number of seemingly different taxa among them. *P. rumba* replaces "*P. polusca*" on the western slopes of the Andes in Ecuador.

***Pedaliodes sonata* PYRCZ et VILORIA n. sp.**

(Figs. 14, 15, 33)

ETYMOLOGY

*sonata* - the name of an instrumental composition in three or more movements.

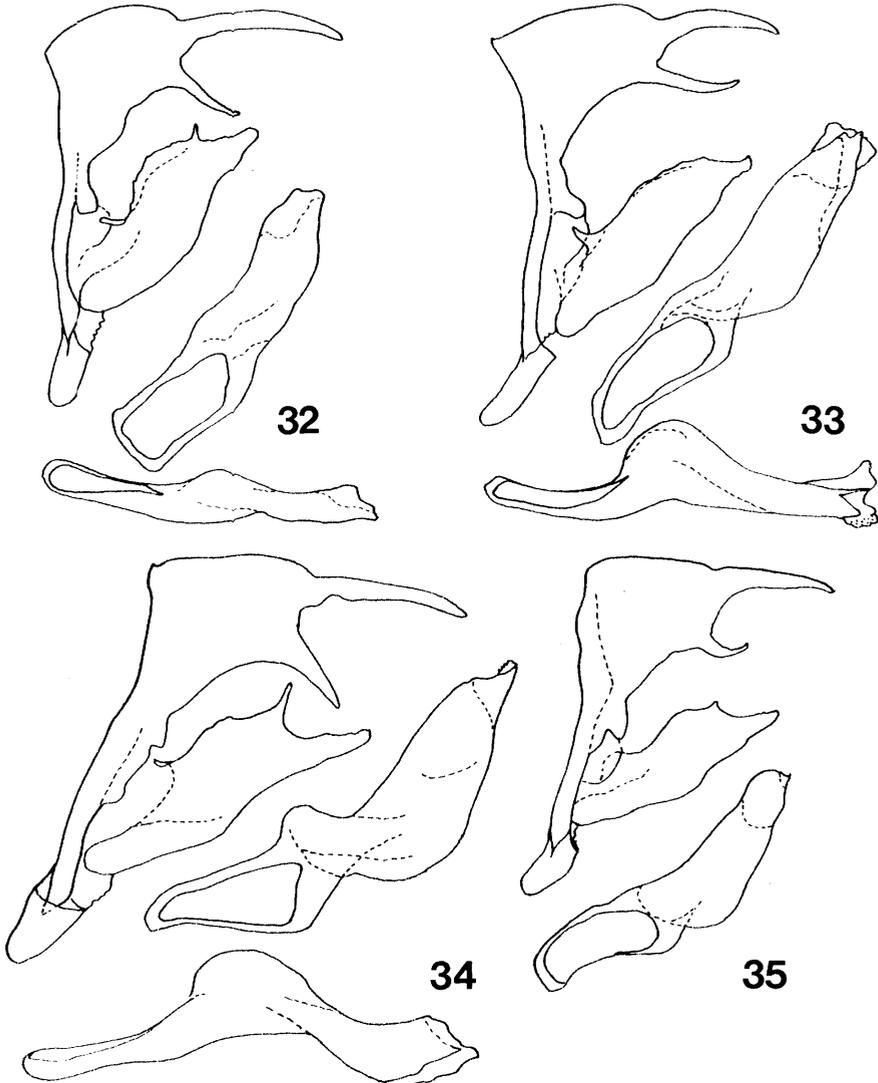
DIAGNOSIS

Wing shape and underside colour pattern comparable to *P. poesia* (HEWITSON), but this new species is smaller and with less undulated outer margins. The male without any trace of red on the underside and much less white scaling. The Female of *P. sonata* externally differs from that of *P. poesia* in having distinct reddish-chestnut underside colour within the forewing discal cell, and more conspicuously throughout the central portion of the postdiscal band. The main difference in the male genitalia of *P. sonata* and *P. poesia* is the absence of a well developed, pseudo-digitiform dorsal process in the valva of the former, which is found in all male specimens of *P. poesia* we have dissected (from Colombia to Bolivia).

DESCRIPTION

Male. (Fig. 14) **Head:** labial palpi beige, covered with light brown hairs; eyes dark chocolate-brown, lustrous, covered with short setae.; antennae 2/5 length of costa, dorsally brown, ventrally russet, club formed gradually, terminal segments blackish brown. **Thorax:** dorsally and ventrally chocolate brown. Walking legs chestnut. **Abdomen:** chocolate blackish-brown. **Wings:** forewing (length: 26-28 mm, mean: 27.04 mm, n = 12) triangular, apex subacute, outer margins straight; fringes short, grey, except for a few cream yellow scales between veins, progressively more numerous towards apex; androconial patch large, extending along veins Cu1 and Cu2, broken in cell A2. Hindwing rounded, outer margins slightly

wavy; fringes grey. Upeside of both wings chocolate brown. Forewing underside dull brown, slightly lighter from postmedian to submarginal line; chocolate brown on apical margin; in some individuals a series of barely visible, subapical lighter dots. Hindwing underside colour as on forewing; slightly lighter band between postmedian and submarginal lines; few whitish scales on costa on distal edge of postmedian line; whitish dot in cell Cu1; outer margin chocolate brown.



32-35. Male genitalia; only one valva is shown; aedeagus removed from natural positions: 32 - *Pedaliodes rumba* n. sp.; 33 - *Pedaliodes sonata* n. sp.; 34 - *Pedaliodes dracula* n. sp.; 35 - *Pedaliodes tabaconas* n. sp.

**Genitalia:** Tegumen convex, but flattened and produced distally; uncus well developed, but shorter than tegumen; subunci almost as long as uncus; valvae simple, with barely visible dorsal processes, produced at distal extremity; aedeagus regularly long and thick, strongly contorted (Fig. 33).

Female. (Fig. 15) (forewing length: 27-30 mm, mean = 28.33, n = 3) Upperside lighter than male, lustrous chestnut; forewing underside dull brown from base to postmedian line except for narrow reddish discal cell cross-band; distal from postmedian line whitish on costa and suffused with red except on tornus, outer margins dark brown speckled with lighter scales. Hindwing underside dark brown from base to postmedian line and on outer margin, speckled with lighter scales; wide beige postmedian to submarginal band, cut through with brown along veins M2 and M3, whitish costal patch on outer part of distal edge of postmedian line.

Immature stages and host plants. Unknown.

#### TYPES

**Holotype** male, Ecuador, Pichincha, Tandapi - Aloag road, 1600-1700 m, 28.IX.1995, A. NEILD *leg.* [MZUJ]; **Allotype** Female, Ecuador, Pichincha, Tandapi, 1750m, 25.IX.1995, A. JASIŃSKI *leg.* [TWP]; **Paratypes** 1 male, same data as holotype; 2 males, same data as allotype; 6 males, same locality, V.1996, A. JASIŃSKI *leg.* [TWP, UCP]; 1 male, Ecuador, Carchi, Monte Chilles, 3650 m [?], XII.1973, R. DE LAFEBRE *leg.*, A. C. ALLYN *Acc.* 1974-5; 1 male, Ecuador, Cotopaxi, Río Mulatos, 3800 m [?], V.1971, R. DE LAFEBRE *leg.*, A. C. ALLYN *Acc.* 1971-31; 2 females, Ecuador, Napo, Papallacta, 4000 m [?], V.1971, R. DE LAFEBRE *leg.*, A. C. ALLYN *Acc.* 1972-15 [AME]; 1 male, Ecuador, Pichincha, Tandapi, Río Tandapi, 1700 m, 3.VIII.1996, K. R. WILLMOTT *leg.*; 1 male, same data, 1550 m, 10.VIII.1993, J. P. W. HALL *leg.*; 1 male, Ecuador, Pichincha, Río Chisinche, 1800 m, 11.VIII.1993, J. P. W. HALL *leg.*; 2 males, Ecuador, Carchi, El Corazón, Reserva Las Golondrinas, nr. La Carolina, 2100 m, 27.XI.1996, K. R. WILLMOTT *leg.* [KWJH].

#### REMARKS

Wing shape, colour pattern and elevational range would suggest that *P. sonata* is an allopatric western Ecuador replacement of the widespread *P. poesia*, unknown from the Ecuadorian Pacific slopes. However, the genitalic structure, particularly the valvae, indicate close affinities with a much bigger new species (PYRCZ & VILORIA, in press), quite distinct in colour pattern, recently discovered in the Colombian Cordillera Occidental.

### *Pedaliodes dracula* PYRCZ et VILORIA n. sp.

(Figs. 16, 17, 34)

*Pedaliodes phoenissa* (HEWITSON); D'ABRERA, 1988: 855, fig. (misidentification).

## ETYMOLOGY

This species bears the name of the novel *Dracula* written by the Irish author Bram STOKER, and first published in London in 1897. This is in celebration of the centennial of this classical masterpiece of literature.

## DIAGNOSIS

Externally resembling *Pedaliodes proerna* (HEWITSON), but usually with distinctive white (whitish in female) anal patch on hindwing underside (but see remarks). Male genitalia of both species are quite different; *P. proerna* has a comparatively bigger armature, with subunci almost as long as uncus (about half as long in *P. dracula*); valvae in *P. proerna* is very much longer than that of *P. dracula*, the latter also have the pre-apical processes much closer to the apex, and they also are better developed and contorted. Aedeagus in *P. dracula* is smaller and more sinuously contorted than that of *P. proerna*. On the other hand, the north Colombian *P. phoenissa* being slightly similar in facies, has also different valvae (short and with processes poorly developed) and even shorter aedeagus.

## DESCRIPTION

Male. (Fig. 16) **Head:** Eyes dark coffee brown, hairy; palpi twice as long as head; antennae reaching half costa, dorsally dark chocolate brown, ventrally orange except tip of club, which is dark brown, club formed gradually. **Thorax:** Densely hairy, dorsally bright coffee brown, ventrally chocolate brown; legs very densely hairy. **Abdomen:** Dorsally coffee brown, ventrally lighter. **Wings:** Forewing length 25.5-30.5 mm, mean: 28.01, n = 33; forewing triangular, apex acute, tornus slightly obtuse, outer margin very slightly convex and undulated; hindwing suboval, outer margin moderately scalloped; wings upperside bright coffee-brown, unicolourous, forewing slightly paler towards outer quarter, some ochraceous scales dusted over lighter area and along costa; massive androconia in central area; fringes light brown between veins; hindwing basal half hairy, more heavily towards anal margin; forewing underside groundcolour chocolate brown, lighter towards postmedian band, darker dusting over apical area and costa, white dusting in apical area; hindwing underside back ground colour coffee brown, marbled with darker dots over all surface, silvery-white scales irregularly dusted over outer half of wing; tiny submarginal white dots in all cells; silvery-white rectangular (to wedge-like) patch in anal region, irregular and variable in size. **Genitalia:** Tegumen low-domed; uncus slightly shorter than tegumen, thin; subunci shorter than uncus, basally expanded; valvae processed dorsally, bifurcated distally; saccus small, subconical; aedeagus large, heavily contorted, spiny at distal tip (Fig. 34).

Female. (Fig. 17). Forewing length 28.5-29 mm, mean = 28.75 mm, n = 2. Ground colour lighter and dull on both surfaces, otherwise pattern similar to male. Hindwing underside anal patch steely-grey.

Immature stages and host plants. Unknown.

## TYPES

**Holotype** male, Baños, Ecuador, local dealer *leg.* [MZUJ]; **Allotype** Female, Baños, Ecuador, V.1997, A. JASIŃSKI *leg.* [TWP]; **Paratypes** 1 male, same data as holotype [TWP]; 3 males, Ecuador, (1 Rhop. slide No. 29545), HEWITSON Coll., Brit. Mus. 79-69; 3 males, Ecdr., Ex GROSE SMITH 1910, JOICEY Bequest, Brit. Mus. 1934-120; 1 male, E Ecuador, Granadillas, BUCKLEY; 1 male, same data, (genit. prep. ALV309-97), GODMAN-SALVIN Coll., Brit. Mus. 1904-1; 10 males, Env. d'Ambato, R. P. Irenée BLANC, Ex OBERTHÜR Collection, Brit. Mus. 1927-3; 1 male, eastern side of Ecuador, Sarayacu, 1879, C. BUCKLEY, Ex OBERTHÜR Collection, Brit. Mus. 1927-3; 1 male, E Ecuador, Banos [*sic*], 7000 ft., IV.1912, M. G. PALMER, Brit. Mus. 1950-372; 9 males, same data, 6800 ft., IV/V.1912 [BMNH]; 1 male, Baños, 6.III.1900, Ex Coll. ERHARDT, (präparat Nr. SA371) [ZSBS]; 1 male, 1 female (captured *in copula*), Ecuador, Tungurahua, Runtún, 2400 m, 01° 26' S/78° 24' W, 29.XI.1966, S. E. VELÁSTEGUI *leg.* [MUSM]; 1 male, Ecuador, Tungurahua, mts. above Los Llanganattis, 3900 m, XI.1970, R. DE LAFEBRE *leg.*, A. C. ALLYN Acc. 1971-7; 4 males, Ecuador, Cotopaxi, Río Mulatos, 3800 m, IV.1971, R. DE LAFEBRE *leg.*, A. C. ALLYN Acc. 1971-18; 1 male, Ecuador, Pichincha, Tandyapa, 3500 m, V.1975, R. DE LAFEBRE *leg.*, A. C. ALLYN Acc. 1975-16; 3 males, Ecuador, Loja, Villonaco, 3600 m, I.1973, R. DE LAFEBRE *leg.*, A. C. ALLYN Acc. 1973-9; 5 males, 1 female, Ecuador, Loja, Villonaco, 3600 m, II.1973, R. DE LAFEBRE *leg.*; A. C. ALLYN Acc. 1973-9 [AME]; 3 males, Ecuador, Baeza area, 2250-2300 m [KWJH, UCP].

## REMARKS

This apparently widespread Ecuadorian species, was figured by D'ABRERA (1988) under the incorrect name of *P. phoenissa* (HEWITSON), a species that is restricted to the northern Cordillera Oriental of Colombia (from the Bogotá area to the Serranía del Tamá) and the Sierra de Perijá in the Colombia-Venezuela border. The latter species although similar in colour pattern (but different size and wing shape), could be considered a relative of *P. dracula*, because of their reminiscent genitalic structures. However, it seems far more likely that the closest relative of this new species is *P. proerna*.

WILLMOTT and HALL (pers. comm.) have captured a series of 14 males which mostly lack the white at the ventral hindwing anal margin, three of which are clearly intermediate (these from the Oña-Loja road); in the rest the white patch is absent. These specimens are from the La Bonita road (2100-2600 m, 3 males), Cerro Palma (Oña-Loja rd., 2800-3000 m; 1 male intermediate, 2 lacking white), Huasipampa (Oña-Loja rd., 2800 m, 2 males intermediate, 1 almost completely lacking white), and five males all lacking white from the western slopes from Nanegalito north to near the Colombian border (1900-2100 m). The aforementioned specimens have been excluded from the type series.

***Pedaliodes tabaconas* PYRCZ et VILORIA n. sp.**

(Figs. 18, 19, 35)

## ETYMOLOGY

Named after the valley of Tabaconas in northernmost Peru where this species was first collected.

## DIAGNOSIS

Underside pattern reminiscent of many species characterised by an orange-rufous hindwing anal wedge (e. g., *P. asconia* THIEME, *P. ferratilis* BUTLER). Among the sympatric species it is most similar to *P. petri* but the forewing apex is more acute, hindwing underside darker and the ripples shorter. *Pedaliodes tabaconas* could also be superficially confused with the Ecuadorian *P. asconia*, but the former new species has a very distinctive underside pre-apical light mark on the forewing, which is also diagnostic when the species is compared to the bigger Peruvian species *Pedaliodes ferratilis*.

## DESCRIPTION

Male. (Fig. 18) **Head**: labial palpi dorsally dark brown, costally lighter, covered with dark brown hair; eyes chocolate brown, hairy; antennae to 2/5 of costa, dorsally dark brown, ventrally slightly lighter, with faint orange sheen, terminal segments dark brown, club formed gradually; **Thorax**: dorsally blackish-brown, covered with short, densely hairy, ventrally lighter dull-brown; **Abdomen**: dorsally blackish-brown, ventrally brown; **Wings**: forewing (length 26-28 mm, mean: 26.58 mm, n = 12) triangular, apex pointed, outer margin slightly excavate, fringes milky-white chequered; hindwing oval, outer margin sinuate, fringes dark brown; dorsal surface of both wings uniform glossy, varying from dark brown to nearly black; forewing underside dull dark-brown, faint whitish costal streak beyond discal cell; hindwing chocolate-brown, uniformly covered with short, darker ripples; anal area suffused with rufous; yellowish anal wedge showing from beneath ripple pattern, extending onto vein Cu1, sharply incised in cell Cu1; faint, short lighter median costal streak. **Genitalia**: Tegumen and uncus aligned, but well differentiated by uncus suture; both about same length; subunci small, as well as saccus; valvae with one main dorsal process, distinct, but not prominent; aedeagus relatively long and thick, heavily contorted (Fig. 34).

Female. (Fig. 18) Similar to male (forewing length: 29 mm, n = 1) but lighter on both surfaces, ripple pattern on hindwing better marked. Anal wedge indistinct.

Immature stages and host plants. Unknown.

## TYPES

**Holotype** male, Valladolid, Zamora-Chinchipe, Ecuador, 2450 m, 09.XI.1996, S. ATTAL leg. [MZUJ]; **Allotype** Female, Sector Yangana, Parque Nacional

Podocarpus, 2850 m, 29.X.1994, EXP. PARROTS IN PERIL *leg.* [BMNH]; *Paratypes* 1 male, same data as holotype; 1 male, Valladolid, Zamora-Chinchi, 2700 m, 22.V.1996, S. ATTAL & I. ALDAS *leg.*; 1 male, Valladolid, Zamora-Chinchi, 2500 m; 1 male, Loja-Zamora, Zamora-Chinchi, 2500 m, 26.I-06.II.1998; 7 males, Tabaconas, Peru, VIII.1996, I. ALDAS *leg.*; 20 males, Zamora-Chinchi, Valladolid north, 2400-2600 m, 15/20.V.1998, A. JASIŃSKI & K. ŁOŚ *leg.* [TWP, UCP (1 male)]; 1 male, Ecuador, Zamora-Chinchi Province, north of Valladolid, 2600 m, 18.V.1994, J. P. W. HALL *leg.*; 1 male, Ecuador, Zamora-Chinchi Province, km 34 Jimbura-San Andrés rd., 2900 m, 23.IX.1997, K. R. WILLMOTT *leg.*; 1 male, Ecuador, Loja, Huasipamba, 10 km S Saraguro, 2800 m, 17.V.1994, J. P. W. HALL *leg.* [KWJH].

## REMARKS

*Pedaliodes tabaconas* is known for the time being from south-eastern Ecuador and northernmost Peru, the upper valleys of Zamora, Chinchi and their tributaries. Even though accurate altitudinal data are few, it appears that it is a lower cloud forest species occurring generally below 2000 m. *P. tabaconas* is still of uncertain affinities within the genus; although possibly related to *P. asconia* THIEME.

***Pedaliodes morenoi pilaloensis* PYRCZ et VILORIA n. ssp.**

(Figs. 20, 36)

## ETYMOLOGY

*pilaloensis* means native to Pilaló, the type locality of this species.

## DESCRIPTION

Male. (Fig. 20) **Head:** antennae half length of costa, dorsally blackish brown, ventrally brown, club, formed gradually, russet-brown, terminal segments black; labial palpi covered with dark brown hair-like scales; eyes chocolate-brown, lustrous, covered with short hair-like scales. **Thorax:** blackish-brown, hairy. Base of femur of walking legs covered with brown hair-like scales. **Abdomen:** dorsally and laterally brown, ventrally slightly lighter. **Wings:** forewing triangular (length: 26-27 mm, mean: 26.61 mm, n = 13), outer margin slightly convex. Fringes brown and white in interspaces. Hindwings rounded, outer margins slightly scalloped, fringes brown. Upperside of both wings dark chocolate-brown. Basal half of hindwing covered with lustrous, hair like scales, anal margin towards tornus orange. Forewing underside pale dark brown, with sparse silvery scales on apex and faint costal streak. Hindwing underside dark chocolate-brown, with large, yellow triangular anal wedge, in some individuals, extending as fine, irregular postmedian line towards vein M2 and following as faint costal streak. **Genitalia:** Tegumen low-domed, aligned with uncus, but suture well developed;

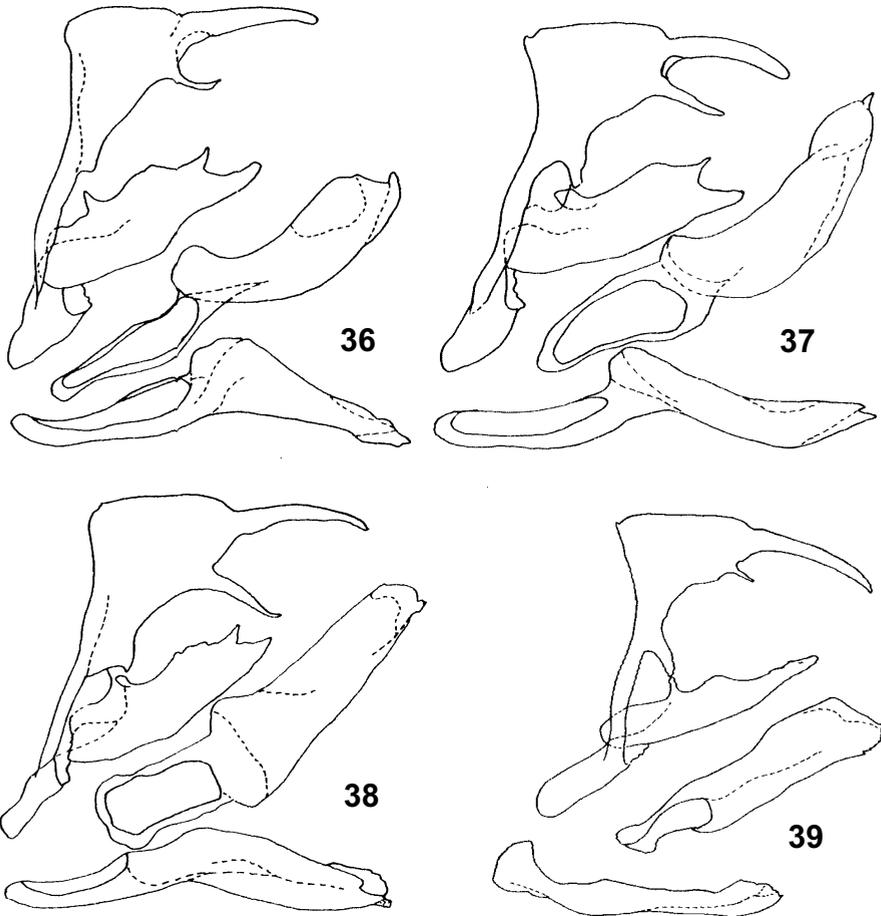
uncus larger than tegumen, solid at base; subunci one third length of uncus, thin; valvae robust, single but heavily processed on dorsum (tooth-like process); saccus conical; aedeagus large, strongly contorted (Fig. 37). For comparison purposes, the genitalia of *P. morenoi morenoi* (from Balzapamba) are illustrated in Fig. 36.

Female. Unknown.

Immature stages and host plants. Unknown.

TYPES

**Holotype** male, Pilaló, Cotopaxi, Ecuador, 2500-3000 m, VII.1996, I. ALDAS leg. [MZUJ]; **Paratypes**, 12 males, same data as holotype [TWP].



36-39. Male genitalia: 36 - *Pedaliodes morenoi morenoi* Dognin; 37 - *Pedaliodes morenoi pilaloensis* n. ssp.; 38. *Pedaliodes peucestas restricta* n. ssp.; 39 - *Pherepedaliodes nubilia* n. sp., only one valva is illustrated; aedeagus removed from natural position

## REMARKS

*Pedaliodes morenoi morenoi* DOGNIN had been considered by several authors (THIEME, 1905; WEYMER, 1912) as a synonym of *P. ferratilis* (BUTLER). It was correctly reinstated as a good species by ADAMS & BERNARD (1981). *P. morenoi morenoi* occurs throughout south-western Ecuador, being known from the Lagunillas range, or the Peruvian border, the upper valley of Catamayo, Loja (its type locality area), and south-western slopes of Chimborazo, Balzapamba area. *P. morenoi pilaloensis* apparently replaces the nominate subspecies further north along the Chocoan slopes of the Andes in Ecuador. It differs from the nominotypical *P. morenoi* in being considerably smaller and in having an orange suffusion on the anal margin of the forewing upperside.

***Pedaliodes peucestas restricta* PYRCZ et VILORIA n. ssp.**

(Figs. 21, 22, 38)

*Pronophila peucestas* HEWITSON, 1862: 4-5, pl. 2, figs 13, 14 (mididentification in part).

## ETYMOLOGY

*restricta* (adj. f.) - limited, for the shorter forewing white band.

## DESCRIPTION

Male. (Fig. 21) This subspecies differs from other populations of *P. peucestas* basically in the shape of the forewing oblique white band, which is shorter, ends on cell Cu2, does not extent into cell A2, and is broader in its posterior part in cells Cu1 and Cu2. Individuals of *P. peucestas restricta* are also smaller than those of other populations. Forewing length: 23-26 mm, mean: 24.72 mm, n = 12. (east Ecuador: 25-27 mm, Colombian Cordillera Occidental: 26-29 mm). **Genitalia:** as in typical subspecies (Fig. 38).

Female. (Fig. 22) Similar to male but slightly larger and lighter on underside. Immature stages and host plants. Unknown.

## TYPES

**Holotype** male, Reserva „El Pahuma”, Calacalí-Nanegalito, Pichincha, Ecuador, 2000-2200 m, 19.II.1992, A. NEILD leg. [MZUJ]; **Allotype** Female, Tulcán-Maldonado, Carchi, 23.V.1997, A. JASIŃSKI leg. [TWP]; **Paratypes** 1 male, Aloag-Tandapi, 1700 m, 25.IX.1995, A. NEILD leg.; 1 male, same data but A. JASIŃSKI leg. [TWP]; 1 male: same data but 28.IX.1995 [UCP]; 1 male, same locality but 09.VI.1994; 1 male, Tandapi-Aloag, no further data; 1 male, Pilaló, Cotopaxi, 2500-3000 m, VII.1996, I. ALDAS leg.; 2 females, same data as allotype; 1 female, 2000 m, no further data; 1 male, Carchi, Maldonado, 1300 m, 26.IV.1998, A. JASIŃSKI leg. [TWP]; 1 male, Santa Lucia, Ecuad., R. HAENSCH, ROTSCCHILD Bequest, Brit. Mus. 1939-1; 2 males, Ecuador, Provincia de Pichincha, SW of Quito, above Chiriboga, 2000 m, 30.VII.[19]86, M. J. & J. ADAMS leg.; 1 male, Ecuador, Provincia de Pichincha, NW of Quito, Alamo

valley, 2200 m, 5.VIII.[19]86, M. J. & J. ADAMS *leg.* (genit. prep. ALV188-96); 1 male, 8 km N of Calacali, Ecuador, 0° 4' N, 78° 31' W, 1860 m, scrubby temp. zone, 10.I.[19]75, R. BRISTOW *leg.*, Brit. Mus. 1975-75 [BMNH].

#### REMARKS

*Pedaliodes peucestas* (HEWITSON) described from Colombia occurs in all three Colombian Cordilleras (ADAMS 1986; Pyrcz & WOJTUSIAK, in press), but only on the western slopes of the Cordillera Oriental, and in northern, central, and part of southern Ecuador, both on the western and eastern slopes of the Andes. There is considerable inter-population variation and there are more than two well differentiated subspecies. *P. peucestas restricta* occurs on the Chocoan slopes of the Andes in Ecuador and certainly in Colombia (south from Río Patía). The population found on the Colombian western slopes north of Patía (*i.e.*, Tambito) belongs to a distinct subspecies, characterised, among other features, by very large size.

#### ***Pherepedaliodes* FORSTER, 1964:149.**

Type-species: *Pedaliodes pheretiades* GROSE-SMITH et KIRBY, [1894]: 7-8, pl. 2, figs 4, 5, by original designation.

The genus *Pherepedaliodes* had hitherto contained only two species, which are well separated from each other by differences in the genital structure, especially the ornamentation of the valvae. They are some of the few members of the *Pedaliodes*-complex with a membranous, thick aedeagus. A new species from Peru and Ecuador is now described.

#### ***Pherepedaliodes nubilia* PYRCZ et VILORIA n. sp.**

(Figs. 23, 39)

#### ETYMOLOGY

*nubilia* (adj. f.) - cloudy, referring to the hindwing underside pattern.

#### DIAGNOSIS

Forewing underside very much like in *P. naevia* THIEME, but hindwings different. Whereas *P. naevia* has a uniform dark brown background and a paler postmedian band, *P. nubilia* has a marble-like pattern not unlike the species of *Panyapedaliodes*, but with indistinct postmedian and submarginal lines. Male genitalia of *P. nubilia* resembles that of *P. naevia* in the atrophy or complete absence of subunci (present, but reduced in *P. pheretiades*). However, the valvae of the new species is devoid of spiny ornaments, while it is markedly serrate (bearing dorsal aggregations of abundant, small spine-like processes) in *P. naevia*.

## DESCRIPTION

Male. (Fig. 22) **Head:** antennae dorsally brown, ventrally russet, club formed gradually, same colour; eyes blackish brown, hairy; palpi light beige, palpal hairs brown. **Thorax:** dorsally and ventrally dark brown. **Abdomen:** brown, lighter ventrally. **Wings:** forewing subtriangular (length: 29-29.5 mm, mean = 29.2, n = 5), apex sub-acute, outer margin straight, fringes brown, cream yellow in interspaces. Hindwing sub-oval, outer margin very slightly wavy, fringes brown. Upperside of both wings uniform lustrous beige-brown. Forewing underside dull beige-brown, dusted with silver and dark brown scales on apex; faint irregular submarginal reddish patch in cells M3 and Cu1. Hindwing underside liberally speckled with dark brown and light beige scales forming a marble-like pattern, with barely marked concentration of dark brown scales along postmedian and submarginal lines and faint whitish submarginal dot in cell Cu2. **Genitalia:** Tegumen and uncus aligned, nearly same length; subunci reduced, almost vestigial; saccus deep and cylindrical; valvae elongated, as long as tegumen and uncus together; aedeagus membranous, broad, compressed basally, depressed distally; spiny at distal extremity (Fig. 39).

Female. Known from one specimen (not measured). Wing pattern similar to male.

Immature stages and host plants. Unknown.

## TYPES

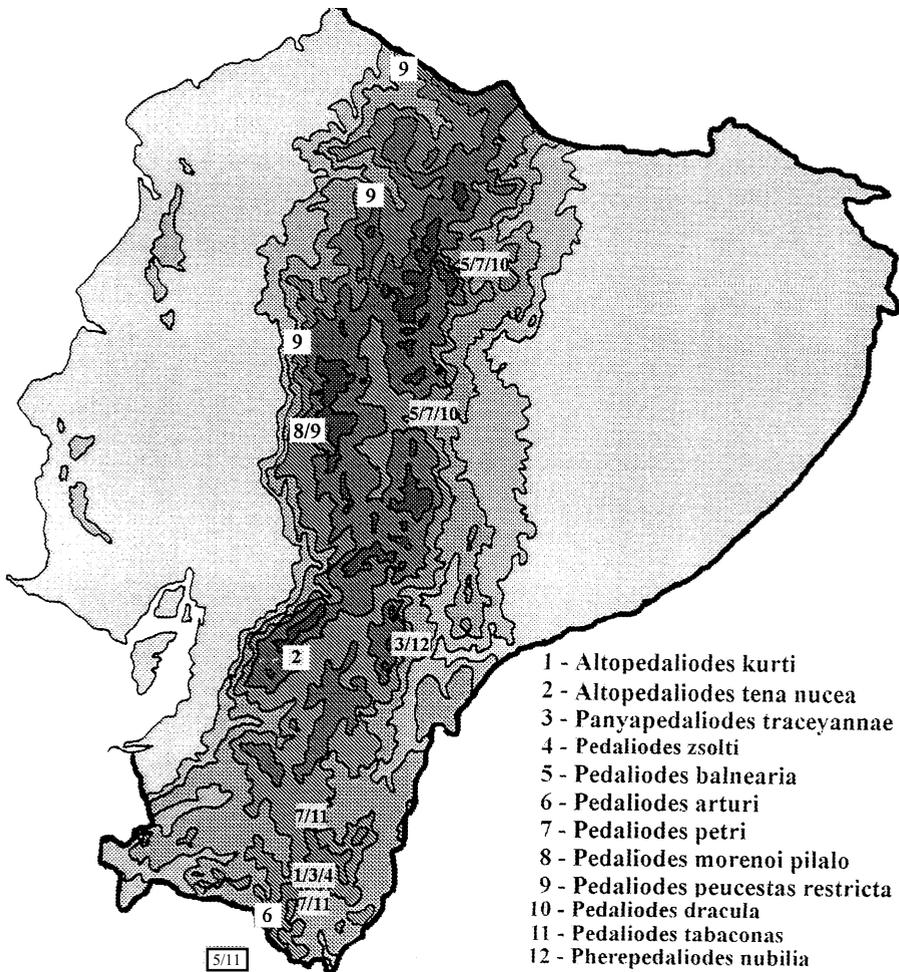
**Holotype** male, Road Limón-Gualaceo, Morona-Santiago, 1850 m, 03-04.XI.1996, A. NEILD *leg.* [MZUJ]; **Paratypes** 1 male, same data as holotype [TWP]; 1 male, Peru [JFLC]; 3 males, Cushi, Prov. Huanuco, Peru, 1900 m, (W. HOFFMANN), ROTHSCHILD Bequest, Brit. Mus. 1939-1 (1 male genit. prep. ALV327-97); 1 male, same data, 1820 m, 1904 [BMNH]; 1 male, Ecuador, Napo Province, El Arrayán, km 6 Baeza-Tena rd., 2200 m, 25.X.1996, K. R. WILLMOTT *leg.*; 1 male, Ecuador, Morona-Santiago Province, km 14 Limón-Gualaceo rd., 1950 m, 30.IX.1997, K. R. WILLMOTT *leg.*; 1 male, Ecuador, Zamora-Chinchipe Province, north of Valladolid, 2200 m, 18/19.V.1994, J. P. W. HALL *leg.*; 1 male, same data, 2000 m [to be deposited in MNCN]; 1 female, Ecuador, Zamora-Chinchipe Province, Zamora-Loja rd., Qbda. San Ramón, 1700 m, 27/28.X.1997, K. R. WILLMOTT *leg.* [KWJH].

## REMARKS

Found in central Peru (Huánuco), it seems that this is a widely distributed species as pointed out by WILLMOTT and HALL (pers. comm.), who recorded it from the Baeza area in Ecuador (possibly extending into adjacent east Colombia). A number of individuals collected in Ecuador were attracted to rotting fish bait. Range 1700-2200 m.

## ACKNOWLEDGEMENTS

We would like to thank Philip ACKERY (BMNH), Gerardo LAMAS (MUSM, Peru), Lee and Jacqueline MILLER (AME, Sarasota), Wolfram MEY (ZMHU, Berlin), Axel HAUSSMAN, Ulf BUSCHBAUM (ZSBS, München), and Horst BEMBENEK (SMTK, Dresden) for giving us access to the butterfly collections of their respective institutions, and Father Francisco PIÑAS (UCP) for the loan of Ecuadorian material. We are grateful to Stéphane ATTAL (Paris), thanks to whom we obtained most of the individuals of the new taxa, and for his four years of efforts in Ecuador on our behalf; Ismael ALDAS (Baños) for pursuing additional collecting; Andrew NEILD (London) for supplying material and making corrections to



40. Distribution of new taxa of pedalioidines in Ecuador

the manuscript; Pierre BOYER (Le Puy Sainte Réparate), Krzysztof ŁOŚ and Artur JASIŃSKI (Warsaw) for providing additional specimens; the latter also for the computer treatment of the graphics. Very special recognition is due to, David LEES for reviewing the last manuscript of this paper, Lee and Jacqueline MILLER for helping us in the painstaking process of gathering data from their rich collections and for useful recommendations, and to Janusz WOJTUSIAK for reviewing the manuscript and close-up photographs, INRENA, Loja for an investigation permit in the National Park Podocarpus, especially the director of the Park, Santos CALDERON S. and Park Rangers, Cayo, Pablo and others for their assistance in the field, Keith WILLMOTT and Jason HALL (University of Florida, Gainesville) for the most extraordinary and detailed critical review of the MS, which lately contributed to improve considerably these notes. The latter colleagues have been also responsible for sharing their geographical records of several years of field work in Ecuador, and for discussing fundamental taxonomic and biogeographic ideas.

The 1998 expedition to Ecuador of the senior author was supported by a doctoral grant of the Polish Committee for Scientific Research.

## REFERENCES

- ADAMS, M. J., 1985. Speciation in the pronophiline Butterflies (*Satyridae*) of the northern Andes. *Journal of Research on the Lepidoptera*, 1985, Suppl. No.1: 33-49.
- , 1986. Pronophiline butterflies (*Satyridae*) of the three Andean Cordilleras of Colombia. *Zoological Journal of the Linnean Society*, **87**: 235-320.
- ADAMS, M. J., G. I. BERNARD. 1981. Pronophiline butterflies (*Satyridae*) of the Cordillera de Mérida, Venezuela. *Zoological Journal of the Linnean Society*, **71**: 343-372.
- BROWN, F. M., 1943. Notes on Ecuadorian butterflies. III. The genus *Lymanopoda* WESTWOOD (*Satyridae: Rhopalocera*). *Annals of the Entomological Society of America*, **36**: 87-102.
- , 1944. Notes on Ecuadorian butterflies. IV. The genus *Penrosada*, new (*Lepidoptera, Satyridae*). *Annals of the Entomological Society of America*, **37**(2): 255-260.
- BUTLER, A. G., 1867. Revision of the group of lepidopterous insects hitherto included in the genus *Pronophila* of WESTWOOD. *Annals and Magazine of Natural History*, (3) **20** (118): 266-268.
- D'ABRERA, B., 1988. Butterflies of the Neotropical Region, part V, *Nymphalidae* (Concl.) & *Satyridae*. pp. 680-887. Hill House. Victoria.
- DOGNIN, P., 1887. Note sur la faune des lépidoptères de Loja et environs (Equateur) et descriptions d'espèces nouvelles, *Le Naturaliste*.(2)**1**(15): 173-175, 7 figs.
- , 1893. Lépidoptères nouveaux de l'Amérique du Sud, Principalement de Loja et environs (Equateur). *Annales de la Société Entomologique de Belgique*, **37**(7): 367-374.
- FORSTER, W. 1964. Beiträge zur Kenntnis der Insektenfauna Boliviens, XIX. *Lepidoptera* III *Satyridae*. *Veröffentlichungen der Zoologischen Staatssammlung München*, **8**: 51-188.
- GROSE-SMITH, H. & W. F. KIRBY. [1894]. *Pedaliodes* II. In: *Rhopalocera Exotica*, being illustrations of new, rare, and unfigured species of butterflies. London: Gurney & Jackson, pp. 5-9, 1 pl.
- HAYWARD, K. J. 1968. Cuatro satíridos nuevos de Ecuador. *Acta Zoologica Lilloana* **22**: 201-206.
- HEWITSON, W. C. 1862. On *Pronophila*, a genus of diurnal *Lepidoptera*; with figures on the new species, and reference to all those which have been previously figured or described. *Transactions of the Entomological Society of London*, **1**(3): 1-17, pls. 1-6.
- , 1869. *Satyridae*. Equatorial *Lepidoptera* collected by Mr. BUCKLEY, part III. London. John van Voorst, pp. 33-48.

- LAMAS, G., [1997]. Diez notas sinonímicas sobre *Satyrinae* neotropicales, con la descripción de dos subespecies nuevas de Perú y Ecuador (*Lepidoptera: Nymphalidae*). Revista Peruana de Entomología, **39**: 49-54.
- MILLER, L. D., 1968. The higher classification, phylogeny and zoogeography of the *Satyridae* (*Lepidoptera*). Memoirs of the American Entomological Society, **24**: 1-174.
- PYRCZ, T. W. (in press). Eduard KRÜGER's collection of *Pronophilini* (*Nymphalidae: Satyrinae*) in the Museum of Zoology of the Polish Academy of Sciences in Warsaw. Lambillionea, **98**.
- PYRCZ, T. W., A. L. VILORIA. (in press). Mariposas de la tribu *Pronophilini* de la Reserva Forestal Tambito, Cordillera Occidental, Colombia. Primera Parte. Convergencia de los patrones de coloración en mariposas andinas: siete nuevas especies del género *Pedaliodes* BUTLER, 1867 (*Lepidoptera: Nymphalidae, Satyrinae*). SHILAP, Revista de Lepidopterología, **101**.
- PYRCZ, T. W., J. WOJTUSIAK. (in press). Mariposas de la tribu *Pronophilini* de la Reserva Forestal Tambito, Cordillera Occidental, Colombia. Segunda Parte. Patrones de distribución altitudinal (*Lepidoptera: Nymphalidae, Satyrinae*). SHILAP, Revista de Lepidopterología, **101**.
- THEME, O. 1905. Monographie der Gattung *Pedaliodes* BUTL. (*Lepidoptera: Rhopalocera: Satyridae*). Berliner Entomologische Zeitschrift, **50**(1/2): 43-141, pls. 1-3.
- WEYMER, G. 1912. 4 Familie: *Satyridae*. In: A. SEITZ (ed.): Die Gross-Schmetterlinge der Erde, 2; Exotische Fauna, 5, Stuttgart: A Kernen, pp. 173-283.