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Systematics, bionomics and zoogeography of high Andean pedalioidines. Part 12: A new polytypic species and evaluation of the role of the Ucayali – Madre de Dios water divide as a biogeographic barrier
(Lepidoptera: Nymphalidae: Satyrinae)

TOMASZ W. PYRCZ¹, ANGEL L. VILORIA² & GERARDO LAMAS M.³

¹Zoological Museum of the Jagiellonian University, Ingardena 6, 30-060 Kraków, Poland, pyrcztomasz@hotmail.com

²Centro de Ecología, Instituto Venezolano de Investigaciones Científicas, Apartado 20632, Caracas 1020-A, Venezuela, aviloria@ivic.ve

³Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Av. Arenales 1256, Lima, Peru, glamasm@unmsn.edu.pe

ABSTRACT. A new species *Pedaliodes phantasia* is described from the department of Cuzco in Peru. Two subspecies are identified. They occur in the valleys of Kosñipata and Lucumayo separated by the Cordillera de Vilcanota ridge, which constitutes the watershed divide between two main affluents of the Amazon, Ucayali and Madre de Dios. Faunal affinities of the two areas are evaluated within four elevational bands based on the genus *Pedaliodes*. It is confirmed that the Vilcanota ridge is an important biogeographical barrier. At the species level, similarity indices between the two areas are lowest at intermediate / high elevations (2600-3000 m). They are highest at lowest (1800-2000 m) and highest elevations (3600 m).

Key words: entomology, taxonomy, climate change, cloud forests, *Pedaliodes phantasia* n. sp., *P. phantasia planetaria* n. ssp., paramo, Peru, Río Kosñipata, Río Lucumayo, Sørensen similarity index.

INTRODUCTION

Zoogeography of Peruvian Andean butterflies is largely unexplored due to the still deficient taxonomy and not sufficient fine-scaled data on species distribution patterns. Historical material deposited in major museums and even recent collecting often bears little reliable distributional data leading to taxonomical errors and misinterpretations of distribution patterns in faunal monographs. The new species of *Pedaliodes* BUTLER

(Nymphalidae, Satyrinae) discussed herein was discovered recently in the department of Cuzco in the upper valley of the Río Kosñipata. Almost simultaneously a second population of this species was found in the valley of the Río Lucumayo, also in Cuzco. Although the two collecting areas are situated less than 80 km away, they belong to the basins of two different affluents of the Amazon, Ucayali and Madre de Dios. The watershed divide is situated along the main ridge of the Cordillera de Vilcanota separating the two collecting localities. In the only general approach to zoogeography of Peru based on endemic butterfly distributions LAMAS (1982) divided the territory of Peru into units comprised within bands of elevation and corresponding with forest on non-forest type of vegetation, recognised the Vilcanota range (referred to as Pantiacolla Range) as a boundary between two zoogeographical regions, the so-called Oxapampa and Marcapata units. At the time of publication of this interesting and pioneering paper the amount of data on Peruvian butterfly taxonomy and distribution was precarious; therefore some units were defined as hypothetical or were strongly supported by ornithological data. The choice of Satyrinae taxa (*Corades*, *Lasiophila*, *Pronophila*, *Pseudomaniola*) representative for each unit turned out largely inaccurate from the perspective of their systematic status or geographic range. No species of the genus *Pedaliodes* were used in the analysis. Yet, *Pedaliodes* species having often restricted geographic ranges and narrow altitudinal distributions have been pointed out as one of the most valuable taxa for the evaluation of geographic patterns in the Andean biomes (VILORIA 2008). PYRCZ (2004) confirmed, partly basing on the distribution patterns of *Pedaliodes*, the validity of two north Peruvian faunal units also proposed by LAMAS (*op. cit.*), La Peca and Chachapoyas. Accumulated data also allows evaluating the faunal similarity of Lucumayo and Kosñipata, and by the same, to test two zoogeographical units defined by LAMAS (*op. cit.*), Oxapampa and Marcapata.

MATERIALS AND METHODS

Field studies were carried out by the senior author in the study area in 1987, 2002, 2003, 2005 and 2008. Sampling was carried out at 1400–3800 m. Standard entomological nets and Van-Someren Rydon baited traps were used. Type material was examined in BMNH, ZMHB, MUSM and MZUJ. Additional material was examined in other public and private collections. Male genitalia were dissected according to standard procedure, preserved in glycerol, and examined, alongside other morphological microstructures, under an Olympus SZX9 stereomicroscope. Adults were photographed with an Olympus E-500 digital camera, and colour plates were composed using Adobe PhotoShop 7.0. All the species of the genus *Pedaliodes* occurring in the study area were listed and their approximate altitudinal distributions were given (Appendix). Species richness was given and Jacard (*J*) similarity index was calculated for 3600, 3400, 3200, 3000, 2800, 2600, 2400, 2200, 2000 and 1800 asl at species and subspecies level. Spearman's rank correlation was calculated for *J* and altitude. The following abbreviations and collection acronyms were used:

FW: forewing;

HW: hindwing;

V: ventral surface;

D: dorsal surface;

BMNH: The Natural History Museum, London, UK (formerly British Museum, Natural History);

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

MZUJ: Muzeum Zoologiczne Uniwersytetu Jagiellońskiego, Kraków, Poland;

PBF: collection of Pierre BOYER, Le Puy Sainte Réparate, France;

TWP: collection of Tomasz Wilhelm PYRCZ, Warsaw, Poland (to be integrated into MZUJ).

RESULTS AND DISCUSSION

Pedaliodes phantasia LAMAS, VILORIA & PYRCZ, n. sp.

(Figs. 1, 2, 5)

TYPE LOCALITY

Acjanaco, Cuzco, Peru.

MATERIAL EXAMINED

HOLOTYPE ♂: PERU, Cuzco, Acjanaco, 3500 m, 1312/7137, 21.VIII.2001, G. Lamas *leg.*, [MUSM]; PARATYPES (23 ♂ and 3 ♀♀): 1 ♂: same data as the holotype (genit. prep. ALV-ADD-2001); 1 ♀: Acjanaco, P. N. Manu, CU, 3500 m, 01.VIII.1990, M. Medina *leg.*, [MUSM]; 3 ♂♂: Acjanaco – Pillcopata, above Qda. Toccahuayco, 3300-3350 m, 22.V.2003, T. Pyrcz *leg.*, (prep. genit. 10/11.12.03/TWP); 1 ♂: same data but 25.V.2003; 3 ♂: same data but 29.V.2003; 3 ♂: Abra Acjanaco vers Pillcopata km 1 a 3, Paucartambo, 3300-3450 m, 24.II.2005, P. Boyer *leg.*; 1 ♂: same data but 22.II.2005, [TWP]; 9 ♂♂ and 2 ♀♀: Cuzco, Acjanaco vers Boca Manu km 2 à 6, 3300-3470 m, 22.V.2003, P. Boyer *leg.*; 3 ♂♂: Cuzco, Acjanaco vers Pillcopata km 1 à 3, 3300-3470 m, 24.II.2005, P. Boyer *leg.*, [PBF].

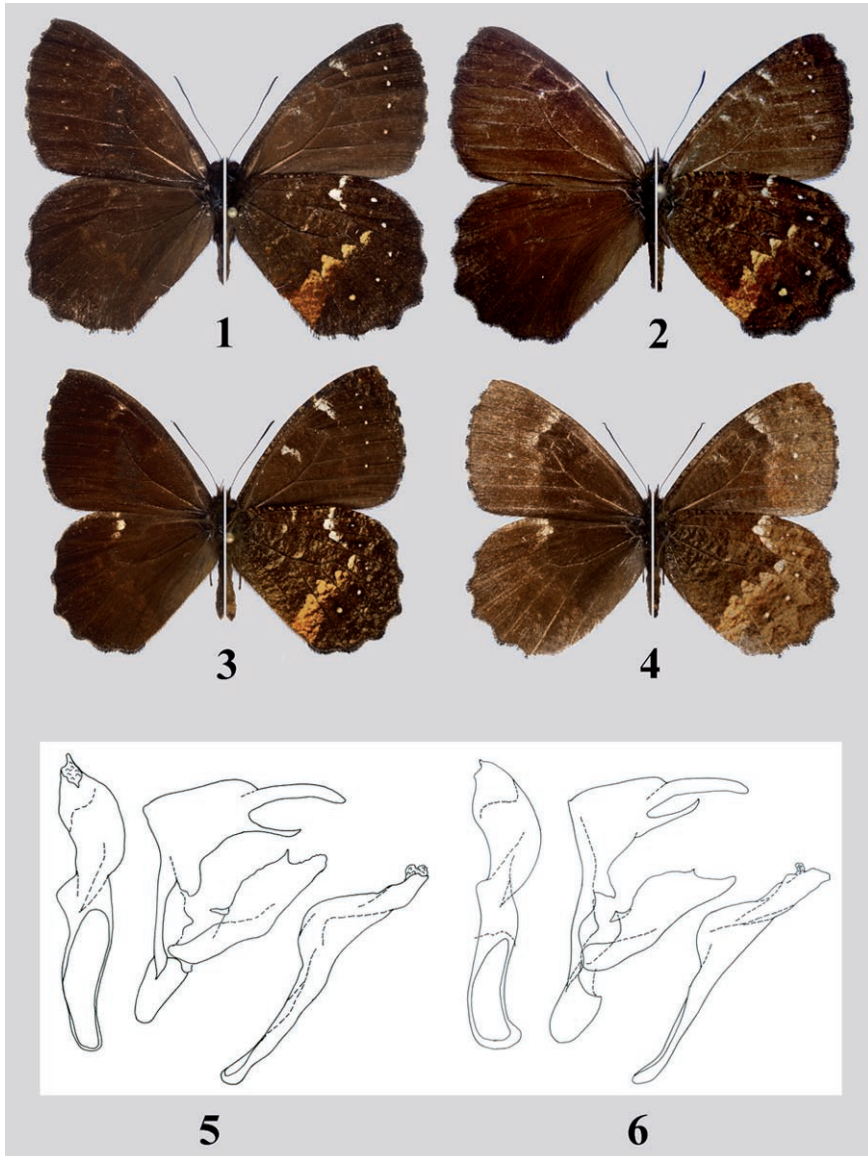
DIAGNOSIS

HWV colour pattern of this species, marked by the elongated anal wedge connected to the white costal streak, resembles several Peruvian species, such as *P. auristriga* THIEME and *P. sztolcmani* PYRCZ, however only in *P. phantasia* its basal edge has prominent intravenul protrusions pointing basally, and the entire HWV is speckled with milky white.

DESCRIPTION

MALE (Fig. 1): Head: Eyes hairy, dark brown; frons with a tuft of dark brown hair; labial palpi twice as long as head, medium brown with some white scales and coffee brown and brown brushes; antennae reaching half of the costa, dorsally black,

ventrally orange brown with some light brown scales, club dark brown, formed gradually, subcylindrical, laterally compressed, slightly concave in its proximal side, where three keels can be observed, comprising 16 segments. Thorax: dorsally blackish brown, ventrally medium brown; legs medium brown, femora hairy. Abdomen: dorsally cof-



1-4. Adults (left – dorsal, right – ventral): 1 – *Pedaliodes phantasia phantasia* male (paratype), 2 – *P. ph. phantasia* female (paratype), 3 – *P. ph. planetaria* male (holotype), 4 – *P. ph. planetaria* female (paratype); 5, 6. Male genitalia (lateral view, aedeagus extracted in lateral (A) and ventral (B) view): 5 – *Pedaliodes phantasia phantasia* (paratype), 6 – *P. ph. planetaria* (paratype)

fee brown, laterally and ventrally lighter, medium brown. Wings: FW length: 27-29 mm (mean: 27.9 mm, n=12); apex subacute, outer margin slightly concave; fringes alternately coffee brown and white. HW subrhomboidal, outer margin crenulated; fringes coffee brown, some whitish scales from apex to M3. FWD coffee brown, lustrous; an extremely faint (in some individuals not apparent) lighter costal streak made of sparse whitish scales in the postdiscal area extending to M3; in some individuals minute whitish submarginal dots, between two and five, mostly apparent in M1-M2 and Cu1-Cu2. HWD coffee brown, lustrous; basal two-thirds hairy; an extremely faint milky white midcostal streak, in some individuals not apparent, reaching to Rs. FWV ground colour brown, lighter than on the upperside, lustrous, suffused with light brown and whitish all over its surface, more densely in subapical, apical and marginal areas, where taking shape of ripple pattern; a small, diffused whitish subcostal dot in mid discal cell; a diffused whitish postdiscal streak, from costa to M2; a straight row of six submarginal white spots in cells R5 to Cu2; HWV ground colour coffee brown, slightly darker than on the FW, with abundant speckling of lighter, milky white and blackish brown; postmedian to submarginal area a shade lighter; a light orange anal wedge extending as a series of discontinuous lunular spots, gradually smaller, to vein M2, heavily suffused with dark brown; a whitish mid-costal streak made of two dots, extending to cell Rs-M1; a series of five submarginal milky white dots of about same size from Rs-M1 to Cu1-Cu2. Male genitalia (Fig 5): Aedeagus slightly longer than tegumen-uncus, strongly contorted, laterally straight and flattened, proximal opening very long, nearly half the length of aedeagus; uncus slightly shorter than tegumen with a very slightly curved extremity; subunci well developed, half the length of uncus, thin; saccus globular, approximately aligned to vinculum; valvae the length of tegumen-uncus, with a slightly irregular dorsal surface and a prominent dorsal process pointing upwards, distal extremity blunt.

FEMALE (Fig. 2): Differs marginally from the male in the slightly lighter brown ground colour of wings both dorsum and venter; HWV anal wedge paler yellow; FW length: 27.5 mm (n = 2).

ETYMOLOGY

This species epithet is an allusion to its fancy HWV colour pattern.

REMARKS

The nominate subspecies of *P. phantasia* was discovered in the upper valley of the Río Kosñipata, an affluent of the Madre de Dios, where it occurs at 3300-3500 m, same elevational band as the nominate. It has not been found so far in the parallel, to the south, valley of Marcapata, even though appropriate elevations have been sampled quite extensively. *P. phantasia* occurs in the uppermost forest. It appears to be most allied to a new undescribed species of (VILORIA & PYRCZ, in prep.) occurring in dry puna habitats of the Cuzco and other SE Peru departments. The two share similar male genitalia and somewhat similar HWV colour patterns. No likely cloud forest allopatric replacement of *P. phantasia* has been discovered so far farther southwards in the department of Puno.

***Pedaliodes phantasia planetaria* PYRCZ & VILORIA, n. ssp.**

(Figs. 3, 4, 6)

TYPE LOCALITY

Carrizales, above Qda. San Luis, Cuzco, Peru.

MATERIAL EXAMINED

HOLOTYPE ♂: PERU, Cuzco, Ollantaytambo – Alfamayo, above Qda. San Luis, 3200-3250 m, 22.II.2005. T. Pyrcz *leg.*, [MUSM]; PARATYPES (31 ♂♂ and 2 ♀♀): 3 ♂♂ and 2 ♀♀: Cuzco, Ollantaytambo – Alfamayo, above Qda. San Luis, 3200-3250 m, 22.II.2005. T. Pyrcz *leg.*, (prep. genit. 13/07.11.05/TWP); 4 ♂♂: same data but 3500-3550 m, 20.V.2003; 3 ♂♂: same data but IV.2005, J. Böttger *leg.*; 3 ♂♂: same data but 3500-3600 m, III.2006; 4 ♂♂: same data but III.2006; 1 ♂: Abra Málaga vers Quillabamba, Urubamba, 3400-3500 m, 26.II.2005, P. Boyer *leg.*, [TWP]; 3 ♂♂: Cuzco, Abra Málaga vers Quillabamba km18 à 26, 3000-3400 m, 22.II.2005, P. Boyer *leg.*; 1 ♂: Cuzco, Abra Málaga vers Quillabamba, 3400-3600 m, 13.V.2003, P. Boyer *leg.*; 1 ♂: Cuzco, Abra Málaga vers Quillabamba, 3400-3500 m, 14.V.2003, P. Boyer *leg.*; 1 ♂: Cuzco, Abra Málaga vers Quillabamba km 15 à 18, 3400-3500 m, 26.II.2005, P. Boyer *leg.*; 2 ♂♂: Cuzco, Abra Málaga vers Quillabamba km 20, 3300 m, 26.II.2005, P. Boyer *leg.*; 2 ♂♂: Cuzco, Carrizales, Abra Málaga vers Quillabamba, 3000-3300 m, III.2006, J. Böttger *leg.*; 2 ♂♂: Cuzco, Carrizales, Abra Málaga vers Quillabamba, 3200 m, III.2005, J. Böttger *leg.* [PBF].

DESCRIPTION

MALE (Fig. 3): Head, thorax and abdomen not differing from the nominotypical. Wings: FW length: 24.5-27 mm (25.8 mm, n=20); apex subacute, outer margin slightly concave; fringes alternately coffee brown and milky white. HW subrhomboidal, outer margin crenulated; fringes coffee brown, some milky white scales from apex to M3. FWD coffee brown, lustrous; a faint, in some individuals barely noticeable, lighter costal streak made of sparse whitish scales in the postdiscal area extending to M3; in some individuals minute whitish submarginal dots in straight row, between two and five, mostly apparent in M1-M2 and Cu1-Cu2. HWD coffee brown, lustrous; basal two-thirds hairy; a milky white midcostal streak, variable but always noticeable, reaching to Rs, in most individuals made of two patches, the costal one larger. FWV ground colour brown, a shade lighter than on the upperside, lustrous, suffused with light brown and whitish in subapical, apical and marginal areas, where taking shape of ripple pattern; some reddish brown scales in apical area; a small, diffused whitish subcostal dot in mid discal cell; a diffused whitish postdiscal streak, from costa to M2; a straight row of six submarginal white spots in cells R5 to Cu2; HWV ground colour coffee brown, a shade darker than on the FW, with abundant speckling of lighter, milky white; postmedian to submarginal area a shade lighter; a rich yellow anal wedge extending as a series of continuous lunular spots, gradually smaller, to vein M2, suffused with dark brown along outer edge, connected marginally to a whitish mid-costal streak made of two dots, extending to cell Rs-M1; a series of five submarginal milky white dots of about

same size from Rs-M1 to Cu1-Cu2. Male genitalia (Fig. 6): Differs from the nominate subspecies in the slightly wider and shallower saccus, somewhat wider aedeagus at proximate extremity, both possibly characters subject to important individual variation, as in other congeners, however especially in the much shorter dorsal process on the aedeagus, reduced to a short sharp tip., and an acute distal extremity of the valvae.

FEMALE (Fig. 4): FW and HWD lighter, medium brown with conspicuous diffused whitish costal markings; FWV coffee brown in basal and beige in outer half, a faint orange postmedian suffusion in cells Cu1-Cu2 and Cu2-1A; HWV with conspicuous ripple pattern in coffee brown basal half and beige in distal half, yellow markings lighter and duller; FW length 26 mm (n=2).

ETYMOLOGY

This subspecies owes its name to the hindwing underside colour pattern which reminds of the sky full of stars, or planets, hence *planetaria*.

REMARKS

P. phantasia planetaria differs from the nominotypical in the smaller size, wider and yellow instead of orange HWV anal wedge, and well marked HWD milky white costal streak, HWV whitish speckling more prominent. This subspecies occurs in the upper valley of the Río Lucumayo. It most probably inhabits the valleys of other affluents of the Río Urubamba, however its presence has not been reported so far from elsewhere, for example the nearby Machu Picchu Sanctuary on the left bank of the Río Urubamba (LAMAS 2003).

DIVERSITY AND DISTRIBUTION PATTERNS

A total of 39 species belonging to the genus *Pedaliodes sensu stricto* were reported from Kosñipata and Lucumayo (PYRCZ *et al.* 2008; unpublished data), including 31 in Kosñipata and 28 in Lucumayo. Species richness pattern along altitude is closely similar in the two localities. It presents the highest values at 2200 – 2400 m with a decrease towards the highest elevations, with the minimum at timberline, and also lower values below 2000 m (Table 2). No species of *Pedaliodes* was found to be endemic in Lucumayo; however several species have restricted ranges and are found only in the upper Urubamba basin. *P. amafania* THIEME, *P. parma* THIEME, *P. melvillei* LAMAS & VILORIA, *Pedaliodes* n. sp. (no. 258 in LAMAS, 2003) and *Pedaliodes* n. sp. PYRCZ (ms) were reported only in San Luis or/and Machu Picchu Sanctuary. There are four species apparently endemic in Kosñipata: *P. ampulla* PYRCZ & BOYER, *P. phaeinomorpha* LAMAS, VILORIA & PYRCZ, *P. niveonota* BUTLER and *Pedaliodes* n. sp. LAMAS & VILORIA (in prep.). Two species are exclusive for Kosñipata and Lucumayo: *P. proculeja* THIEME comb. reinst. (see: note*) and the described herein *P. phantasia*. Overall, *J* at the species level is low (0.51) despite the short distance separating the two localities. It shows that the two samples belong to different faunal pools and confirms the Ucayali – Madre de Dios water divide as an important zoogeographical barrier. It does not imply however

that the faunal units (Oxapampa and Marcapata) are valid on the geographic scale proposed by LAMAS (1982). Particularly the validity of the large Oxapampa unit (extending from Vilcanota to central Peru) is questionable based on available taxonomic and distributional data in the genus *Pedaliodes* and the tribe Pronophilini (PYRCZ *et al.* 2008). One third (10) of all the species of *Pedaliodes* occurring in Lucumayo are not found in central Peru (Junín).

There is no statistically significant correlation of J with altitude at the species level. However, at the same time, there is a significant negative correlation at the subspecies level ($r_s = -0.98$, $p < 0.05$). At the highest elevation (3600 m) J is high at species (0.75) but null at subspecies level. In other words, at timberline the same species occur in Lucumayo and Kosñipata but invariably as different subspecies. This suggests, considered that changes in *Pedaliodes* ranges are marginally affected by long distance dispersal or migration, the existence in the past of an ecological corridor connecting the uppermost forests of the valleys of Lucumayo and Kosñipata. Nowadays, the habitats of *Pedaliodes* in the two localities are separated by an ecological/topographical barrier formed

Table 1. Jacard Similarity Coefficient.

Altitude m	Species	Subspecies
3600	0.75	0
3400	0.44	0.08
3200	0.41	0.06
3000	0.26	0.11
2800	0.26	0.17
2600	0.35	0.21
2400	0.75	0.55
2200	0.75	0.44
2000	0.92	0.66
1800	0.9	0.72
Overall	0.51	0.26

Table 2. Species richness of the genus *Pedaliodes*.

Altitude m	Lucumayo	Kosñipata
3600	3	4
3400	6	7
3200	8	9
3000	9	10
2800	10	11
2600	11	12
2400	14	14
2200	14	14
2000	12	13
1800	9	10

by puna grassland above 3500-3600 m and ridges at 3600-4000 m. A slight climate shift leading to the lifting of timberline by about 200-400 metres would eliminate any ecological barrier between the populations of the species inhabiting forested areas at the highest elevations of Madre de Dios and Ucayali basins. Although paleoecological studies of Peru are not sufficiently fine-scaled as to detect such subtle climate changes (PLACZEK *et al.* 2001), some studies in the northern Andes confirm a warmer and humid phase some 5000 BP that conducted to the rising of forest level of approximately 400 m (SCHUBERT & VIVAS 1991). As indicated by the morphological analysis, the differentiation process affecting the populations of *Pedaliodes* inhabiting Kosñipata and Lucumayo at timberline did not achieve full speciation.

The lowest *J* at the species level is recorded at intermediate high elevations, at 2600 and 3000 m (0.26). Several taxa occurring within this elevational band in the two areas are related but morphologically more markedly differentiated than their congeners at higher elevations. This suggests their solid isolation and full speciation through genetic drift and natural selection. We may speculate that elevational changes in the forest cover were not higher than 400 m. Otherwise, populations of the species occurring in the two areas at 3000 m would enter into contact and gene flux in a panmictic situation would restrict speciation.

At the lowest elevations, 1800 and 2000 m the SI is very high at both the species (0.9, 0.92) and high at the subspecies level (0.72, 0.66). This is due to the presence of mostly widely distributed species. Again, it indicates the presence of an ecological corridor connecting the two localities allowing a gene flow and restricting potential differentiation.

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APPENDIX

Approximate altitudinal ranges of species and subspecies of *Pedaliodes* in Kosñipata and Lucumayo

	Lucumayo	Kosñipata	Lucumayo	Kosñipata	Altitude
#	species	species	subspecies	subspecies	range m asl
1	<i>phantasia</i>	<i>phantasia</i>	<i>planetaria</i>	<i>phantasia</i>	3200-3600
2		<i>n. sp. 1</i>			3200-3600
3	<i>pactyes</i>	<i>pactyes</i>	<i>n. ssp. 1</i>	<i>n. ssp. 2</i>	3200-3600
4	<i>proculeja*</i>	<i>proculeja*</i>	<i>malaga</i>	<i>proculeja</i>	3200-3600
5	<i>daulis</i>				3000-3400
6		<i>antulla</i>			3000-3400
7	<i>albutia</i>	<i>albutia</i>			3000-3400
8	<i>melvillei</i>				3000-3400
9		<i>ackeryi</i>			3000-3400
10	<i>amafania</i>				2800-3200
11		<i>phaeinomorpha</i>			2800-3200
12	<i>pheres</i>	<i>pheres</i>	<i>n. ssp. 1</i>	<i>n. ssp. 2</i>	2800-3200
13	<i>demathani</i>	<i>damathani</i>	<i>alfa</i>	<i>ockendeni</i>	2600-3000
14		<i>puma</i>			2600-3000
15	<i>parma</i>				2600-3000
16		<i>niveonota</i>			2600-3000
17	<i>n. sp. 2</i>				2600-2800
18		<i>ampulla</i>			2600-2800
19	<i>n. sp. 3</i>				2600-3000
20		<i>simmius</i>			2600-3000
21	<i>auraria</i>	<i>auraria</i>			2600-3000
22	<i>boettgeri</i>				2200-2800
23		<i>patizathes</i>			2200-2800
24	<i>hopfferi</i>	<i>hopfferi</i>			2200-2800
25	<i>praxithea</i>	<i>praxithea</i>			2200-2800
26	<i>ferratilis</i>	<i>ferratilis</i>			2000-2600
27	<i>antonia**</i>	<i>antonia**</i>	<i>quincedis</i>	<i>n. ssp.</i>	2000-2600
28	<i>poesia</i>				2000-2600
29		<i>hewitsoni</i>			2000-2600
30	<i>manis</i>	<i>manis</i>			1800-2400
31	<i>montagna</i>	<i>montagna</i>			1800-2400
32	<i>palaepolis</i>	<i>palaepolis</i>			1800-2400
33	<i>molesta</i>	<i>molesta</i>			1800-2400
34	<i>phrasicla</i>	<i>phrasicla</i>	<i>n. ssp.</i>	<i>galaxias</i>	1800-2400
35	<i>petri</i>	<i>petri</i>			1800-2400
36	<i>transmontana</i>	<i>transmontana</i>			1800-2400
37	<i>pausia</i>	<i>pausia</i>			1800-2400
38		<i>porima</i>			1400-2000
39	<i>prosa</i>	<i>prosa</i>			1200-1800

- Pedaliodes phantasia* LAMAS, VILORIA & PYRCZ, n. sp.
Pedaliodes phantasia plantetaria PYRCZ & VILORIA, n. ssp.
Pedaliodes n. sp. 1 LAMAS & VILORIA, MS
Pedaliodes pactyes (HEWITSON, 1874)
Pedaliodes pactyes n. ssp. 1 PYRCZ, MS
Pedaliodes pactyes n. ssp. 2 PYRCZ, MS
Pedaliodes proculeja THIEME, 1905*
Pedaliodes proculeja malaga (PYRCZ, 2008)
Pedaliodes daulis THIEME, 1905
Pedaliodes antulla THIEME, 1905
Pedaliodes albutia THIEME, 1905
Pedaliodes melvillei VILORIA & LAMAS, 2008 (in PYRCZ *et al.* 2008)
Pedaliodes ackeryi PYRCZ & VILORIA, 2008
Pedaliodes amafania THIEME, 1905
Pedaliodes phaeinomorpha LAMAS, VILORIA & PYRCZ, 2008 (in PYRCZ *et al.* 2008)
Pedaliodes pheres THIEME, 1905
Pedaliodes pheres n. ssp. 1 PYRCZ, MS
Pedaliodes pheres n. ssp. 2 PYRCZ, MS
Pedaliodes demathani PYRCZ, 2004
Pedaliodes demathani alfa PYRCZ & BOYER, 2008 (in PYRCZ *et al.* 2008)
Pedaliodes demathani ockendeni LAMAS & VILORIA, 2008 (in PYRCZ *et al.* 2008)
Pedaliodes puma THIEME, 1905
Pedaliodes parma THIEME, 1905
Pedaliodes niveonota BUTLER, 1873
Pedaliodes n. sp. 2 PYRCZ, MS
Pedaliodes ampulla PYRCZ & BOYER, 2008 (in PYRCZ *et al.* 2008)
Pedaliodes n. sp. 3 VILORIA & PYRCZ, MS
Pedaliodes simmias THIEME, 1905
Pedaliodes auraria THIEME, 1905
Pedaliodes boettgeri PYRCZ, 2004
Pedaliodes patizathes (HEWITSON, 1874)
Pedaliodes hopfferi STAUDINGER, [1887]
Pedaliodes praxithea (HEWITSON, 1870)
Pedaliodes ferratilis BUTLER, 1873
Pedaliodes antonia STAUDINGER, 1897**
Pedaliodes antonia quincedis THIEME, 1905

* *Pedaliodes proculeja* was placed in the genus *Neopedaliodes* VILORIA, L. MILLER & J. MILLER (VILORIA, MILLER, MILLER & PYRCZ 2008). That action is now considered not justified. The description of *Neopedaliodes* underlines the importance of male genitalia for the validity of the genus, whereas the male genitalia of *P. proculeja* closely resemble the genitalia of *Pedaliodes sensu stricto* (PYRCZ *et al.* 2008).

** *Pedaliodes antonia* was placed in the monobasic genus *Antopedaliodes* FORSTER (FORSTER 1964). Its validity is questionable, and relies almost exclusively on some characters of male genitalia (shape of aedeagus and valvae), which could be considered as autapomorphic for *Pedaliodes antonia*.

- Pedaliodes antonia n. ssp.* LAMAS, VILORIA & PYRCZ, MS
Pedaliodes poesia (HEWITSON, 1862)
Pedaliodes hewitsoni STAUDINGER, 1897
Pedaliodes manis (C. & R. FELDER, [1867])
Pedaliodes montagna ADAMS & BERNARD, 1981
Pedaliodes palaepolis (HEWITSON, 1878)
Pedaliodes molesta PYRCZ, 2004
Pedaliodes phrasicla (HEWITSON, 1874)
Pedaliodes phrasicla n. ssp. PYRCZ, MS
Pedaliodes phrasicla galaxias THIEME, 1905
Pedaliodes petri PYRCZ & VILORIA, 1999b
Pedaliodes transmontana PYRCZ & VILORIA, 1999a
Pedaliodes pausia (HEWITSON, 1862)
Pedaliodes porima GROSE-SMITH & KIRBY, 1894
Pedaliodes prosa STAUDINGER, 1894