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# FAUNISTIC AND TAXONOMIC DATA ON ORIBATID MITES (ACARI: ORIBATIDA) OF TAIWAN, WITH AN IDENTIFICATION KEY TO KNOWN SPECIES OF *PERGALUMNA* FROM THE ORIENTAL REGION

**Sergey G. Ermilov[1]* and Peter Jäger[2]**

[1] X-BIO Institute, Tyumen State University, Tyumen, Russia
[2] Senckenberg Research Institute, Arachnology, Frankfurt am Main, Germany
* corresponding author; e-mail: ermilovacari@yandex.ru

ABSTRACT: This study is based on oribatid mite materials collected from forest litter in Taiwan. In particular, in the course of our study, we recorded 10 species from 10 genera and eight families. Of these, two species (*Scheloribates guhitanus*, *Setogalumna luzonica*) have been recorded for the first time from Taiwan. Additionally, a supplementary description of *Pergalumna kunsti* is presented based on specimens from Taiwan. An identification key to the known species of *Pergalumna* from the Oriental region is presented.

KEY WORDS: Taiwanese mites, fauna, record, morphology, *Pergalumna*

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## INTRODUCTION

While in the past the fauna and taxonomy of oribatid mites (Acari: Oribatida) of Taiwan were insufficiently studied (Tseng 1982, 1984; Aoki 1991, 1995; Chu and Aoki 1997; Bayartogtokh *et al*. 2009; see also summarized faunistic data in Chen *et al*. 2010), these topics have been researched extensively in recent years (e.g., Ermilov and Liao 2017, 2018, 2021; Niedbała and Ermilov 2021).

The primary aims of this paper are as follows: to present a list of the identified oribatid taxa (with notes on new records), which were collected in Taiwan in 2013; and to present supplementary morphological data on *Pergalumna kunsti* Ermilov and Starý, 2017 based on the Taiwanese specimens. The newly presented figures and information on some morphological characteristics will help identify the latter species in the future.

An identification key to the known representatives of *Pergalumna* from the Oriental region was provided by Ermilov *et al*. (2015). However, since then, several new species have been described and many new findings have been recorded. Therefore, an additional goal of this paper is to update this identification key.

## MATERIALS AND METHODS

**Specimens.** Collection locality: Taiwan, Pingtung County, Hengchun Township, Kenting National Park, close to the Howard Beach Resort, 21°56′17.63″N, 120°48′31.85″E, 24 m a.s.l., sifting litter in secondary forest, Winkler extraction, June 24, 2013 (P. Jäger leg.).

**Observation and documentation.** Specimens were mounted in lactic acid on temporary cavity slides for measurement and illustration. Drawings were made with a camera lucida using an "Olympus CX43RF" transmission light microscope. All measurements are in micrometres (μm).

**Abbreviations.** The following morphological abbreviations are used. *Prodorsum*: *L*—lamellar line; *ro*, *le*, *in*, *bs*—rostral, lamellar, interlamellar, and bothridial setae, respectively; *Ad*—dorsosejugal porose area; *D*—dorsophragma; *P*—pleurophragma. *Notogaster*: *c*, *la*, *lm*, *lp*, *h*—setae; *ia*, *im*—lyrifissures; *gla*—opisthonotal gland opening. *Epimeral and lateral podosomal regions*: *1b*, *3b*, *3c*, *4a*, *4b*, *4c*—epimeral setae; *PdI*, *PdII*—pedotecta I, II, respectively; *dis*—discidium; *cir*—circumpedal carina. *Anogenital region*: *g*, *ag*, *an*, *ad*—genital, aggenital, anal, and adanal setae, respectively; *iad*—adanal lyrifissure; *po*—preanal organ.

## LIST OF IDENTIFIED ORIBATID MITE TAXA[1]

**Trhypochthoniidae**

*Archegozetes longisetosus* Aoki, 1965: 1 ex. Distribution: Tropical.

**Basilobelbidae**

*Basilobelba parmata* Okayama, 1980: 1 ex. Distribution: Japan, Oriental.

[1] The distribution of the species is mostly taken from Subías (2022). References for the original descriptions of species are not presented in the *References* section.

**Eremulidae**

*Eremulus avenifer* Berlese, 1913: 2 ex. Distribution: southern Palaearctic, Oriental, Tahiti, Afrotropical.

**Oppiidae**

*Lasiobelba insulata* Ohkubo, 2001: 13 ex. Distribution: Japan, Taiwan.

**Otocepheidae**

*Trichotocepheus erabuensis* Aoki, 1965: 2 ex. Distribution: eastern Palaearctic, southeast China, Taiwan.

**Haplozetidae**

*Peloribates pakistanensis* Hammer, 1977: 2 ex. Distribution: Pakistan, Oriental.

**Scheloribatidae**

*Scheloribates guhitanus* Corpuz-Raros, 1980: 2 ex. Distribution: Philippines, Vanuatu. New record of the species in Taiwan.

**Galumnidae**

*Galumna flabellifera* Hammer, 1958: 1 ex. Distribution: Tropical, Subtropical.

*Pergalumna kunsti* Ermilov and Starý, 2017: 4 ex. Distribution: Oriental.

*Setogalumna luzonica* Ermilov and Corpuz-Raros, 2015: 16 ex. Distribution: Philippines. New record of the species in Taiwan.

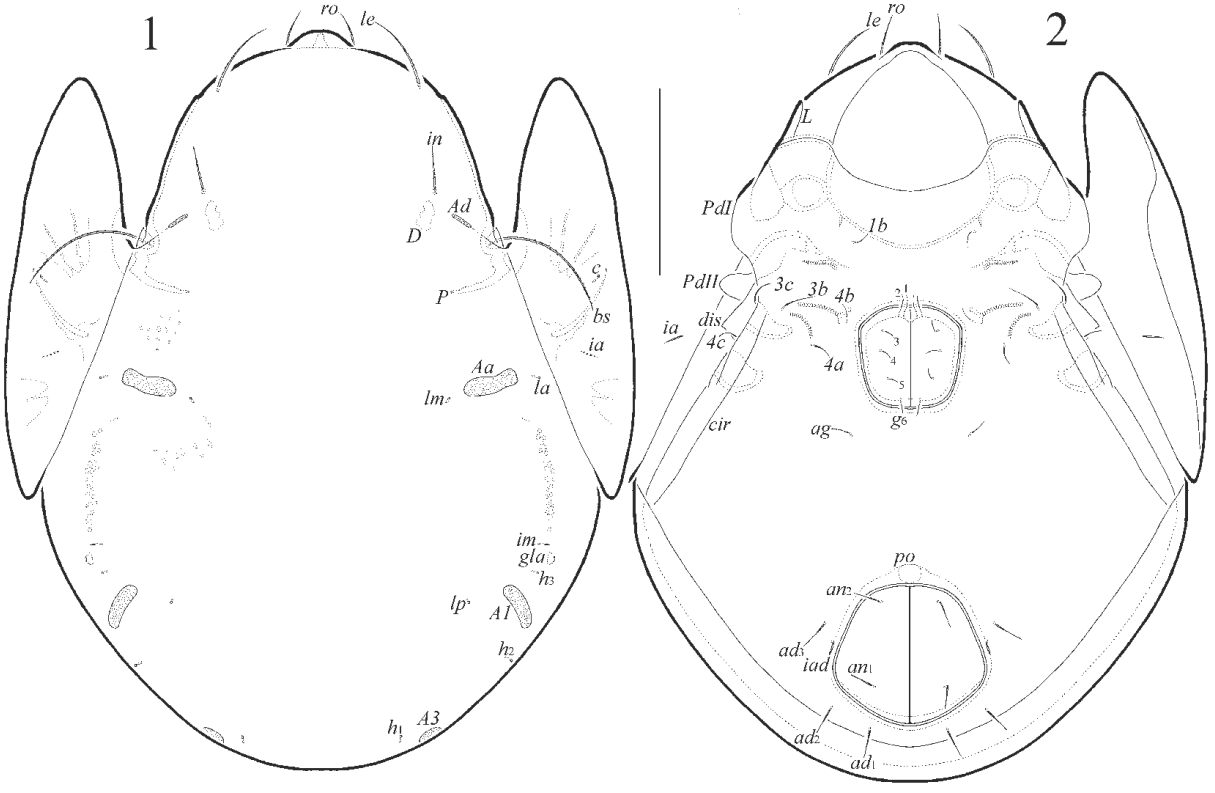
Thus, we found 10 species from 10 genera and eight families, of which two species (*Scheloribates guhitanus*—see Corpuz-Raros 1980 and *Setogalumna luzonica*—see Ermilov and Corpuz-Raros 2015) are recorded for the first time from Taiwan. According to the distribution of the identified mites, two species are oriental, and the other species are recorded from two or more geographical regions.

## SUPPLEMENTARY MORPHOLOGICAL DATA

### *Pergalumna* (*Pergalumna*) *kunsti* Ermilov and Starý, 2017

(Figs. 1, 2)

*Pergalumna kunsti* was described by Ermilov and Starý (2017) from Vietnam. Later, this species has also been recorded from Taiwan and southern China (Ermilov and Leong 2018, 2020; Ermilov and Liao 2021).




Figs. 1–2. *Pergalumna kunsti* Ermilov and Starý, 2017, adult: 1—dorsal view; 2—ventral view (gnathosoma, legs and right pteromorph not shown). Scale bar—200 μm.

Specimens of *P. kunsti* from the new Taiwanese material are morphologically similar to those in the original description in all main morphological traits, e.g.,: large body size; surface without heavy sculpturing and ornamentation; rostrum rounded; rostral, lamellar and interlamellar setae comparatively long, *le* longest; bothridial seta long, setiform, barbed; dorsosejugal suture interrupted medially; dorsosejugal porose area present; three pairs of notogastral porose areas, with *Aa* boothshaped/peanut-shell-shaped, located between setal alveoli *la* and *lm* and equally distant from them; median pore absent; notogastral lyrifissure *im* located dorsolaterally to porose area *A1*; epimeral setal formula: 1–0–2–3; circumpedal carina medium-sized, directed to insertion of seta *3b* or slightly lateral to it; aggenital seta located closer to genital aperture than to anal aperture; anal and adanal setae medium-sized, erect; postanal porose area absent.

There are, however, some morphological differences: (a) our specimens are smaller than Vietnamese specimens (body length: 825–885 vs. 929–1045); (b) in our specimens, dorsosejugal porose area narrowly elongate oval (vs. oval); (c) in our specimens, notogastral porose area *A1* always distinctly elongate oval (vs. oval in typical case); (d) in our specimens, circumpedal carina directed slightly lateral to insertion of epimeral seta *3b* (vs. to insertion of *3b*). We believe that these differences represent intraspecific variability, and therefore, the above traits should be used when identifying *G. kunsti* in the future.

## KEY TO KNOWN REPRESENTATIVES OF *PERGALUMNA*[1] FROM THE ORIENTAL REGION

(Updated after Ermilov *et al*. 2015)

We exclude *P. bhaskari* Sarkar, Sanyal and Chakrabarti, 2012 from India, *P. heroica* (Willmann, 1931) from Java, *P. medialis* (Sellnick, 1925) from Sumatra, *P. obsessa* Subías, 2004 from Taiwan (as *Galumna pallida* Tseng 1984), and *P. sabitai* Sarkar, Sanyal and Chakrabarti, 2012 from India from the key because these species have been poorly described. We have also excluded *P. operata* Tseng, 1984 from Taiwan because it has distinct notogastral setae that are absent in *Pergalumna* species.

1. Dorsosejugal suture represented by dense tubercles ..... 2
— Dorsosejugal suture simple or absent ..... 3
2. Genital plate with several striae; all notogastral porose areas larger than diameter of bothridium; body length: 451–490 ..... ..... *P. margaritata* Mahunka, 1989. Distribution: Oriental.
— Genital plate with one stria; all notogastral porose areas similar in size to diameter of bothridium; body length: 402–447 ..... ..... *P. pseudomargaritata* Mahunka, 1994. Distribution: Thailand.
3. Dorsosejugal suture complete, clearly developed ..... 4
— Dorsosejugal suture absent, interrupted medially or unclear medially ..... 18
4. Two pairs of notogastral porose areas *Aa*; body length: 882 ..... *P. incomperta* Engelbrecht, 1972. Distribution: South Africa, India.
— One pair of notogastral porose areas *Aa* ..... 5
5. Rostrum pointed ..... 6
— Rostrum rounded ..... 9
6. Four pairs of notogastral porose areas (*A2* present); notogastral porose area *Aa* elongate triangular, transversally oriented; lateral part of pteromorph with strong ridges forming slightly visible reticulate pattern ..... Two similar species (possibly the same): 1) *P. altera* (Oudemans, 1915) (=*Pergalumna harunaensis* Aoki, 1961) (see also Aoki 1975; Engelbrecht 1972; Weigmann 2006; Fujikawa *et al*. 2006) (body length: 517–670; distribution: Semicosmopolitan);
2) *P. amamiensis* Aoki, 1984 (see also Hagino and Shimano 2019; Zheng *et al*. 2021) (body length: 519–680; distribution: southeastern Palaearctic, Taiwan).
— Three pairs of notogastral porose areas (*A2* absent); notogastral porose area *Aa* rounded/oval; pteromorph without strong ridges and reticulate pattern ..... 7
7. Interlamellar seta represented by alveolus; posterior part of notogaster with two parallel, longitudinal furrows; body length: 664–830 .... *P. asetosa* Ermilov, Shtanchaeva, Kalúz and Subías, 2013. Distribution: India.
— Interlamellar seta long; posterior part of notogaster without longitudinal furrows ..... 8
8. All notogastral porose areas rounded; genital plate densely striate; body length: 664–830 ..... ..... *P. yurtaevi* Ermilov and Anichkin, 2011 (in 2011a; see also Ermilov, Anichkin *et al*. 2012). Distribution: Oriental, Australasian.

[1] All species included here belong to the nominate subgenus.

— All notogastral porose areas oval; genital plate with two striae; body length: 610–680 ..... *P. sidorchukae* Zheng, Liang, Ren and Yang, 2019. Distribution: southeastern China.
9. Interlamellar seta minute or represented by alveolus ..... 10
— Interlamellar seta medium-sized or long ..... 14
10. Notogaster surface foveolate; body length: 222–235 ..... *P. annulata* Mahunka, 1995. Distribution: Borneo.
— Notogaster surface not foveolate ..... 11
11. Bothridial seta setiform; notogastral porose area *Aa* located medially to notogastral setal alveolus *la*; body length: 675–690 ..... *P. nuda* Balogh, 1960. Distribution: Angola, Vietnam.
— Bothridial seta with slightly developed head; notogastral porose area *Aa* located anteriorly to notogastral setal alveolus *la* ..... 12
12. Notogastral porose area *Aa* rounded; body length: 820 ..... *P. andicola* Hammer, 1961. Distribution: Neotropical, India.
— Notogastral porose area *Aa* elongate triangular or elongate oval, transversely oriented ..... 13
13. Rostral and lamellar setae short; body length: 693–755 ..... *P. longiporosa* Fujita and Fujikawa, 1987. Distribution: Japan, India.
— Rostral and lamellar setae long; body length: 705–898 ..... *P. obvia* (Berlese, 1914) (see also Weigmann 2006; Bayartogtokh 2010; Ermilov, Weigmann *et al*. 2013). Distribution: Semicosmopolitan.
14. Three pairs of notogastral porose areas (*A2* absent); notogastral porose area *Aa* rounded; body length: 820 ..... *P. corniculata* (Berlese, 1905) (see also Mahunka 1992). Distribution: Oriental.
— Four pairs of notogastral porose areas (*A2* present); notogastral porose area *Aa* elongate oval or elongate triangular, or boot-shaped, transversally oriented ..... 15
15. Bothridial seta clavate; body length: 672 ..... *P. andhraense* Raju, Appalanaidu and Rao, 1981. Distribution: India.
— Bothridial seta lanceolate ..... 16
16. Notogastral porose area *Aa* elongate oval; distance between notogastral porose areas *Aa* equal to distance between notogastral setal alveoli *lm–lm*; body length: 830–898 ..... *P. paraelongata* Ermilov and Anichkin, 2012 (in Ermilov, Niedbała *et al*. 2012). Distribution: Tropical.
— Notogastral porose area *Aa* triangular or boot-shaped; distance between notogastral porose areas *Aa* distinctly shorter than distance between notogastral setal alveoli *lm–lm* ..... 17
17. Notogastral porose area *Aa* triangular; median pore present; adanal seta $ad_3$ inserted lateral to adanal lyrifissure; body length: 623 ..... *P. taprobanica* Balogh, 1988. Distribution: Oriental.
— Notogastral porose area *Aa* boot-shaped; median pore absent; adanal seta $ad_3$ inserted anterior to adanal lyrifissure; body length: 734 ..... *P. hastata* Aoki, 1987. Distribution: Japan, Oriental.
18. Rostrum trapezoid; anal seta longer than width of anal plate; body length: 1278–1311 ..... *P. paraclericata* Ermilov, Chatterjee, Das and Bordoloi, 2014. Distribution: India.
— Rostrum not trapezoid; anal seta shorter than width of anal plate ..... 19
19. Rostrum pointed ..... 20
— Rostrum rounded ..... 25
20. Four pairs of notogastral porose areas (*A2* present); body length: 730–780 ..... *P. cattienica* Ermilov and Anichkin, 2011 (in 2011a). Distribution: Oriental.
— Three pairs of notogastral porose areas (*A2* absent) ..... 21
21. Interlamellar seta represented by alveolus; anterior part of prodorsum with two longitudinal ridges; notogastral porose areas *Aa* located closer to notogastral setal alveolus *lm* and distant from *la*; body length: 1162–1278 ..... *P. minipora* Ermilov, Chatterjee, Das and Bordoloi, 2014. Distribution: India.
— Interlamellar seta of medium-sized or long; prodorsum without ridges; notogastral porose area *Aa* equally distant from *la* and *lm* ..... 22
22. Notogastral porose area *Aa* elongate oval, transversely oriented; notogastral porose area *A1* elongate oval, longitudinally oriented; genital plate not striate; adanal seta $ad_1$ distinctly longer than $ad_2$ ..... 23
— Notogastral porose areas *Aa* and *A1* rounded/oval; genital plate striate; adanal setae $ad_1$ and $ad_2$ similar in length ..... 24
23. Notogaster surface foveolate; median pore represented by several foveae; body length: 365–415 ..... *P. paratsurusakii* Ermilov, Shtanchaeva, Kalúz and Subías, 2013. Distribution: India.
— Notogaster surface not foveolate; median pore single; body length: 531–581 .....

..... *P. titiwangsaensis* Ermilov and Kalúz, 2019. Distribution: Malaysia.

24. Adanal setae $ad_1$ and $ad_2$ minute; median pore present; interlamellar seta shorter than bothridial seta; body length: 498–531 ..... *P. mahunkai* Ermilov, Shtanchaeva, Kalúz and Subías, 2013. Distribution: Oriental.

— Adanal setae $ad_1$ and $ad_2$ medium-sized; median pore absent; interlamellar seta longer than bothridial seta; body length: 597–680 ..... ..... *P. paracattienica* Ermilov, Chatterjee, Das and Bordoloi, 2014. Distribution: India.

25. Four pairs of notogastral porose areas (*A1* and *A2* present) ..... 26

— Three pairs of notogastral porose areas (*A1* or *A2* absent) ..... 33

26. Interlamellar seta short or represented by alveolus ..... 27

— Interlamellar seta medium-sized or long ..... 30

27. Notogastral porose areas *Aa* located closer to notogastral setal alveolus *lm* and distant from *la*; bothridial seta with unilaterally dilated head; body size: 360–400 ..... *P. ventralis* (Willmann, 1931) (=*Galumna duplicata* Hammer, 1958) (see also Hammer 1961). Distribution: Tropical, southern Palaearctic.

— Notogastral porose area *Aa* located closer to notogastral setal alveolus *la* and distant from *lm*; bothridial seta clavate or setiform ..... 28

28. Bothridial seta clavate; pteromorph surface striate; body length: 600 ..... ..... *P. montana* Hammer, 1961. Distribution: Neotropical, India.

— Bothridial seta setiform; pteromorph surface not striate ..... 29

29. Notogastral porose areas *Aa* located anterior to notogastral setal alveolus *la*; median pore absent; adanal setae $ad_1$ and $ad_2$ medium-sized; body length: 730 ..... *P. corolevuensis* Hammer, 1973. Distribution: Australasian, India.

— Notogastral porose areas *Aa* located medial to notogastral setal alveolus *la*; median pore present; adanal setae $ad_1$ and $ad_2$ short; body length: 863–1145 ..... ..... *P. panayensis* Ermilov and Corpuz-Raros, 2015

30. Notogaster surface foveolate; body length: 348–365 ..... ..... *P. thailandensis* Ermilov and Khaustov, 2020. Distribution: Thailand.

— Notogaster surface not foveolate ..... 31

31. Notogastral porose area *A1* located anteromedially to *A2*; interlamellar seta medium-sized; body length: 745–842 ..... *P. hauseri* Mahunka, 1995. Distribution: Oriental.

— Notogastral porose area *A1* located anteriorly to *A2*; interlamellar seta long ..... 32

32. All notogastral porose areas slightly elongate oval, similar in size; body length: 510–630 ..... ..... *P. pterinervis* (Canestrini, 1898) (see also Berlese 1905, 1914; Mahunka 1992). Distribution: New Guinea, Oriental.

— Notogastral porose area *Aa* slightly elongate oval, larger than rounded *A1*, *A2*, *A3*; similar in size; body length: 550–608 ..... ..... *P. pertrichosa* Mahunka, 1995. Distribution: Oriental.

33. Notogastral porose area *Aa* located anteriorly to notogastral setal alveolus *la* or clearly closer to *la* and distant from *lm* ..... 34

— Notogastral porose area *Aa* located clearly closer to notogastral setal alveolus *lm* and distant from *la* or equally distant from *la* and *lm* ..... 40

34. Bothridial seta clavate ..... 35

— Bothridial seta setiform or with slightly thickened mediodistal part ..... 36

35. Notogaster surface foveolate; median pore absent; body length: 246–282 ..... ..... *P. crassipora* Mahunka, 1995 (see also Ermilov and Corpuz-Raros 2016). Distribution: Oriental.

— Notogaster surface not foveolate; median pore represented by several foveae; body length: 262–282 ..... *P. pseudosejugalis* Ermilov and Anichkin, 2012. Distribution: Vietnam.

36. Interlamellar and lamellar setae short; rostrum nasiform; body length: 468 ..... ..... *P. aegra* Pérez-Íñigo and Baggio, 1986. Distribution: Neotropical, India, USA (Louisiana).

— Interlamellar and lamellar setae long; rostrum broadly rounded ..... 37

37. Notogastral porose area *Aa* located anteriorly to notogastral setal alveolus *la*; body length: 495–650 ..... *P. jongkyui* Choi, 1986 (see also Zheng *et al*. 2019). Distribution: southeastern Palaearctic, Taiwan.

— Notogastral porose area *Aa* located medially to notogastral setal alveolus *la* ..... 38

38. Notogastral porose area *Aa* slightly elongate oval, transversely oriented; notogaster surface without heavy sculpture; body length: 390–435 ..... *P. intermedia retroversa* Aoki and Hu, 1993. Distribution: Oriental.

— Notogastral porose area *Aa* rounded; notogaster surface with heavy sculpture ..... 39
39. Notogaster surface heavily granulate; body length: 302–356 ..... ..... *P. punctulata* Balogh and Mahunka, 1967 (see also Aoki 2009). Distribution: Vietnam.
— Notogaster surface heavily tuberculate; body length: 385–425 ..... ..... *P. granulata* Balogh and Mahunka, 1967. Distribution: Oriental, Japan.
40. Notogastral porose area *Aa* located clearly closer to notogastral setal alveolus *lm* and distant from *la* ..... 41
— Notogastral porose area *Aa* equally distant from notogastral setal alveoli *la* and *lm* ..... 50
41. Notogastral porose area *Aa* very small (smaller than diameter of bothridium) ..... 42
— Notogastral porose area *Aa* not very small (larger than diameter of bothridium) ..... 43
42. Interlamellar seta minute; lamellar seta inserted on strong triangular teeth; median pore present; body length: 863–929 ..... .... *P. capualensis* Ermilov and Corpuz-Raros, 2016. Distribution: Philippines.
— Interlamellar seta medium-sized; lamellar seta inserted on prodorsal surface; median pore absent; body length: 527–612 ..... ..... *P. imadatei* Aoki and Hu, 1993. Distribution: Oriental.
43. Notogaster surface striate; median pore represented by several foveae; body length: 610–715 .... *Pergalumna hawaiiensis hawaiiensis* (Jacot, 1934) (see also Ermilov and Mansurov 2017). Distribution: Australasian, Oriental.
— Notogaster surface not striate; median pore single or absent ..... 44
44. Interlamellar seta minute ..... 45
— Interlamellar setae of medium-sized or long ... ..... 46
45. Median pore present; rostrum narrowly rounded; body length: 720 ..... ..... *P. bimaculata* Hammer, 1973. Distribution: Australasian, Oriental.
— Median pore absent; rostrum broadly rounded; body length: 400 ..... ..... *P. tahitiensis* Balogh and Balogh, 2002 (see also Hammer 1972 as *Pergalumna montana*). Distribution: Tahiti, India.
46. Median pore present ..... 47
— Median pore absent ..... 48
47. Interlamellar and bothridial setae similar in length; median pore small; body length: 520–676 ..... *P. foveolata* Hammer, 1973[1]. Distribution: Australian, Neotropical, Oriental.
— Interlamellar seta distinctly shorter than bothridial seta; median pore large; body length: 720 ... ..... *P. remota* (Hammer, 1968). Distribution: New Zealand, Oriental.
48. Bothridial seta smooth; body length: 398–453 ..... *P. indivisa* Mahunka, 1995. Distribution: Oriental.
— Bothridial seta barbed ..... 49
49. Adanal seta $ad_1$ distinctly longer than $ad_2$; notogastral lyrifissure *im* distant from porose area *A1*; body length: 451–490 ..... ..... *P. mauritii* Mahunka, 1978. Distribution: Mauritius, Mariana Islands, Vietnam.
— Adanal setae $ad_1$ and $ad_2$ similar in length; notogastral lyrifissure *im* near to porose area *A1*; body length: 451–490 ..... *P. kotschyi* Mahunka, 1989. Distribution: Vietnam.
50. Notogastral porose area *A1* strongly elongate oval (longer than porose area *Aa*), longitudinally oriented ..... 51
— Notogastral porose area *A1* rounded/oval or slightly elongate oval (shorter than porose area *Aa*) ..... 52
51. Adanal seta $ad_1$ distinctly longer than $ad_2$; median pore single in males and females; body length: 415–481 ..... *P. paraindistincta* Ermilov, Sandmann, Klarner, Widyastuti and Scheu, 2015. Distribution: Oriental.
— Adanal setae $ad_1$ and $ad_2$ similar in length; median pore represented by several foveae and present only in female; body length: 547–614 ..... ..... *P. indistincta* Ermilov and Anichkin, 2011 (in 2011b). Distribution: Vietnam.
52. Bothridial seta smooth ..... 53
— Bothridial seta barbed ..... 54
53. Interlamellar seta shorter than lamellar seta; genital plate smooth; body length: 742–845 ..... *P. magnipora capillaris* Aoki, 1961. Distribution: eastern Palaearctic, Oriental, Kenya.
— Interlamellar seta not shorter than lamellar seta; genital plate striate; body length: 822–840 .....

[1] We exclude the data on *P. foveolata* provided in the supplementary description by Bayartogtokh and Chatterjee (2010). The above authors redescribed this species based on Indian material, but some important morphological traits of their specimens do not correspond to those of the original description (e.g., presence [vs. absence] of dorsosejugal suture; notogastral porose area *Aa* equally distant from *la* and *lm* [vs. located closer to setal alveolus *lm*]).

*P. magnipora xishuangbanna* Aoki and Hu, 1993. Distribution: southern China.

54. Notogastral porose area *Aa* elongate oval .... 55
— Notogastral porose area *Aa* rounded/oval ..... 57

55. Adanal seta $ad_1$ distinctly longer than $ad_2$; all notogastral porose areas amorphous; body length: 332–440 ..... *P. amorpha* Mahunka, 2008 (see also Zheng *et al*. 2019). Distribution: Oriental.
— Adanal setae $ad_1$ and $ad_2$ similar in length; all notogastral porose areas with distinct borders ..... ..... 56

56. All adanal setae medium-sized; postanal porose area absent; lamellar seta long; body length: 825–1045 ..... *P. kunsti* Ermilov and Starý, 2017. Distribution: Oriental.
— All adanal setae minute; postanal porose area present; lamellar seta short; body length: 576 ..... *P. magnipora capensis* Engelbrecht, 1972. Distribution: South Africa, India.

57. Adanal setae $ad_1$ and $ad_2$ not shorter than width of anal plate ..... 58
— Adanal setae $ad_1$ and $ad_2$ shorter than width of anal plate ..... 59

58. Adanal setae $ad_1$ and $ad_2$ shorter than length of anal plate; notogastral seta *c* (on pteromorph) developed; notogastral porose area *Aa* rounded; genital plate striate; body length: 514–597 ..... *P. minituberculata* Ermilov and Martens, 2014. Distribution: Nepal.
— Adanal setae $ad_1$ and $ad_2$ longer than length of anal plate; notogastral seta *c* (on pteromorph) represented by alveolus; notogastral porose area *Aa* oval, transversely oriented; genital plate not striate; body length: 522–542 ..... ..... *P. longisetosa* Balogh, 1960. Distribution: Afrotropical, Neotropical, Oriental.

59. Notogaster surface with long and short ridges and tubercles simultaneously; adanal seta $ad_1$ distinctly longer than $ad_2$; body length: 408–485 ..... *P. menglunensis* Aoki and Hu, 1993. Distribution: Oriental.
— Notogaster surface without ridges and tubercles simultaneously; adanal setae $ad_1$ and $ad_2$ similar in length ..... 60

60. Notogaster surface foveolate; body length: 763–830 ..... *P. storkani* Ermilov and Starý, 2017. Distribution: Oriental.
— Notogaster surface not foveolate; body length: 437–465 ..... *P. intermedia intermedia* Aoki, 1963 (see also Aoki 1966). Distribution: southern Palaearctic, northern Oriental.

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