

## A review of the genus *Pseudolaelaps* Berlese, 1916 (Acari: Mesostigmata, Pseudolaelapidae), with descriptions of eleven new species from Europe

PETER MAŠÁN

Institute of Zoology, Slovak Academy of Sciences, Dúbravská cesta 9, 845-06 Bratislava, Slovakia;  
e-mails: peter.masan@savba.sk; uzaepema@savba.sk

### Abstract

The study presents a review of the genus *Pseudolaelaps* Berlese, 1916 (Acari: Mesostigmata, Pseudolaelapidae), based on over 200 specimens collected from Bulgaria, Croatia, France, Greece, Italy, Romania, Serbia, Slovakia and Ukraine, including the type specimens of three species (*P. doderoi*, *P. gamaselloides*, and *P. paulseni*) deposited in the Berlese Acaroteca, Florence. The European fauna is shown to include 14 species, 11 of which are described as new: *P. barbatus* sp. nov. (Romania, Serbia), *P. brevipilis* sp. nov. (Bulgaria), *P. jozefi* sp. nov. (Greece), *P. lepidus* sp. nov. (Italy), *P. mirandus* sp. nov. (Bulgaria), *P. pallidus* sp. nov. (Italy), *P. propinquus* sp. nov. (Italy), *P. regularis* sp. nov. (Bulgaria), *P. rotundus* sp. nov. (Romania, Slovakia, Ukraine), *P. scaber* sp. nov. (France, Italy), and *P. stellifer* sp. nov. (Bulgaria, Romania, Slovakia). One of the Berlese species, *P. gamaselloides* Berlese, 1920, is redescribed and newly reported from Croatia and Slovakia. A key for identification of *Pseudolaelaps* species is provided.

**Key words:** Acari; Mesostigmata; *Pseudolaelaps*; new species; key; Europe

### Introduction

The genus *Pseudolaelaps* was proposed and briefly described by Berlese (1916), as a new replacement name for the homonymous subgenus *Hoplolaelaps* Berlese, 1910 (the senior homonym is *Hoplolaelaps* Berlese, 1903, now a synonym of the laelapid genus *Pseudoparasitus* Oudemans, 1902). *Laelaps* (*Hoplolaelaps*) *doderoi* Berlese, 1910 was designated as the type species of the genus, but its description was also brief and very general, and the same is true for the other two congeneric species described by Berlese (1910, 1920), namely *Pseudolaelaps paulseni* (Berlese, 1910) and *Pseudolaelaps gamaselloides* Berlese, 1920. As a result, these brief and inadequate old descriptions could hardly provide a useful basis for identification of Berlese species in future taxonomic research, although a detailed diagnosis of the genus was more recently elaborated by other authors (Evans & Till 1966, Bregetova 1977).

As stated by Mašán and Halliday (2014), different authors have classified *Pseudolaelaps* in different places within the cohort Gamasina. In their classification of the family Dermanyssidae, Evans and Till (1966) erected a separate subfamily Pseudolaelapinae for this genus, to accommodate a species with marked hypotrachy of the idiosoma and appendages, and a trispinate epistome. Bregetova (1977) considered the genus as a member of the Laelapidae. Karg (1993) later moved the genus to the Eviphidoidea and elevated it to family rank. In Lindquist *et al.* (2009), *Pseudolaelaps* is included provisionally as the sole representative of the pachylaelapid subfamily Pseudolaelapinae,

- Genu II with one ventral seta ( $av_1$  absent); polygonal cells of sternal reticulation denticulate on anterior outlines, denticles larger, sparsely arranged and directed anteriorly (Figs 6, 17); dorsal setae longer (Fig. 5):  $j_1$  24–26  $\mu\text{m}$ ,  $j_5$  37–38  $\mu\text{m}$ ,  $J_4$  60–65  $\mu\text{m}$ , setae  $J_5$  (50–57  $\mu\text{m}$ ) about three times longer than  $S_5$  (15–17  $\mu\text{m}$ ); length of dorsal shield 440–455  $\mu\text{m}$  [Romania, Serbia] . . . . . *Pseudolaelaps barbatus* sp. nov.
- 11. Genu II with one ventral seta ( $av_1$  absent); dorsal setae longer (Fig. 25):  $j_1$  25–30  $\mu\text{m}$ ,  $j_5$  30–40  $\mu\text{m}$ ,  $J_4$  44–60  $\mu\text{m}$ ,  $J_5$  36–55  $\mu\text{m}$ , setae  $S_5$  (23–30  $\mu\text{m}$ ) shorter than  $Jv_3$  (33–37  $\mu\text{m}$ ); metasternal platelets subtriangular, 23–29  $\mu\text{m}$  wide; sternal shield with reticulate sculpture (Figs 26, 36); width of anal shield 93–107  $\mu\text{m}$ ; length of dorsal shield 435–475  $\mu\text{m}$  [Italy] . . . . . *Pseudolaelaps propinquus* sp. nov.
- Genu II with two ventral setae ( $av_1$ ,  $pv_1$ ); dorsal setae shorter (Fig. 13):  $j_1$  20–25  $\mu\text{m}$ ,  $j_5$  28–34  $\mu\text{m}$ ,  $J_4$  32–42  $\mu\text{m}$ ,  $J_5$  30–36  $\mu\text{m}$ , setae  $S_5$  (27–33  $\mu\text{m}$ ) longer than  $Jv_3$  (21–30  $\mu\text{m}$ ); metasternal platelets suboval, 18–23  $\mu\text{m}$  wide; sternal shield with reticulate-punctate sculpture (Figs 14, 21); width of anal shield 83–93  $\mu\text{m}$ ; length of dorsal shield 420–455  $\mu\text{m}$  [Italy] . . . . . *Pseudolaelaps lepidus* sp. nov.

### Acknowledgements

I am deeply grateful to Dr. Marisa Castagnoli (Istituto Sperimentale per la Zoologia Agraria, Sezione Acarologia, Firenze) for her kindness in providing access to the Berlese Acaroteca, and providing laboratory space and all-round assistance to me during my visit to Italy. I sincerely thank Ivan Mihál and Peter Fend'a who collected important part of the specimens examined. This study was fully supported by the Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Academy of Sciences [VEGA Grant No. 2/0091/14: Arboricolous mites (Acari: Mesostigmata) associated with wood-destroying insects and fungi in Slovakia, with consideration on taxonomy, ecology and chorology of individual species.].

### References

- Berlese, A. (1903) Diagnosi di alcune nuove specie di Acari italiani, mirmecofili e liberi. *Zoologischer Anzeiger*, 27, 12–28.
- Berlese, A. (1910) Lista di nuove specie e nuovi generi di Acari. *Redia*, 6, 242–271.
- Berlese, A. (1913) Acari nuovi. Manipoli VII–VIII. *Redia*, 9, 77–111 + Plates 1–8.
- Berlese, A. (1916) Centuria prima di Acari nuovi. *Redia*, 12, 19–67.
- Berlese, A. (1920) Centuria quinta di Acari nuovi. *Redia*, 14, 143–195.
- Bregetova, N.G. (1977) Family Laelaptidae Berlese, 1892. In: Ghilyarov, M.S. & Bregetova, N.G. (eds.) *Key to the Soil Inhabiting Mites. Mesostigmata*. Nauka, Leningrad. pp. 483–554. (in Russian)
- Călugăr, A. (2013) Effect of pollution with cement dust on the edaphic gamasid mite fauna (Acari: Gamasina) in different forest ecosystems from Romania. In: Schausberger, P. (ed.) *Acari in a Changing World: Proceedings of the 7th Symposium of EURAAC, Vienna, 2012. Acarologia*, 53, 151–161. <http://dx.doi.org/10.1051/acarologia/20132092>
- Chaudhury, S., Gupta, S.K. & Saha, G.K. (2010) Description of two new species of mites of the family Laelaptidae (Acari: Mesostigmata) from rat burrow in West Bengal, India. *Proceedings of the Zoological Society*, 63, 135–139. <http://dx.doi.org/10.1007/s12595-010-0019-z>
- Evans, G.O. (1963) Observations on the chaetotaxy of the legs in the free-living Gamasina (Acari: Mesostigmata). *Bulletin of the British Museum (Natural History) Zoology*, 10, 277–303.
- Evans, G.O. & Till, W.M. (1966) Studies on the British Dermanyssidae (Acari: Mesostigmata). Part II. Classification. *Bulletin of the British Museum (Natural History) Zoology*, 14, 109–370.
- Evans, G.O. & Till, W.M. (1979) Mesostigmatic mites of Britain and Ireland (Chelicerata: Acari – Parasitiformes). An introduction to their external morphology and classification. *Transactions of the Zoological Society of London*, 35, 145–270. <http://dx.doi.org/10.1111/j.1096-3642.1979.tb00059.x>
- Fend'a, P. & Mašán, P. (2003) Roztočie – Acari (Parasitiformes, ex. Uropodina). In: Mašán, P. & Svatoň, J. (eds.) *Pavúkovec Národného parku Poloniny – Arachnids of the Poloniny National Park (Arachnida:*

- Araneae, Pseudoscorpiones, Opiliones, Acari – Parasitiformes*). Štátna ochrana prírody SR Banská Bystrica a Správa Národného parku, Poloniny, Snina. pp. 143–205. (in Slovak)
- Honciuc, V. & Manu, M. (2010) Ecological study on the edaphic mites populations (Acari: Mesostigmata – Gamasina; Oribatida) in urban areas from Romania. *Romanian Journal of Biology – Zoology*, 55, 3–17.
- Kaczmarek, S. & Marquardt, T. (2008) Contribution to the biodiversity of mites (Acari: Mesostigmata) of Tarchankut Peninsula (Crimea). In: Bertrand, M., Kreiter, S., McCoy, K.D., Migeon, A., Navajas, M., Tixier, M.S. & Vial, L. (eds.) *Integrative Acarology*. Proceedings of the 6th European Congress, European Association of Acarologists, Montpellier. pp. 83–187.
- Kaczmarek, S., Marquardt, T. & Faleńczyk-Koziróg, K. (2009) Checklist of soil Mesostigmata (Acari) of Central Croatia (Dalmatia) with some microenvironmental remarks. *Polish Journal of Entomology*, 78, 177–184.
- Karg, W. (1993) Acari (Acarina), Milben. Parasitiformes (Anactinochaeta). Cohors Gamasina Leach. Raubmilben. 2. Überarbeitete Auflage. *Die Tierwelt Deutschlands*, 59, 1–523.
- Kazemi, Sh. & Ahangaran, Y. (2011) Soil-inhabiting Mesostigmata (Acari) of west Mazandaran Province, Iran. In: Kazemi, Sh. & Saboori, A. (eds.) *Abstract and Proceeding Book of the First Persian Congress of Acarology*. Kerman, Iran. p. 62.
- Lindquist, E.E. (1994) Some observations on the chaetotaxy of the caudal body region of gamasine mites (Acari: Mesostigmata), with a modified notation for some ventrolateral body setae. *Acarologia*, 35, 323–326.
- Lindquist, E.E. & Evans, G.O. (1965) Taxonomic concepts in the Ascidae, with a modified setal nomenclature for the idiosoma of the Gamasina (Acarina: Mesostigmata). *Memoirs of the Entomological Society of Canada*, 47, 1–64.  
<http://dx.doi.org/10.4039/entm9747fv>
- Lindquist, E.E., Krantz, G.W. & Walter, D.E. (2009) Order Mesostigmata. In: Krantz, G.W. & Walter, D.E. (eds.) *A Manual of Acarology (Third Edition)*. Texas Tech University Press, Lubbock, Texas, USA. pp. 124–232.
- Malek-Shahkouyi, M., Afshari, A. & Nemati, A. (2011) Pseudolaelapinae: a new subfamily for Iranian mite fauna and its taxonomic position. In: Kazemi, Sh. & Saboori, A. (eds.) *Abstract and Proceeding Book of the Second Iranian Pest Management Conference*. Kerman, Iran. p. 5.
- Manu, M. (2009) Ecological research on predatory mite populations (Acari: Mesostigmata) in some Romanian forests. *Bihorean Biologist*, 3, 111–117.
- Manu, M. & Honciuc, V. (2010a) Ecological research on the soil mites populations (Acari: Mesostigmata – Gamasina, Oribatida) from forest ecosystems near Bucharest City. *Romanian Journal of Biology – Zoology*, 55, 19–30.
- Manu, M. & Honciuc, V. (2010b) Rank correlations at the level of soil mites (Acari: Gamasida; Oribatida) from central parks of Bucharest City, Romania. *Acta Entomologica Serbica*, 15, 129–140.
- Manu, M., Băncilă, R.I. & Onete, M. (2013) Soil mite communities (Acari: Gamasina) from different ecosystem types from Romania. *Belgian Journal of Zoology*, 143, 30–41.
- Mašán, P. & Halliday, B. (2014) Review of the mite family Pachylaelapidae (Acari: Mesostigmata). *Zootaxa*, 3776, 1–66.  
<http://dx.doi.org/10.11646/zootaxa.3776.1.1>
- Molnos, É. (1982) Data on Dermanyssidae (Acari) living on small mammals and birds in Hungary. *Parasitologia Hungarica*, 14, 91–93.
- Sabbatini Peverieri G., Romano M., Pennacchio F., Nannelli R. & Roversi, P.F. (2011) Gamasid soil mites (Arachnida: Acari) as indicators of the conservation status of forests. *Redia*, 94, 53–58.
- Stănescu-Manu, M. (2008) The influence of some abiotic factors on the structural dynamics of the predatory mite populations (Acari: Mesostigmata) from an ecosystem with *Myricaria germanica* from Doftana Valley (Romania). *Travaux du Muséum National d'Histoire Naturelle «Grigore Antipa»*, 51, 463–471.

Accepted by Zhi-Qiang Zhang: 2 Jul. 2014; published 8 Sept. 2014