



HAL
open science

**First report of *Macrocheles robustulus* (Berlese, 1904)
(Acari: Mesostigmata: Macrochelidae) on the pet
beetle, *Pachnoda marginata peregrina* Kolbe
(Coleoptera: Melolontidae: Cetoniinae)**

Jenő Kontschán, Sándor Hornok

► **To cite this version:**

Jenő Kontschán, Sándor Hornok. First report of *Macrocheles robustulus* (Berlese, 1904) (Acari: Mesostigmata: Macrochelidae) on the pet beetle, *Pachnoda marginata peregrina* Kolbe (Coleoptera: Melolontidae: Cetoniinae). *Acarologia*, 2025, 65 (3), pp.717-720. 10.24349/e4n8-l8ik . hal-05199138

HAL Id: hal-05199138

<https://hal.science/hal-05199138v1>

Submitted on 4 Aug 2025

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

First report of *Macrocheles robustulus* (Berlese, 1904) (Acari: Mesostigmata: Macrochelidae) on the pet beetle, *Pachnoda marginata peregrina* Kolbe (Coleoptera: Melolontidae: Cetoniinae)

Jenő Kontschán ^a, Sándor Hornok ^b

^a Plant Protection Institute, HUN-REN Centre for Agricultural Research, Budapest, Hungary and Department of Plant Sciences, Albert Kázmér Faculty of Mosonmagyaróvár, Széchenyi István University, Mosonmagyaróvár, Hungary.

^b Department of Parasitology and Zoology, University of Veterinary Medicine, Budapest, Hungary and HUN-REN-UVMB Climate Change: New Blood-sucking Parasites and Vector-borne Pathogens Research Group, Hungary.

Short note

ABSTRACT

The first occurrence of the widely distributed predatory mite *Macrocheles robustulus* (Berlese, 1904) on the cetoniin beetle pet species, *Pachnoda marginata peregrina* Kolbe is presented. A short description and new illustration are provided with a note on macrochelid mites associated with cetoniin beetles.

Keywords mite; flower beetle; pet; association

Species belonging to the mite family Macrochelidae (Parasitiformes: Mesostigmata) are usually large, fast-moving predators living in soil, leaf litter or decomposing organic matter. The macrochelid mites usually feed on nematodes, eggs and larvae of smaller insects or other mites, and very often can be found in association with certain insect groups (e.g. flies and beetles) (Mašán 2003). The association of macrochelids with flower beetles (Coleoptera: Scarabaeidae: Cetoniinae) seems to be a rare phenomenon and the published records are presented from Europe, North America, South-Africa and Iran. The first report of the association of macrochelid mites and flower beetles was presented by Ryke & Meyer (1958) from Republic of South-Africa. Several years later Haitlinger (2002) mentioned four macrochelid mites in association with two cetoniin beetles (*Oxythrea funesta* (Poda) and *Potosia cuprea metallica* (Herbst)). Mašán (2003) in his monograph about the macrochelid mites of Slovakia also presented four species associated with a cetoniin species (*Potosia cuprea* Fabricius). So far only one species [*Macrocheles glaber* (J. Müller, 1860)] has been reported from *Cetonia aurata* (Linnaeus) (Ács and Kontschán 2014) and one species from *Hoplia hungarica* Burmeister (Kontschán 2018) from Hungary. Norton (1973) mentioned two species from *Osmoderma eremicola* Knoch, and Bahrami *et al.* (2011) listed four macrochelid species in association with *Oxythrea cinctella* flower beetle.

A couple of months ago, some photos were presented about the pet cetoniin beetle, *Pachnoda marginata peregrina* Kolbe (Figure 1A) in a Hungarian Facebook Group (Insects in terrarium, posted by A. Kovács). The presented photos contained some cetoniin beetles with mites on their bodies (Figure 1B). An e-mail was written to the owner of the beetles to request some mites for identification. The investigated mites were cleared in lactic acid for a week and afterwards were studied with a Leica 1000 compound microscope with a drawing

Received 23 April 2025

Accepted 15 July 2025

Published 17 July 2025

Corresponding author

Jenő Kontschán 

jkontschan@gmail.com

Academic editor

Roy, Lise

<https://doi.org/10.24349/e4n8-l8ik>

ISSN 0044-586X (print)

ISSN 2107-7207 (electronic)



Kontschán J. and Hornok S.

Licensed under

Creative Commons CC-BY 4.0



How to cite this article Kontschán J. and Hornok S. (2025), First report of *Macrocheles robustulus* (Berlese, 1904) (Acari: Mesostigmata: Macrochelidae) on the pet beetle, *Pachnoda marginata peregrina* Kolbe (Coleoptera: Melolontidae: Cetoniinae). *Acarologia* 65(3): 717-720. <https://doi.org/10.24349/e4n8-l8ik>

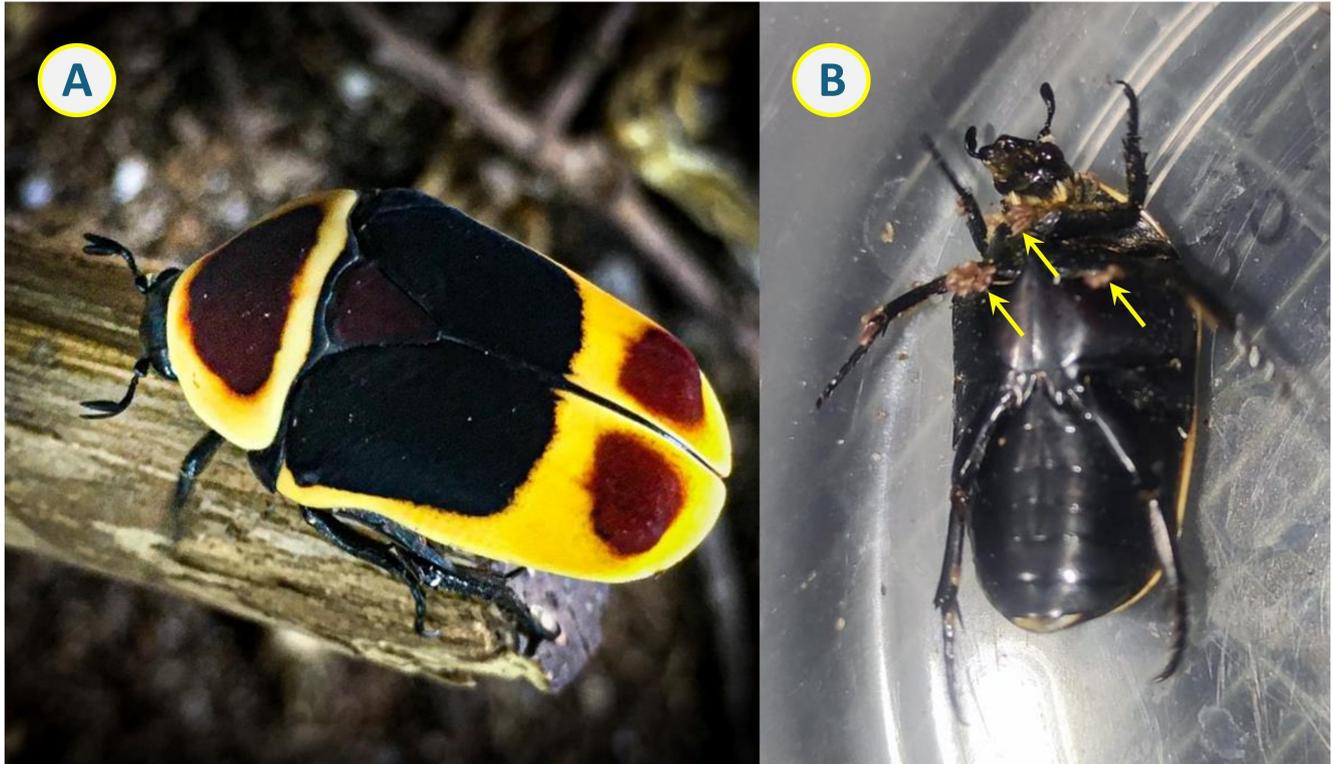


Figure 1 A – Dorsal view of the pet beetle *Pachnoda marginata peregrina* Kolbe, and B – *Macrocheles robustulus* (Berlese, 1904) on its ventral surface (photo by A. Kovács).

tube. Specimens examined are stored in 70% ethanol and deposited in the mite collection of Plant Protection Institute, HUN-REN Centre for Agricultural Research, Martonvásár, Hungary. Measurements are given in micrometers (μm).

Six females of *Macrocheles robustulus* (Berlese, 1904) (Figures 2) were collected on body of *P. marginata peregrina* in terrarium of beetles in Ecséd (Hungary). The dorsal shield of examined *M. robustulus* is oblong with fine reticulate sculptural pattern. Majority of dorsal setae are smooth, except setae serrate or pilose j_4 , s_2 , r_2 , r_3 , z_4 , Z_4 and Z_5 . Setae j_1 are brush shaped (Fig 2A). Ventral shields are sculptured. Sternal shield is sparsely punctured to micropunctured. Ventrianal shield is reticulated and punctured in some rows (Fig 2B).

Macrocheles robustulus lives in decaying substrates of organic origin, it prefers dunghills, manures and excrements, often occurs in bird nests and composts (Mašán 2003). This species is also reported in association with scarabaeid insects, like *Aphodius subterraneus*, *Copris lunaris* and *Potosia cuprea* (Mašán 2003). Karg (1993) mentioned from soils of natural habitats and greenhouses, compost and together with enchytreids and from *Onthophagus* species. This species was reported in Europe, Middle East, North- and South America and Australian regions (Mašán 2003) and it is common in Hungary, earlier it was collected from from dung of horse, cattle and pig and from soil (Kontschán 2020). This is the first report of *Macrocheles robustulus* in association with the pet beetle *Pachnoda marginata peregrina* and this is also the first report of this pet beetle with mites.

To date, very few macrochelid species have been reported from cetoniin beetles (Table 1.). Contrary to other beetles from the family Scarabaeidae, flower beetles usually feed on pollen from flowers, which are unsuitable habitats for the fast-moving predatory mites like the macrochelids. The dung beetles (Scarabaeinae) and their close relatives (like Geotrupinae) carry several macrochelid mites, and their used habitat (like dungs or compost) has many insects, nematodes, or other prey of the predatory mites. However, the larvae of the flower

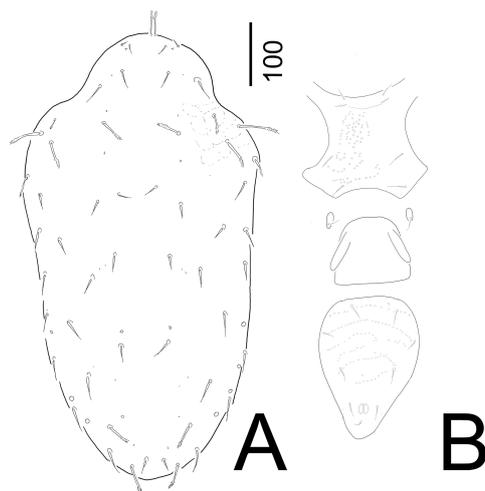


Figure 2 *Macrocheles robustulus* (Berlese, 1904). (A) Dorsal view, (B) Ventral view.

beetles live in compost or other organic substrates, where the macrochelid mites can join the larvae of flower beetles. After the metamorphosis of the beetle larvae, these mites could stay on the body of the adult flower beetles.

The origin of *Pachnoda marginata peregrina* is the West Afrotropical realm, where its larvae live in compost and organic substrates, similar to the other larvae of flower beetles. However, the *Macrocheles robustulus* has not been reported from the West Africa; but this mite occurs in other tropical areas as well (Mašán 2003), so the potential association between the mite and the beetle is also possible in the area of origin of the host beetles as well.

The herein reported association between *Macrocheles robustulus* and the pet beetle *Pachn-*

Table 1 Macrochelid mites associated with beetles from the subfamily Cetoniinae.

Mite species	Host cetoniinae species	Locality	References
<i>Glyphotaspis americana</i> (Berlese, 1888)	<i>Oxythyrea funesta</i> (Poda)	Poland	Haitlinger 2002
<i>Glyphotaspis confusa</i> (Foá, 1900)	<i>Potosia cuprea</i> (Fabricius)	Slovakia	Mašán 2003
<i>Glyphotaspis saprophila</i> Mašán, 2003	<i>Potosia cuprea</i> (Fabricius)	Slovakia	Mašán 2003
<i>Macrocheles insignitus</i> Berlese, 1918	<i>Potosia cuprea</i> (Fabricius)	Slovakia	Mašán 2003
	<i>Potosia cuprea</i> (Fabricius)	Poland	Haitlinger 2002
	<i>Oxythyrea funesta</i> (Poda)	Poland	Haitlinger 2002
	<i>Oxythrea cinctella</i> (Schaum)	Iran	Bahrami et al. 2011
<i>Macrocheles merdarius</i> (Berlese, 1889)	<i>Potosia cuprea</i> (Fabricius)	Slovakia	Mašán 2003
	<i>Oxythrea cinctella</i> (Schaum)	Iran	Bahrami et al. 2011
<i>Macrocheles robustulus</i> (Berlese, 1904)	<i>Potosia cuprea</i> (Fabricius)	Slovakia	Mašán 2003
	<i>Pachnoda marginata peregrina</i> Kolbe	Hungary	Present study
<i>Macrocheles glaber</i> (J. Müller, 1860)	<i>Oxythyrea funesta</i> (Poda)	Poland	Haitlinger 2002
	<i>Oxythrea cinctella</i> (Schaum)	Iran	Bahrami et al. 2011
	<i>Cetonia aurata</i> (Linnaeus)	Hungary	Kontschán & Ács 2014
<i>Macrocheles mamifer</i> Berlese, 1918	<i>Oxythyrea funesta</i> (Poda)	Poland	Haitlinger 2002
<i>Macrocheles kekensis</i> Kontschán, 2018	<i>Hoplia hungarica</i> Burmeister	Hungary	Kontschán 2018
<i>Macrocheles merdarius africanus</i> Ryke & Meyer, 1958	<i>Pachnoda rufa</i> (Des.)	Republic of South-Africa	Ryke & Meyer 1958
<i>Macrocheles scutacus</i> (Berlese, 1904)	<i>Oxythrea cinctella</i> (Schaum)	Iran	Bahrami et al. 2011
<i>Macrocheles</i> sp. near <i>muscaedomesticae</i>	<i>Osmoderma eremicola</i> Knoch	USA	Norton 1973
<i>Macrocheles</i> sp.	<i>Osmoderma eremicola</i> Knoch	USA	Norton 1973

oda marginata peregrina could, however, easily become established in the microenvironment of a terrarium. Either the bought beetle substrate was infected with the mites or the bought beetle larvae carried the mites on their bodies. Still, these mites were not observed earlier in the terrarium or on the body of larvae, so we need to suppose that these mites were originally present in the substrate and later colonized the terrarium and the beetles.

Macrochelid mites associated with cetoniin beetles

We summarised all information about the association of these two invertebrate groups in Table 1. Most of the published information (nine species) are presented from Europe, but only two macrochelid mites were recorded from North America (Norton 1973), one from South-Africa (Ryke & Meyer 1958) and four species from Iran (Bahrami *et al.* 2011). The two big comprehensive works (Karg 1993 and Bregetova 1977) did not present any associations macrochelid mites with flower beetles.

ORCID

Jenő Kontschán  <https://orcid.org/0000-0001-8274-4238>

Sándor Hornok  <https://orcid.org/0000-0002-1125-5178>

References

- Ács A, Kontschán J. 2014. Contribution to the Macrochelidae Vitzthum, 1930 fauna of the Carpathian Basin and the Balkan Peninsula (Acari: Mesostigmata). *Opusc. Zool. Budapest*, 45(2): 109-118.
- Bahrami F, Arbabi M, Shoushtari VR, Kazemi Sh. 2011. Mesostigmatic mites associated with Coleoptera and biodiversity calculation of these mites phoretic on dung beetles in Golestan Province (North of Iran). *Middle-East J. Sci. Res.*, 9(3): 345-366.
- Berlese A. 1888. Acari Austro-americi quos collegit Aloysius Balzan. *Boll. Soc. entomol. ital.*, 20: 171-222.
- Berlese A. 1889. Acari, Myriopoda et Scorpiones hucusque in Italia reperta, 54.
- Berlese A. 1904. Acari nuovi. *Manipulus II. Redia*, 1: 258-280. <https://doi.org/10.1177/0038026104SP100122>
- Berlese A. 1918. Centuria quarta di Acari nuovi. *Redia*, 13: 115-192.
- Bregetova NG. 1977. [Identification key for soil inhabiting mites. Mesostigmata.] Nauka, Leningrad pp. 717. (in Russian).
- Foà A. 1900. Esistono il polimorfismo e la partenogenesi nei Gamasidi. *Boll. Soc. entomol. ital.*, 32: 121-149.
- Haitlinger R. 2002. Mites (Acarina) associated with Cetoniinae and Trichiinae (Insecta: Coleoptera: Scarabaeidae) in Poland. In: Ignatowicz S. (Ed). *Postępy polskiej akarologii*. Warszawa: Wydawnictwo SGGW. p. 63-73.
- Karg W. 1993. Acari (Acarina), Milben Parasitiformes (Anactinochaeta) Cohors Gamasina Leach. *Raubmilben*. Jena, Stuttgart, New York Gustav Fischer Verlag. p. 96-114.
- Kontschán J. 2018. *Macrocheles kekensis* sp. n., a new macrochelid mite associated with a centoniin beetle from Hungary (Acari, Mesostigmata). *ZooKeys*, 768: 97-104. <https://doi.org/10.3897/zookeys.768.24460>
- Kontschán J. 2020. Checklist of the Hungarian species of family Macrochelidae (Acari: Mesostigmata). *Acarol. Stud.*, 2(1): 7-17.
- Mašán P. 2003. Macrochelid Mites of Slovakia (Acari, Mesostigmata, Macrochelidae). Institute of Zoology, Slovak Academy of Sciences, Bratislava. pp. 149.
- Müller J 1860. Die Insektenepizoen mährischen Fauna. *Jahresbericht der mährisch-schlesische Gesellschaft, Brünn*. p. 157-184.
- Norton R. 1973. Phoretic mites associated with the hermit flower beetle, *Osmoderma eremicola* Knoch (Coleoptera:Scarabaeidae). *Am. Midl. Nat.*, 90(2): 447-449. <https://doi.org/10.2307/2424466>
- Ryke PAJ, Meyer MKP. 1958. Some parasitoid mites (Mesostigmata: Acarina) associated with Coleoptera in the Western Transvaal. *Journal Ent. Soc. S. Africa.*, 21(1): 139-161.