



Zootaxa 0000 (0): 000–000
<http://www.mapress.com/j/zt/>

Copyright © 2018 Magnolia Press

Correspondence

ISSN 1175-5326 (print edition)

ZOOTAXA

ISSN 1175-5334 (online edition)

<https://doi.org/10.11646/zootaxa.0000.0.0>

<http://zoobank.org/urn:lsid:zoobank.org:pub:00000000-0000-0000-0000-000000000000>

A clarification for the subgenera of *Paramacrobiotus* Guidetti, Schill, Bertolani, Dandekar and Wolf, 2009, with respect to the International Code of Zoological Nomenclature

MARLEY, N.J.^{1,9}, KACZMAREK, Ł.², GAWLAK, M.³, BARTELS, P.J.⁴, NELSON, D.R.⁵, ROSZKOWSKA, M.^{2,6}, STEC, D.⁷, & DEGMA, P.⁸

¹Marine Biology and Ecology Research Centre, University of Plymouth, Drake Circus, Plymouth, PL4 8AA, United Kingdom

²Department of Animal Taxonomy and Ecology, Faculty of Biology, Adam Mickiewicz University, Poznań, Umultowska 89, 61-614 Poznań, Poland

³The Institute of Plant Protection-National Research Institute, Węgorza 20, 60-318 Poznań, Poland

⁴Department of Biology, Warren Wilson College CPO 6032, P.O. Box 9000, Asheville, North Carolina 28815, USA

⁵Department of Biological Sciences, East Tennessee State University, Johnson City, TN 37614, USA

⁶Department of Bioenergetics, Faculty of Biology, Adam Mickiewicz University, Poznań, Umultowska 89, 61-614 Poznań, Poland

⁷Department of Entomology, Institute of Zoology and Biomedical Research, Jagiellonian University, Gronostajowa 9, 30-387 Kraków, Poland

⁸Department of Zoology, Comenius University in Bratislava, Mlynska dolina, Ilkovicova 6/B-1, 84215 Bratislava, Slovakia

⁹Corresponding author. E-mail: nigel.marley@plymouth.ac.uk

The recent re-description of *Paramacrobiotus* Guidetti, Schill, Bertolani, Dandekar and Wolf, 2009 has inadvertently led to the description of an objective synonym within its subgenera nominal taxa. To resolve this issue, we have re-described both subgenera, and proposed a new substitute name for one subgenus, in line with the International Code of Zoological Nomenclature. Additionally we have confirmed the placement of two recently published *Paramacrobiotus* species, not included in the last revision, within the respective subgenera established herein.

The nominal taxa *Macrobiotus areolatus* Murray, 1907 and *Macrobiotus richtersi* Murray, 1911 were, along with 18 other nominal taxa, transferred to a newly described genus, *Paramacrobiotus* Guidetti, Schill, Bertolani, Dandekar and Wolf, 2009. Two other taxa were either conditionally transferred or transferred with a designation of *species dubium* (Guidetti *et al.* 2009).

Paramacrobiotus was described as follows: “Diagnosis. Macrobiotids with Y-type claws, cuticle smooth and without pores; mouth ring with ten evident peribuccal lamellae; buccal armature showing ventrally and dorsally a posterior crown of strong triangular or bicuspidal teeth followed (at least dorsally) by three robust transverse crests; large buccal tube; three clearly rod-shaped and elongated macroplacoids; microplacoid clearly distant (more than its length) from the third macroplacoid, or absent; eggs with large and (under light microscope) reticulate processes; very long and thin spermatozoa, with head longer than the tail. Type species: *Macrobiotus richtersi* Murray, 1911 (Guidetti *et al.* 2009).” More recently, Kaczmarek *et al.* (2017) have re-examined a wide range of specimens and species from this genus, analyzing a range of morphological characters of the buccal apparatus, claws, and sculptured eggs, resulting in two groupings of taxa based primarily on the presence/ absence of the microplacoid.

Whilst the analysis was correct and two groups of nominal taxa were designated as subgenera, the final designation and description of these new taxa did not adhere to the ICZN Code. Namely, the designation of two new subgenera failed to acknowledge and apply the Principle of Coordination, Article 43 (ICZN 1999) and more specifically Article 43.1, the “Statement of the Principle of Coordination” applied to genus-group names. This clause states that “a name established for a taxon at either rank in the genus group is deemed to have been simultaneously established by the same author[s] for a nominal taxon at the other rank in the group; both nominal taxa have the same type species, whether it was fixed originally [as in this case] or subsequently”. Consequently, the subgenus *Paramacrobiotus* (*Paramacrobiotus*) *sensu* Guidetti *et al.* (2009) already existed and is therefore a senior objective synonym, see ICZN (1999, Article 61.3.3).

Additionally, Article 44 on Nominotypical Taxa is also applicable. Article 44.1 states “When a genus is considered to contain subgenera, the subgenus that contains the type species of the nominal genus is denoted by the same name as the genus, with the same author and date [Art. 43.1]; this subgenus is termed the nominotypical subgenus”, (ICZN 1999),

which specifically in this case refers to *Paramacrobotus (Paramacrobotus) sensu* Guidetti *et al.* (2009). Consequently, the nominal subgenus taxon was not available to be re-used by Kaczmarek *et al.* (2017).

To correct this situation, and in accordance with the International Code of Zoological Nomenclature, we propose to reinstate the nominotypical taxon *Paramacrobotus (Paramacrobotus) sensu* Guidetti *et al.* (2009), with the taxonomic description amended from *Microplacoidus sensu* Kaczmarek *et al.* (2017), and then designate a substitute name for the second subgenus in accordance with the Code.

Moreover, according to Article “51.3.2. The use of parentheses enclosing the name of the author and the date is not affected by the presence of a subgeneric name, by transfer to a different subgenus within the same genus, by a change of rank within the species group, or by transfer of a subspecies to a different species within the same genus”, (ICZN 1999). For this reason the following species names have to be corrected: *Paramacrobotus fairbanksi* Schill, Förster, Dandekar & Wolf, 2010, *P. intii* Kaczmarek, Cytan, Zawierucha, Diduszko & Michalczyk, 2014, *P. kenianus* Schill, Förster, Dandekar & Wolf, 2010, *P. klymenki* Pilato, Kiosya, Lisi & Sabella, 2012, *P. palaui* Schill, Förster, Dandekar & Wolf, 2010 and *P. pius* Lisi, Binda & Pilato, 2016 as they were mistakenly accompanied with parentheses in Kaczmarek *et al.* (2017).

According to the revision by Kaczmarek *et al.* (2017), the genus *Paramacrobotus* comprised 36 species, but just after its publication two new *Paramacrobotus* species were described without their inclusion in any of mentioned subgenera. This prevents an update of “Actual checklist of Tardigrada species” (Degma *et al.* 2009–2017) since only published taxonomical acts can be acknowledged by the checklist’s authors. In order to fill this gap we examined also a type series of *Paramacrobotus lachowskiae* Stec, Roszkowska, Kaczmarek & Michalczyk, 2018 and studied the original description of *Paramacrobotus sagani* Daza, Caicedo, Lisi, & Quiroga, 2017. We confirm the placement of these two taxa into respective subgenera established herein.

Taxonomic Account

Phylum Tardigrada Doyère, 1840

Class Eutardigrada Richters, 1926

Order Parachela Schuster, Nelson, Grigarick and Christenberry, 1980

Superfamily Macrobotoidea Thulin, 1928 in Sands *et al.* 2008, Marley *et al.* 2011

Family Macrobotidae Thulin, 1928

Genus *Paramacrobotus* Guidetti, Schill, Bertolani, Dandekar and Wolf, 2009

Type species. *Paramacrobotus richtersi* (Murray, 1911).

Diagnosis (according to Kaczmarek *et al.* 2017, amended): Most characters as described by Guidetti *et al.* (2009, p. 319) and additionally: oral cavity armature (OCA) of *harmsworthi* type (*sensu* Michalczyk and Kaczmarek 2003), almost always comprising three bands of teeth (except for three species in which the first band of teeth is not visible under light microscopy or for *P. richtersi* and *P. areolatus* in which the OCA is unknown but probably present; see Kaczmarek *et al.* 2017, Table 2–3). Buccal tube with ventral lamina. Macroplacoid configuration: 2<1<3. Lunules under claws present. Egg types: *areolatus*, *beotiae*, *chierегоi*, *csotiensis*, *huziori*, *richtersi*, *submorulatus* and *tonollii*.

Subgenus *Paramacrobotus* Guidetti, Schill, Bertolani, Dandekar and Wolf, 2009

Type species: *Paramacrobotus richtersi* (Murray, 1911).

Diagnosis (according to Kaczmarek *et al.* 2017, see subgenus *Microplacoidus*): Pharynx with microplacoid that has two lateral “wings”. The other characters as in the genus *Paramacrobotus*.

Composition: *P. (P.) alekseevi* (Tumanov, 2005) comb. nov., *P. (P.) beotiae* (Durante Pasa and Maucci, 1979) comb. nov., *P. (P.) chierегоi* (Maucci and Durante Pasa, 1980) comb. nov., *P. (P.) corgatensis* (Pilato, Binda and Lisi, 2002) comb. nov., *P. (P.) danielae* (Pilato, Binda, Napolitano and Moncada, 2001) comb. nov., *P. (P.) danielisae* (Pilato, Binda and Lisi, 2006a) comb. nov., *P. (P.) fairbanksi* Schill, Förster, Dandekar and Wolf, 2010 comb. nov., *P. (P.) garynahi* (Kaczmarek, Michalczyk and Diduszko, 2005) comb. nov., *P. (P.) gerlachae* (Pilato, Binda and Lisi, 2004) comb. nov., *P. (P.) halei* (Bartels, Pilato, Lisi and Nelson, 2009) comb. nov., *P. (P.) hapukuensis* (Pilato, Binda and Lisi, 2006b) comb. nov., *P. (P.) kenianus* Schill, Förster, Dandekar and Wolf, 2010 comb. nov., *P. (P.) lorenae* (Biserov, 1996) comb. nov., *P. (P.) magdalenae* (Michalczyk and Kaczmarek, 2006a) comb. nov., *P. (P.) palaui* Schill, Förster, Dandekar and Wolf, 2010 comb. nov., *P. (P.) peteri* (Pilato, Claxton and Binda, 1989) comb. nov., *P. (P.) pius* Lisi, Binda and Pilato, 2016 comb. nov., *P. (P.) priviterae* (Binda, Pilato, Moncada and Napolitano, 2001) comb. nov., *P. (P.) richtersi* (Murray, 1911) comb. nov., *P. (P.) rioplatensis* (Claps and Rossi, 1997) comb. nov., *P. (P.) sagani* Daza, Caicedo, Lisi, & Quiroga, 2017 comb. nov., *P. (P.) savai* (Binda and Pilato, 2001) comb. nov., *P. (P.) sklodowskiae* (Michalczyk, Kaczmarek and

Węglarska, 2006) comb. nov., *P. (P.) submorulatus* (Iharos, 1966b) comb. nov., *P. (P.) vanescens* (Pilato, Binda and Catanzaro, 1991) comb. nov. and *P. (P.) wauensis* (Iharos, 1973) comb. nov. (see Kaczmarek *et al.* 2017).

Subgenus *Amicrobiotus* nom. nov.

Type species: *Paramacrobotus areolatus* (Murray, 1907).

Diagnosis (according to Kaczmarek *et al.* 2017, see subgenus *Paramacrobotus*): Pharynx without microplacoid. The other characters as in the genus *Paramacrobotus*.

Etymology: *A-* prefix from Greek without, *micro-* prefix from Greek meaning small; [*Amicro*] refers to the lack of a microplacoid, with the latter sometime referred with the vernacular *micro*; *-biot* from Greek bios meaning life, *-us* for gender masculine, Lawrence (1998). *Amicrobiotus*, gender masculine.

Composition: *P. (A.) areolatus* (Murray, 1907) **comb. nov.**, *P. (A.) centesimus* (Pilato, 2000) **comb. nov.**, *P. (A.) crenatus* (Maucci, 1991) **comb. nov.**, *P. (A.) csotiensis* (Iharos, 1966a) **comb. nov.**, *P. (A.) derkai* (Degma, Michalczyk and Kaczmarek, 2008) **comb. nov.**, *P. (A.) huziori* (Michalczyk and Kaczmarek, 2006b) **comb. nov.**, *P. (A.) intii* Kaczmarek, Cytan, Zawierucha, Diduszko and Michalczyk, 2014 **comb. nov.**, *P. (A.) klymenki* Pilato, Kiosya, Lisi and Sabella, 2012 **comb. nov.**, *P. (A.) lachowskiae* Stec, Roszkowska, Kaczmarek & Michalczyk, 2018 **comb. nov.**, *P. (A.) spinosus* Kaczmarek, Gawlak, Bartels, Nelson and Roszkowska, 2017 **comb. nov.**, *P. (A.) tonollii* (Ramazzotti, 1956) **comb. nov.** and *P. (A.) walteri* (Biserov, 1997/1998) **comb. nov.** (see Kaczmarek *et al.* 2017).

Acknowledgement

The authors gratefully acknowledge the constructive comments received from Dr. Sandra J. McInnes (British Antarctic Survey, UK), Dr. Philip Pugh (Anglia Ruskin University, UK), and an anonymous reviewer, which improved this paper.

References

- Bartels, P.J., Pilato, G., Lisi, O. & Nelson, D.R. (2009) *Macrobotus* (Eutardigrada, Macrobiotidae) from the Great Smoky Mountains National Park, Tennessee/North Carolina, USA (North America): two new species and six new records. *Zootaxa*, 2022, 45–57.
- Binda, M.G. & Pilato, G. (2001) *Macrobotus savai* and *Macrobotus humilis*, two new species of tardigrades from Sri Lanka. *Bollettino Accademia Gioenia Science Naturali, Catania*, 34 (360), 101–111.
- Binda, M.G., Pilato, G., Moncada, E. & Napolitano, A. (2001) Some tardigrades from Central Africa with the description of two new species: *Macrobotus ragonesei* and *M. privitera* (Eutardigrada Macrobiotidae). *Tropical Zoology*, 14, 233–242. <https://doi.org/10.1080/03946975.2001.10531155>
- Biserov, V.I. (1996) *Macrobotus lorenae* sp.n., a new species of Tardigrada (Eutardigrada Macrobiotidae) from the Russian Far East. *Arthropoda Selecta*, 5 (1/2), 145–149.
- Biserov, V.I. (1997/1998) Tardigrades of the Caucasus with a taxonomic analysis of the genus *Ramazzottius* (Parachela: Hypsibiidae). *Zoologischer Anzeiger*, 236 (2–3), 139–159.
- Claps, M.C. & Rossi, G.C. (1997) Tardígrados de Uruguay, con descripción de dos nuevas especies (Echiniscidae, Macrobiotidae). *Iheringia Serie Zoología, Porto Alegre*, 83, 17–22.
- Daza, A., Caicedo, M., Lisi, O. & Quiroga, S. (2017) New records of tardigrades from Colombia with the description of *Paramacrobotus sagani* sp. nov. and *Doryphoribius rosanae* sp. nov. *Zootaxa*, 4362 (1), 29–50. <https://doi.org/10.11646/zootaxa.4362.1.2>
- Degma, P., Bertolani, R. & Guidetti, R. (2009–2017) Actual checklist of Tardigrada species. 33rd Edition. 46 pp. Available from: <http://www.tardigrada.modena.unimo.it/miscellanea/Actual%20checklist%20of%20Tardigrada.pdf>, (accessed 26 January 2018)
- Degma, P., Michalczyk, Ł. & Kaczmarek, Ł. (2008) *Macrobotus derkai*, a new species of Tardigrada (Eutardigrada, Macrobiotidae, *huziori* group) from the Colombian Andes (South America). *Zootaxa*, 1731, 1–23.
- Doyère, L. (1840) Mémoire sur les Tardigrades. *Annales des Sciences Naturelles, Series 2*, 14, 269–361, pls. 12–19.
- Durante Pasa, M.V. & Maucci, W. (1979) Tardigradi muscicoli della Grecia. *Zeszyty Naukowe Uniwersytetu Jagiellońskiego, Prace Zoologiczne*, 25, 19–45.
- Guidetti, R., Schill, R.O., Bertolani, R., Dandekar, T. & Wolf, M. (2009) New molecular data for tardigrade phylogeny, with the erection of *Paramacrobotus* gen. nov. *Journal of Zoological Systematics and Evolutionary Research*, 47, 315–321. <https://doi.org/10.1111/j.1439-0469.2009.00526.x>
- Iharos, G. (1966a) Neue Tardigraden-Arten aus Ungarn (Neuere Beiträge zur Kenntnis der Tardigraden-Fauna Ungarns, VI.). *Acta Zoologica Academiae Scientiarum Hungaricae*, 12 (1–2), 111–122.
- Iharos, G. (1966b) Beiträge zur Kenntnis der Tardigraden-Fauna Österreichs. *Acta Zoologica Academiae Scientiarum Hungaricae*, 12 (1–2), 123–127.
- Iharos, G. (1973) Neuere Daten zur Kenntnis der Tardigraden-Fauna von Neuguinea. *Opuscula Zoologica Budapest*, 11 (1–2), 65–73.
- International Commission on Zoological Nomenclature (1999) *International Code of Zoological Nomenclature. Fourth Edition*. The International Trust for Zoological Nomenclature, London, 306 pp. <http://www.iczn.org/iczn/index.jsp> (accessed 27 December

2017)

- Kaczmarek, L., Michalczyk, L. & Diduszko, D. (2005) Some tardigrades from Siberia (Russia, Baikal region) with a description of *Macrobotus garynahi* sp. nov. (Eutardigrada: Macrobiotidae: *richtersi* group). *Zootaxa*, 1053, 35–45.
- Kaczmarek, L., Cytan, J., Zawierucha, K., Diduszko, D. & Michalczyk, L. (2014) Tardigrades from Peru (South America), with descriptions of three new species of Parachela. *Zootaxa*, 3790 (2), 357–379.
<https://doi.org/10.11646/zootaxa.3790.2.5>
- Kaczmarek, L., Gawlak, M., Bartels, P.J., Nelson, D.R. & Roszkowska, M. (2017). Revision of the genus *Paramacrobotus* Guidetti *et al.*, 2009 with the description of a new species, re-descriptions and a key. *Annales Zoologici*, 67(4): 627–656.
<https://doi.org/10.3161/00034541ANZ2017.67.4.001>
- Lawrence, E. (Editor) (1998) *Henderson's Dictionary of Biological Terms 11th Edited*. Longman, Singapore Publishers (Pte) Ltd., Singapore, 693 pp.
- Lisi, O., Binda, M.G. & Pilato, G. (2016) *Eremobiotus ginevrae* sp. nov. and *Paramacrobotus pius* sp. nov., two new species of Eutardigrada. *Zootaxa*, 4103 (4), 344–360.
<https://doi.org/10.11646/zootaxa.4103.4.3>
- Marley, N.J., McInnes, S.J. & Sands, C.J. (2011) Phylum Tardigrada: A re-evaluation of the Parachela. *Zootaxa*, 2819, 51–64.
- Maucci, W. (1991) Tre nuove specie di Eutardigradi della Groenlandia Meridionale. *Bollettino del Museo Civico di Storia Naturale di Verona*, 15, 279–289.
- Maucci, W. & Durante Pasa, M.V. (1980) Tardigradi muscicoli delle Isole Andamane. *Bollettino del Museo Civico di Storia Naturale di Verona*, 7, 281–291.
- Michalczyk, L. & Kaczmarek, L. (2003) A description of the new tardigrade *Macrobotus reinhardti* (Eutardigrada: Macrobiotidae, *harmsworthi* group) with some remarks on the oral cavity armature within the genus *Macrobotus* Schultze. *Zootaxa*, 331, 1–24.
- Michalczyk, L. & Kaczmarek, L. (2006a) A new species *Macrobotus magdaleneae* (Tardigrada: Eutardigrada: Macrobiotidae, *richtersi* group) from Costa Rican rain forest (Central America). *New Zealand Journal of Zoology*, 33, 189–196.
- Michalczyk, L. & Kaczmarek, L. (2006b) *Macrobotus huziori*, a new species of Tardigrada (Eutardigrada: Macrobiotidae) from Costa Rica (Central America). *Zootaxa*, 1169, 47–59.
- Michalczyk, L., Kaczmarek, L. & Węglarska, B. (2006) *Macrobotus sklodowskiae* sp. nov. (Tardigrada: Eutardigrada: Macrobiotidae, *richtersi* group) from Cyprus. *Zootaxa*, 1371, 45–56.
- Murray, J. (1907) Arctic Tardigrada, collected by Wm. S. Bruce. *Transactions of the Royal Society of Edinburgh*, 45 (III, 25), 669–681, 2 pls.
<https://doi.org/10.1017/s0080456800011789>
- Murray, J. (1911) Arctiscoida. *Proceedings of the Royal Irish Academy*, 31 (37), 1–16.
<https://doi.org/10.5962/bhl.title.64352>
- Pilato, G. (2000) *Macrobotus centesimus*, new species of eutardigrade from the South America. *Bollettino Accademia Gioenia Science Naturali, Catania*, 33 (358), 97–101.
- Pilato, G., Binda, M.G. & Catanzaro, R. (1991) Remarks on some tardigrades of the African fauna with the description of three new species of *Macrobotus* Schultze 1834. *Tropical Zoology*, 4 (2), 167–178.
<http://dx.doi.org/10.1080/03946975.1991.10539487>.
- Pilato, G., Binda, M.G. & Lisi, O. (2002) Notes on tardigrades of the Seychelles with the description of two new species. *Bollettino Accademia Gioenia Science Naturali, Catania*, 35 (361), 503–517.
- Pilato, G., Binda, M.G. & Lisi, O. (2004) Notes on tardigrades of the Seychelles with the description of three new species. *Italian Journal of Zoology*, 71, 171–178.
- Pilato, G., Binda, M.G. & Lisi, O. (2006a) Three new species of eutardigrades from the Seychelles. *New Zealand Journal of Zoology*, 33, 39–48.
- Pilato, G., Binda, M.G. & Lisi, O. (2006b) Eutardigrada from New Zealand, with descriptions of two new species. *New Zealand Journal of Zoology*, 33, 49–63.
- Pilato, G., Binda, M.G., Napolitano, A. & Moncada, E. (2001) Notes on South American tardigrades with the description of two new species: *Pseudechiniscus spinerectus* and *Macrobotus danielae*. *Tropical Zoology*, 14(2), 223–231.
<https://doi.org/10.1080/03946975.2001.10531154>.
- Pilato, G., Claxton, S. & Binda, M.G. (1989) Tardigrades from Australia. III. *Echiniscus marcus* and *Macrobotus peteri*, new species of tardigrades from New South Wales. *Animalia*, 16, 43–48.
- Pilato, G., Kiosya, Y., Lisi, O. & Sabella, G. (2012) New records of Eutardigrada from Belarus with the description of three new species. *Zootaxa*, 3179, 39–60.
- Ramazzotti, G. (1956) Tre nuove specie di Tardigradi ed altre specie poco comuni. *Atti della Societ Italiana di Scienze Naturali*, 95 (III–IV), 284–291.
- Richters, F. (1926) Tardigrada. In: Kükenthal, W. & Krumbach, T. (Eds.), *Handbuch der Zoologie*. Walter de Gruyter & Co., Berlin, pp. 1–68.
- Sands, C.J., McInnes, S.J., Marley, N.J., Goodall-Copestake, W.P., Convey, P. & Linse, K. (2008) Phylum Tardigrada: an ‘individual’ approach. *Cladistics*, 24, 1–18.
<https://doi.org/10.1111/j.1096-0031.2008.00219.x>
- Schill, R.O., Förster, F., Dandekar, T. & Wolf, M. (2010) Using compensatory base change analysis of internal transcribed spacer 2 secondary structures to identify three new species in *Paramacrobotus* (Tardigrada). *Organisms, Diversity & Evolution*, 10 (4), 287–296.
<https://doi.org/10.1007/s13127-010-0025-z>
- Schuster, R.O., Nelson, D.R., Grigarick, A.A. & Christenberry, D. (1980) Systematic criteria of the Eutardigrada. *Transactions of the*

American Microscopical Society, 99, 284–303.

<https://doi.org/10.2307/3226004>

Stec, D., Roszkowska, M., Kaczmarek, Ł. & Michalczyk, Ł. (2018) *Paramacrobotus lachowskae*, a new species of Tardigrada from Colombia (Eutardigrada: Parachela: Macrobiotidae). *New Zealand Journal of Zoology*, 45 (1), 43–60.

<https://doi.org/10.1080/03014223.2017.1354896>

Thulin, G. (1928) Über die Phylogenie und das System der Tardigraden. *Hereditas*, 11, 207–266.

<https://doi.org/10.1111/j.1601-5223.1928.tb02488.x>

Tumanov, D.V. (2005) Notes on the Tardigrada of Thailand, with a description of *Macrobotus alekseevi* sp. nov. (Eutardigrada, Macrobiotidae). *Zootaxa*, 999 (1), 1–16.

<https://doi.org/10.11646/zootaxa.999.1.1>