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### Notes to the species composition of the genus *Paramacrobotus* Guidetti *et al.*, 2009 (Tardigrada, Eutardigrada, Macrobiotidae)

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**Summary:** For this paper I analyzed the descriptions of all seventy seven currently known *Macrobiotus* species with three macroplacoids, with or without a microplacoid, to ascertain if they fit to the morphological diagnosis of the genus *Paramacrobotus* Guidetti *et al.*, 2009. Most (sixty three species) differed from the genus *Paramacrobotus* characters as they were either members of the *Macrobiotus harmsworthi* and *furciger* species groups or did not possess the combination of two unique genus characters (elongated macroplacoids and microplacoid considerably distant from the third macroplacoid, if present). Insufficient descriptions for a further ten species means their taxonomic positions remain unclear. Four *Macrobiotus* species are transferred to the genus *Paramacrobotus* and their new taxonomic position is *Paramacrobotus danielisae* (Pilato, Binda & Lisi, 2006) **comb. nov.**, *Paramacrobotus hapukuensis* (Pilato, Binda & Lisi, 2006) **comb. nov.**, *Paramacrobotus privitera* (Binda, Pilato, Moncada & Napolitano, 2001) **comb. nov.** and *Paramacrobotus sklodowskiae* (Michalczyk, Kaczmarek & Węglarska, 2006) **comb. nov.**

Guidetti *et al.* (2009) separated the new genus *Paramacrobotus* from the genus *Macrobiotus* C.A.S. Schultze, 1834 on the basis of the results of molecular and morphological studies of Tardigrada species from several families. Some characters of the genus were shared with the genus *Macrobiotus* (Y-type claws and mouth ring with ten evident peribuccal lamellae; see Pilato & Binda 2010). The morphological diagnosis of the genus (Guidetti *et al.* 2009) also included characters that are shared with some *Macrobiotus* species that were not incorporated into the new genus (i.e. smooth cuticle without pores, a buccal armature showing a posterior crown of strong triangular or bicuspidal teeth and at least dorsally three robust transverse crests, large buccal tube, eggs with large and reticulated processes) and the combination of two characters which appears to be unique to the genus *Paramacrobotus* (three clearly rod shaped and elongated macroplacoids and microplacoid distant more than its length from the third macroplacoid, or absent – see also Pilato & Binda 2010, page 3). The generic diagnosis was based on characters of *Macrobiotus* species representing ‘*richtersi-areolatus* group’ (with *Paramacrobotus richtersi* (Murray, 1911) as the type species). In the final phylogenetic trees in Guidetti *et al.* (2009) *Macrobiotus richtersi*, *M. areolatus* Murray, 1907 and *M. tonollii* Ramazzotti, 1956 provided the core cluster of the *Paramacrobotus* group. It is worthy of notice that cuticular pores, which were reported in the original description of *Macrobiotus tonollii*, were not observed by R. Guidetti and R. Bertolani (authors of the new genus; Guidetti *et al.* 2009) when they examined *M. tonollii* paratypes (Roberto Guidetti, personal communication).

I believed that the valid characters for *Paramacrobotus* are present in several species still attributed to the genus *Macrobiotus*. To ascertain whether the *Macrobiotus* species with three macroplacoids, with or without a microplacoid, adhere to the morphological definition of the genus *Paramacrobotus* I studied their original descriptions from the literature.

From the 149 species and four subspecies currently ascribed to the genus *Macrobiotus* (Degma *et al.* 2013), 77 species and one subspecies were described with three macroplacoids, with or without a microplacoid. Most were attributed to the *harmsworthi* species group (40 species and one subspecies; see Kaczmarek *et al.* 2011, Pilato *et al.* 2010) or to the *furciger* species group (8 species; see Binda & Rebecchi 1992, Tumanov 2006, Pilato & Lisi 2009). A further 14 species were described with microplacoids close to the macroplacoids and/or granular or almost granular shaped macroplacoids (at least one of them) and clearly do not belong to the genus *Paramacrobotus* as described by Guidetti *et al.* (2009) and Pilato & Binda (2010). These are: *Macrobiotus artipharyngis* Iharos, 1940 (probably belongs to the genus *Minibiotus* R.O. Schuster, 1980 in Schuster *et al.* 1980), *M. ascensionis* Richters, 1908, *M. insignis* Bartoš, 1963, *M. kovalevi* Tumanov, 2004, *M. lazzaroi* Maucci, 1986, *M. lusitanicus* Maucci & Durante Pasa, 1984, *M. norvegicus* Mihelčič, 1971/72, *M. potockii* Węglarska, 1968, *M. pseudofurcatus* Pilato, 1972, *M. spertii* Ramazzotti,