

A Revision of the Genus *Minibiotus* (Tardigrada: Macrobiotidae) with Descriptions of Eleven New Species from Australia

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ABSTRACT. The genus *Minibiotus* is redefined and the type species, *Minibiotus intermedius* (Plate, 1889) is redescribed. Eleven new species of *Minibiotus* are diagnosed and described, and three are transferred from the genus *Macrobiotus* using a range of qualitative and quantitative characters of adults and eggs. Keys are provided to the adults of the 22 reported species in the genus and to the eggs of the 20 species for which eggs have been described. Characters useful in discriminating species with very similar morphology are noted. The difficulties inherent in taxonomic studies of small animals such as many of those in the genus *Minibiotus* are discussed as are the problems of recognition of species in groups where both the adult form and sometimes also the egg are very similar. The examination and description of the eggs is important in tardigrade taxonomy.

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Minibiotus Schuster *et al.*, 1980 is a genus of terrestrial tardigrades found commonly in mosses and lichens. The type species *Minibiotus intermedius* (Plate, 1889) remained the only species in the genus until *M. maculartus* was described by Pilato & Claxton in 1988. The adults of this species closely resembled *M. intermedius* but the eggs were quite dissimilar, having processes that lacked an enclosing membrane—a character suggested as definitive for the genus by its authors. Further species have since been described. *Minibiotus fallax* was described by Pilato *et al.* in 1989. This species had few adult characters similar to those of *M. intermedius* apart from the presence around the mouth of papulae (Fig. 1a) rather than the lamellae present in the closely related genus *Macrobiotus*. Miller *et al.*, (1994) transferred *Macrobiotus weinerorum* Dastych,

1984 to the genus *Minibiotus* while Dastych & Drummond (1996) attributed *Macrobiotus stuckenbergi* Dastych *et al.*, 1990 to the genus *Minibiotus*. Binda & Pilato (1992) described two new species and transferred *Macrobiotus furcatus* to the genus *Minibiotus*. They suggested that the *Minibiotus* bucco-pharyngeal apparatus has a “characteristic appearance” which includes double curvature of the buccal tube, stylet supports inserted a considerable distance from the pharyngeal bulb and first macroplacoid situated very close to the apophysis. The genus *Minibiotus*, however, has not been uniformly accepted (Ramazzotti & Maucci, 1983) perhaps because of its unsatisfactory definition (Pilato, 1982). One of the aims of this paper is to provide a more precise definition of the genus.