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Tardigrades of Israel with description of four new species

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Abstract

Only few species of tardigrades have been recorded from Israel. In this paper we report an additional 20 species, 18 of which are new records for that geographical area; four (*Bryodelphax meronensis* **sp. nov.**, *Macrobiotus dimentmani* **sp. nov.**, *Pseudobiotus hirsutellus* **sp. nov.** and *Mixibius schnurae* **sp. nov.**) are new to science. *Bryodelphax meronensis* **sp. nov**. differs from similar species (*B. alzirae*, *B. tatrensis* and *B. mateusi*) in details of the cuticular ornamentation and the absence of papilla on the hind legs. It also differs from *B. alzirae* by the presence of 12 lateral intersegmental platelets, instead of 6. It differs from *B. atlantis* in details of the plate ornamentation, lack of eyes, and shorter internal buccal cirri. *Macrobiotus dimentmani* **sp. nov**. differs from *M. diffusus* with more slender claws, the external claws slightly longer, and in characteristics of the eggs (the apical portion of the conical processes is subdivided into two to six long, flexible terminal points that are not very thin filaments; each process has a ring of basal dots, the egg shell has an obvious granulation). *Mixibius schnurae* **sp. nov**. differs from all other known species within the genus by characteristics of the cuticular ornamentation; in addition it differs from *M. ornatus* and *M. sutirae* in having the stylet supports inserted on the buccal tube in a more cephalic position; and from *M. ninguidus* in having longer buccal tube and shorter second placoid. *Pseudobiotus hirsutellus* **sp. nov**. differs from *P. vladimiri* in the presence of eye spots; cuticular spine-shaped processes present on the central portion of the body as well as the anterior and posterior portions; wider buccal tube, longer placoids; longer claws that are without accessory points; and the absence of oval papillae on the first three pairs of legs. The new species differs from *P. spinifer* in having less numerous and smaller spine-shaped cuticular processes; wider buccal tube; longer placoids; and the absence of oval papilla on the first three pairs of legs.

Key words: Tardigrada, *Bryodelphax meronensis* **sp. nov**., *Macrobiotus dimentmani* **sp. nov**., *Pseudobiotus hirsutellus* **sp. nov**., *Mixibius schnurae* **sp. nov**.

Introduction

The tardigradological fauna of Israel is almost unknown. Only 14 species were recorded from Palestine (mainly what is today Israel, but also sites in Jordan) by Rahm (1936) two of which, *Macrobiotus terrae sanctae* and *Diphascon emmautinum* were considered new to science. However, the descriptions of both these species were incomplete and they can no longer be identified with any certainty. For example, Rahm (1936) wrote about *Macrobiotus terrae sanctae*, "*Krallen wie Hypsibius dujardini"* [Claws as *Hypsibius dujardini*] and the drawing seems to indicate claws of Hypsibiidae, not Macrobiotidae. Ramazzotti (1972) hypothesized that *Diphascon emmautinum* was a synonym of *D. spitzbergense* Richters 1903, and Ramazzotti & Maucci (1983) considered the species a *nomen dubium* and it was therefore excluded. Those species that we consider were present in Palestine are: *Pseudechiniscus suillus* (Ehrenberg, 1853), *Echiniscus blumi* Richters, 1903, *Echiniscus testudo* (Doyère, 1840), *Murrayon hastatus* (Murray, 1907), *Macrobiotus hufelandi* Schultze, 1834, *Paramacrobiotus richtersi* (Murray, 1911) (*Macrobiotus schültzei* Greeff, as reported by Rahm (1936) but later synonymised), *Macrobiotus echinogenitus* Richters, 1904, *Macrobiotus occidentalis* Murray, 1910, *Hypsibius scabropygus* Cuénot, 1929, *Ramazzottius oberhaeuseri* (Doyère, 1840), *Diphascon alpinum* Murray, 1906 and *Milnesium tardigradum* Doyère, 1840.

Our colleagues Chanan Dimentman and Heather Schnur (University of Jerusalem) requested we study a collection of tardigrades from Israel and sent us a number of moss samples and specimens collected from freshwater habitats.

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