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Two new species of Macrobiotidae, *Macrobiotus szeptyckii* (*harmsworthi* group) and *Macrobiotus kazmierskii* (*hufelandi* group) from Argentina

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Abstract. In moss samples collected in Argentina two new species of Eutardigrada were found. One of them, *M. szeptyckii* sp. n., belongs to the *harmsworthi* group and differs from other species of the group by some qualitative characters and morphometric traits of adults and eggs. The other new species, *M. kazmierskii* sp. n., belongs to the *hufelandi* group and differs from the most similar *M. patagonicus* by the presence of the first band of teeth in the oral cavity, the presence of a constriction in the first macroplacoid, and terminal discs of the egg processes without teeth.

Key words: Tardigrada, Eutardigrada, *harmsworthi* group, *hufelandi* group, new species, Argentina.

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I. INTRODUCTION

Up to now almost 160 terrestrial and freshwater species and subspecies have been described in the genus *Macrobiotus* (GUIDETTI & BERTOLANI 2005; DEGMA & GUIDETTI 2007). In this paper we describe two *Macrobiotus* species that are new to science. Both species belong to large species complexes within the genus *Macrobiotus*: *Macrobiotus szeptyckii* sp. n. belongs to the *harmsworthi* group and *Macrobiotus kazmierskii* sp. n. to the *hufelandi* group. The *harmsworthi* group is characterised by the presence of three macroplacoids in the shape of short, rounded rods and a distinct microplacoid situated very close to them, more or less conical egg processes and oral cavity armature of the *harmsworthi* type (MICHALCZYK & KACZMAREK 2003) or slightly modified. The *hufelandi* group is characterised by the presence of two macroplacoids in the shape of long rods and a distinct

microplacoid, eggs with truncated cones ended with terminal discs and the oral cavity armature of the *hufelandi* type (MICHALCZYK & KACZMAREK 2003).

II. MATERIAL AND METHODS

In four moss samples over 100 specimens and 45 eggs of the new species were found. Most specimens and eggs (61 specimens and 27 eggs) were mounted on microscopic slides in HOYER's medium and examined under Phase Contrast Microscopy (PCM). The remaining material was prepared for examination in Scanning Electron Microscopy (SEM). Photomicrographs were made using both PCM and SEM.

All measurements are given in micrometers [μm]. Body length was measured from the mouth to the end of the body excluding the hind legs. Buccal tube length and level of the stylet support insertion point were measured from anterior margin of stylet sheaths. Buccal tube widths were measured as the external and internal diameters at the level of the stylet support insertion point. The *pt* ratio is the ratio of the length of a given structure to the length of the buccal tube expressed as a percentage (PILATO 1981). In the description of the holotype, the *pt* is given after the µm value [in square brackets and *italics*]. Terminology describing the oral cavity armature is given according to MICHALCZYK & KACZMAREK (2003).

III. TAXONOMY

Macrobiotus szeptyckii sp. n.

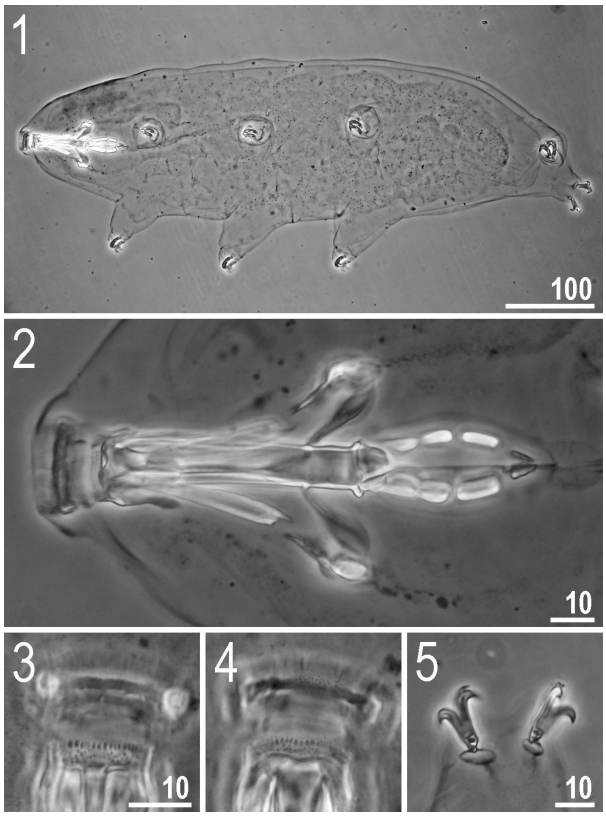
(Figs 1-15)

Material examined: Holotype, 14 paratypes (6 adults and 8 eggs) (slides No. 11/2, 11/3, 11/6, 11/7) were extracted from a moss sample collected from rocks, 70 km south from San Carlos de Bariloche, Nahule Huepi National Park, Argentina, South America, 21.02.2003; 33 paratypes (27 adults and 6 eggs) (slides No. 1468/1, 1468/3, 1468/4, 1469/1, 1469/3) were extracted from two moss samples collected from rocks in a *Nothofagus* forest, W 71°49.908′, S 41°11.551′, 1100 m asl in Ventisquero Negro, Nahuel Huepi National Park, Rio Negro Province, Argentina, South America, 27.01.2006.

Holotype and 47 paratypes (33 adults and 14 eggs) are preserved at the Department of Animal Taxonomy and Ecology, A. Mickiewicz University, Poznań.

D e s c r i p t i o n. A d u l t (h o l o t y p e): Body length 588.9 (Fig. 1). Body transparent/white, eyes present. Cuticle smooth, without pores. Fine, regular granulation present on legs IV only.

Bucco-pharyngeal apparatus of the *Macrobiotus*-type (Figs 2-4). Mouth antero-ventral, surrounded by a ring of 10 peribuccal lamellae. Oral cavity armature of the *echinogenitus* type with three bands of teeth (Figs 3-4). Teeth of the first band are smaller than those of the other two bands and are in the shape of granules (PCM)/cones (SEM). They are present in the anterior portion of the oral cavity just behind peribuccal lamellae. This band of teeth is continuous and looks the same on all oral cavity walls. The teeth of the second band are intermediate in size between those of the first band and those of the third band of teeth. They are in the shape of small ridges parallel to the main axis of the buccal tube (PCM). They are positioned in the posterior portion of the oral cavity just behind the ring fold and just before the third band of teeth. This band of teeth is continuous and arranged in one row. Between the second and the third band of teeth numerous small supplementary teeth are present (they are arranged in a narrow irregular continuous band). The teeth of the third band are larger than those in the other two rows and there are usually six. They are in the shape of transverse ridges/baffles or granules (PCM). They are positioned in the rear of the oral cavity just



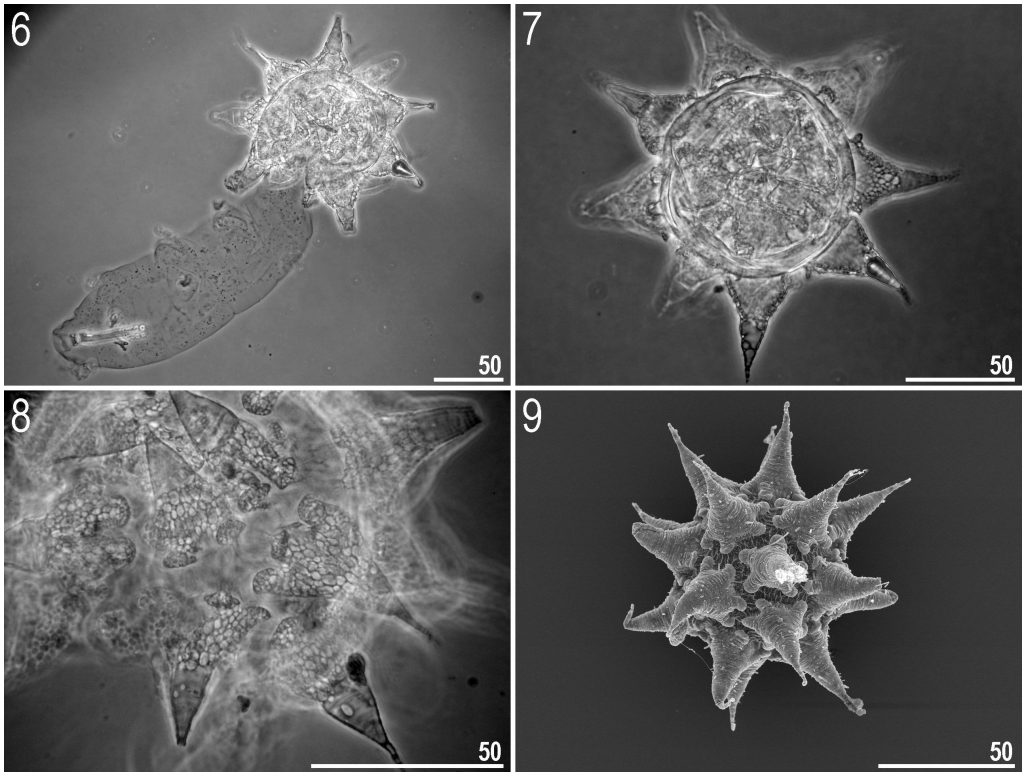
Figs 1-5. *Macrobiotus szeptyckii* sp. n. – 1 – habitus (ventro-lateral view, holotype); 2 – buccal apparatus (ventral view, holotype); 3-4 – oral cavity armature: 3 – ventral teeth, 4 – dorsal teeth (paratype); 5 – claws IV (holotype). (PCM)

behind the second band of teeth and just before the buccal tube opening. Usually this band is not continuous and is divided into two series: ventral and dorsal. Both series consist of one median and two lateral teeth.

Buccal tube 58.2 long and 9.4 [*16.2*] (external), 6.6 [*11.0*] (internal) wide, with one bend in anterior part of tube (visible in lateral view). Ventral lamina 38.8 [*66.7*] long. Stylet supports inserted on buccal tube at 47.3 [*81.3*]. Pharyngeal bulb slightly oval with apophyses, three macroplacoids and microplacoid (Fig. 2). Pharyngeal apophyses distinct, rounded and forked posteriorly. First macroplacoid longest and thinner anteriorly, 10.0 [*17.2*] long, second shortest, 7.8 [*13.4*] long and third 9.4 [*16.2*] long with subterminal constriction. Large and triangular microplacoid 6.5 [*11.2*] long. Macroplacoid row 29.8 [*51.2*] long. Placoid row 37.4 [*64.3*] long.

Claws of the *hufelandi*-type, stout (Fig. 5). Primary branches with distinct accessory points. Lunules on all legs smooth. Primary branch (pb) with basal claw of I pair of legs 13.1 [*22.5*] long, secondary branch (sb) 10.0 [*17.2*] long, II pb. 13.4 [*23.0*], sb. 10.0 [*17.2*]; III pb. 14.4 [*24.7*], sb 10.4 [*17.9*]; IV pb. 18.3 [*31.4*], sb. 14.4 [*24.7*]. Thin cuticular bars present under claws I-III. Other cuticular thickenings on legs absent.

E g g. White/colourless, laid freely (Figs 6-15). Spherical, without areolation and with 8 processes on the circumference (Figs 6-7, 9). Processes in the shape of long cones terminated with a single sharp point (Figs 8, 10-13). Process walls double, with a system of small transverse supporting walls visible in PCM as a reticular-like design (Figs 8, 10-11). In the upper portion of each pro-



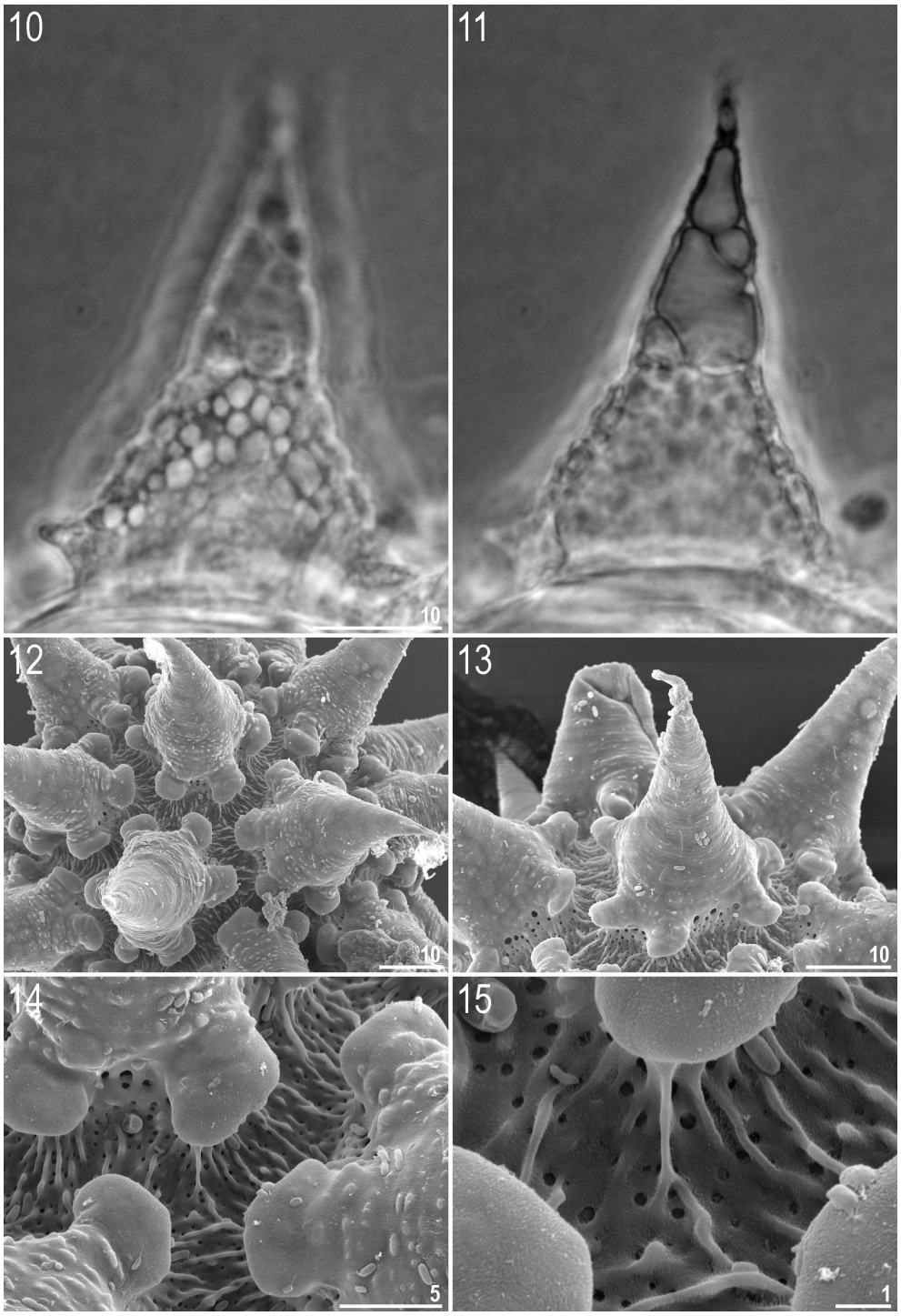
Figs 6-9. *Macrobiotus szeptyckii* sp. n. – 6 – a juvenile hatching (paratype); 7 – egg; 8 – egg surface with processes; 9 – egg. (6-8: PCM, 9: SEM)

cess a large bubble is present. The bubble is nearly as long as a half of the process. Sometimes the bubble can be divided into 2-4 smaller bubbles (Fig. 11). Both external and internal walls are devoid of pores (visible in SEM only). Processes walls smooth, although when processes are not fully stretched, small ridge-shaped tubercles at the base are sometimes visible in SEM (*e.g.,* Fig. 14). At the base of each process six large finger-like structures are present (Figs 8, 12-14). Surface between processes covered by thin wrinkles and numerous minute pores (Figs 14-15). Additionally, larger pores between finger-like structures are present (Figs 13-14). Distinct wrinkles in SEM are weakly visible in PCM, whereas pores are visible only in SEM.

D i f f e r e n t i a l d i a g n o s i s. *M. szeptyckii* sp. n., by the presence of finger-like structures at the base of egg processes and the absence of egg areolation, is most similar to 5 species of the *harmsworthi* group: *M. blocki*, *M. erminiae, M. liviae, M. peterseni* and *M. snaresensis*.

The new species differs in detail from:

1. *M. blocki* DASTYCH, 1984 by the presence of smooth lunules on legs IV, a lower number of processes on the egg circumference (8 in the new species and 15-24 in *M. blocki*), larger eggs with processes (140.8-174.0 in the new species and 90.0-130.0 in *M. blocki*), higher egg processes (31.5-44.5 in the new species and 10.0-25.0 in *M. blocki*), wider egg processes (23.9-30.0 in the new species and 8.0-14.0 in *M. blocki*), a lower number of finger-like structures at the base of the egg processes (6 in the new species and 7-10 in *M. blocki*), and a different composition of bubbles within the egg processes (one large bubble (rarely 2-4 smaller bubbles) on the top of each process in the new species and several bubbles increasing in size from the top of the process in *M. blocki*) (DASTYCH 1984).



Figs 10-15. *Macrobiotus szeptyckii* sp. n. – 10-11 – egg process: 10 – 'surface' with 'reticular design', 11 – mid-section; 12 – a fragment of egg surface with processes; 13 – egg process; 14 – process bases with porous egg surface; 15 – porous egg surface between processes. (SEM)

Table I

Measurements [in μm] of selected morphological structures of specimens of *Macrobiotus szeptyckii* sp. n. mounted in HOYER's medium (RANGE refers to the smallest and the largest structure found among all measured specimens; N – number of specimens/structures measured, SD – standard deviation)

Character	N	Range		Mean		SD	
		μm	pt	μm	pt	μm	pt
Body	6	358.6-647.0	*894.5*-1091.1	446.0	*964.7*	107.6	*69.5*
Buccal tube	6	37.2-59.3	–	46.0	–	8.5	–
Stylet support insertion point	6	28.6-46.1	*74.9-77.8*	35.1	*76.4*	6.6	1.3
Buccal tube external width	6	4.6-7.8	*12.0*-13.2	5.7	*12.4*	1.2	*0.5*
Buccal tube internal width	6	3.4 5.8	*8.3* 9.8	4.1	*8.8*	0.9	*0.6*
Ventral lamina	6	23.7 39.7	*63.2 66.9*	29.6	*64.1*	6.1	1.4
Macroplacoid 1	6	5.3-8.5	*11.8*-16.1	6.2	*13.6*	1.2	1.5
Macroplacoid 2	6	3.0-5.3	*7.6*-8.9	3.9	*8.4*	0.9	0.6
Macroplacoid 3	6	4.2-7.4	*10.2-12.5*	5.1	*11.0*	1.3	0.9
Microplacoid	6	2.4-4.4	*5.5*-7.4	2.9	*6.2*	0.8	0.7
Macroplacoid row	6	14.3-24.2	*34.4*-40.8	17.1	*37.1*	3.8	2.4
Placoid row	6	17.3-29.4	*42.3*-49.6	20.9	*45.2*	4.7	2.8
Claw 1 - primary branch	5	8.3-12.5	*20.2*-22.6	9.5	*21.4*	1.8	1.1
Claw 1 - secondary branch	3	5.9-10.6	*14.4*-17.9	7.9	*16.2*	2.4	1.7
Claw 2 - primary branch	4	8.3-12.8	*20.2*-24.0	10.1	*22.2*	2.1	1.6
Claw 2 - secondary branch	3	5.9-9.3	*15.7*-18.6	7.8	*16.7*	1.7	1.6
Claw 3 - primary branch	3	8.5-13.2	*22.3*-23.7	10.5	*22.9*	2.4	*0.7*
Claw 3 - secondary branch	2	6.5-11.4	*17.5*-19.2	9.0	*18.3*	3.5	*1.2*
Claw 4 - primary branch	5	10.6-15.3	*24.6-31.7*	12.8	*27.5*	1.7	3.0
Claw 4 - secondary branch	5	7.7-11.4	*17.5*-25.0	9.5	*20.6*	1.3	3.1

2. *M. erminiae* BINDA & PILATO, 1999 by the oral cavity armature of the *echinogenitus* type (*harmsworthi* type in *M. erminiae*), smooth lunules on legs IV, a narrower buccal tube (5.9-10.8 [*15.4-17.1*] in the new species and 10.9-16.4 [*22.1-24.5*] in *M. erminiae*), a slightly smaller microplacoid (2.6-6.9 [*7.3-11.2*] in the new species and 6.3-9.5 [*12.1-13.5*] in *M. erminiae*), the presence of large bubble(s) on the top of the egg processes, larger eggs with processes (140.8-174.0 in the new species and 100.0-116.0 in *M. erminiae*), higher egg processes (31.5-44.5 in the new species and 12.0-24.0 in *M. erminiae*), wider egg processes (23.9-30.0 in the new species and 16.0-21.0 in *M. erminiae*), and by a lower number of finger-like structures at the base of the egg processes (6 in the new species and 8-10 in *M. erminiae*) (BINDA & PILATO 1999).

3. *M. liviae* RAMAZZOTTI, 1962 by the absence of pores in the cuticle, generally shorter placoids (see the original description of *M. liviae* and PILATO & BINDA 1996), the presence of large bubbles

on the top of the processes, and by shorter egg processes (31.5-44.5 in the new species and 50.0-55.0 in *M. liviae*) (RAMAZZOTTI 1962).

4. *M. peterseni* MAUCCI, 1991 by the oral cavity armature of the *echinogenitus* type (*harmsworthi* type in *M. peterseni*), a higher *pt* of stylet supports insertion point (78.7-82.0 in the new species and 76.2 in a 480.0 long specimen of *M. peterseni*), the presence of eyes, smooth lunules on legs IV, the presence of egg processes in the shape of long cones (bell/copula-shaped in *M. peterseni*), larger eggs with processes (140.8-174.0 in the new species and 75.9-92.4 in *M. peterseni*), higher egg processes (31.5-44.5 in the new species and 12.0-14.0 in *M. peterseni*), and by a lower number of processes on the egg circumference (8 in new species and 13-15 in *M. peterseni*) (MAUCCI 1991).

5. *M. snaresensis* HORNING *et al.*, 1978 by the oral cavity armature of the *echinogenitus* type (*areolatus* type in *M. snaresensis*), the presence of eyes, the presence of large bubbles on the top of the processes, and by higher egg processes (31.5-44.5 in the new species and about 21.0 in an egg with 109.0 in diameter in *M. snaresensis*) (HORNING *et al.* 1978).

R e m a r k s. Adults: Measurements and *pt* values of selected morphological structures for 10 randomly chosen specimens are given in Table I.

Eggs: Measurements for 7 randomly chosen eggs are provided in Table II.

E t y m o l o g y. The species is named in memory of Prof. Andrzej SZEPTYCKI, a distinguished Polish zoologist and a reviewer of the first author's PhD thesis.

Table II

Measurements [in μm] of selected morphological structures of eggs of *Macrobiotus szeptyckii* sp. n. mounted in HOYER's medium (MIN and MAX refer to the smallest and the largest structure found among all measured eggs/structures; N – number of eggs/structures measured, SD – standard deviation)

Character	N	Min	Max	Mean	SD
Diameter of egg without processes	7	78.6	102.6	88.5	8.3
Diameter of egg with processes	7	140.8	174.0	156.8	11.5
Processes height	21	31.5	44.5	37.9	3.7
Processes base width	21	23.9	30.0	26.5	1.5
Process base/height ratio	21	0.56	0.88	0.71	0.08
Distance between processes	12	2.1	6.0	3.7	1.5
Number of processes on the egg circumference	7	8	8	8.0	0.0

Macrobiotus kazmierskii sp. n.

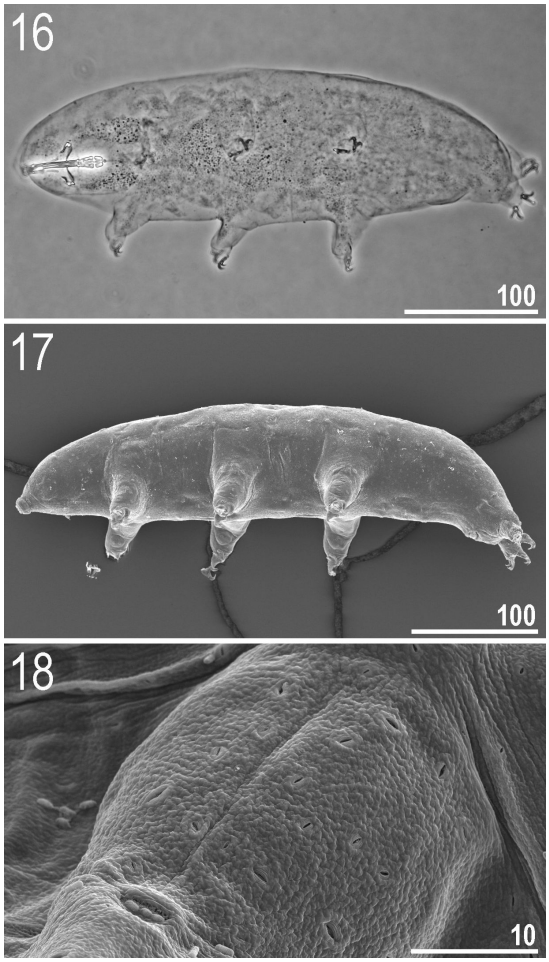
(Figs 16-31)

M a t e r i a l e x a m i n e d. Holotype and 39 paratypes (26 adults and 20 eggs) (slides No. 1469/1, 1469/2, 1469/3) were extracted from a moss sample collected from rocks in a *Nothofagus* forest, W 71°49.908′, S 41°11.551′, 1100 m asl in Ventisquero Negro, Nahuel Huepi National Park, Rio Negro Province, Argentina, South America, 27.01.2006.

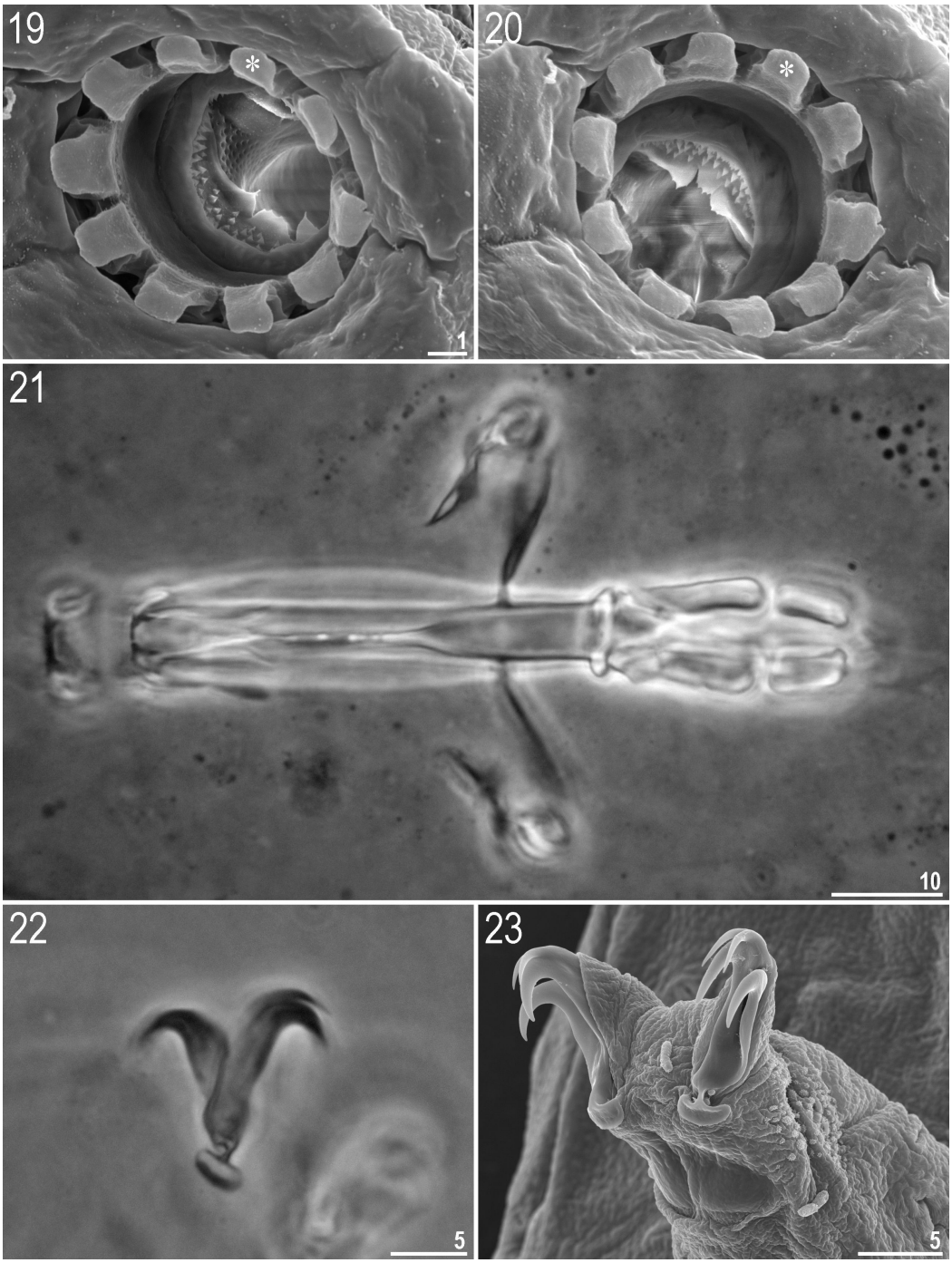
Holotype and 39 paratypes (26 adults and 13 eggs) are preserved at the Department of Animal Taxonomy and Ecology, A. MICKIEWICZ University, Poznań.

D e s c r i p t i o n. A d u l t (h o l o t y p e): Body length 363.7 (Figs 16-17). Body transparent/white, eyes present. Cuticle smooth, with pores (*ca*. 1.0 in diameter, Fig. 18). Fine, regular granulation present on legs I-IV.

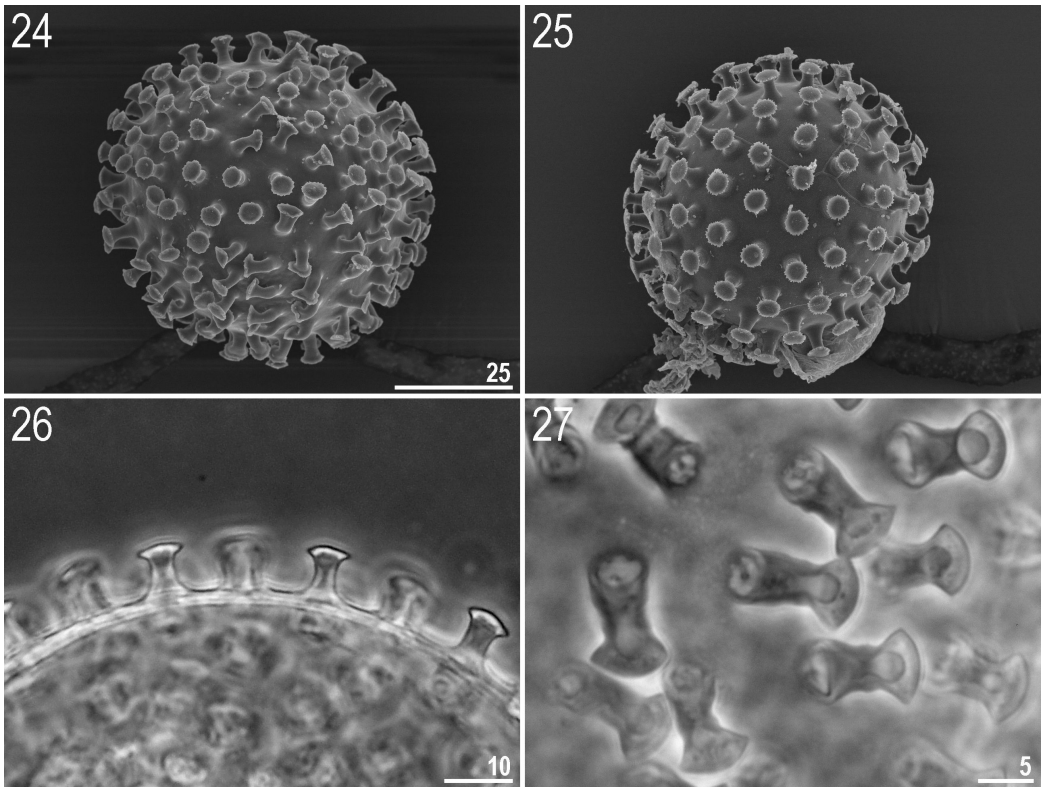
Bucco-pharyngeal apparatus of the *Macrobiotus*-type (Figs 19-21). Mouth antero-ventral, surrounded by a ring of 10 peribuccal lamellae. Oral cavity armature of the *hufelandi*-type with three bands of teeth (Figs 19-20). Teeth of the first band are smaller than those of other two bands and are in the shape of granules (PCM)/cones (SEM). The first band of teeth is present in the anterior portion of the oral cavity just behind, and sometimes on the bases of the peribuccal lamellae. This band, usually consisting of 3-4 irregular rows of teeth, is continuous and appears the same on all oral cavity walls, but is not always clearly visible in PCM. Teeth of the second band are intermediate in size between those of the first and the third band of teeth. They are also in the shape of granules (PCM)/cones (SEM) and are positioned in the rear of oral cavity behind ring fold and just in front of third band of teeth. The second band of teeth is also continuous, though wider (with 3-5 irregular rows of teeth) on both ventral and dorsal walls of the oral cavity and with usually only one row on lateral walls. These teeth are also more variable in size and shape than those of the first band. Teeth of the third band are larger than those of other two bands and are in the shape of transverse



Figs 16-18. *Macrobiotus kazmierskii* sp. n. – 16-17 – habitus (ventro-lateral view, 16 – holotype, 17 – paratype); 18 – ventral pores. (16: PCM, 17-18: SEM).



Figs 19-23. *Macrobiotus kazmierskii* sp. n. – 19-20 – oral cavity armature (paratype): 19 – ventral teeth, 20 – dorsal teeth (asterisk indicates the most dorsal lamella); 21 – buccal apparatus (ventral view, paratype); 22-23 – claws III (paratypes). (19-20, 23: SEM, 21-22: PCM).



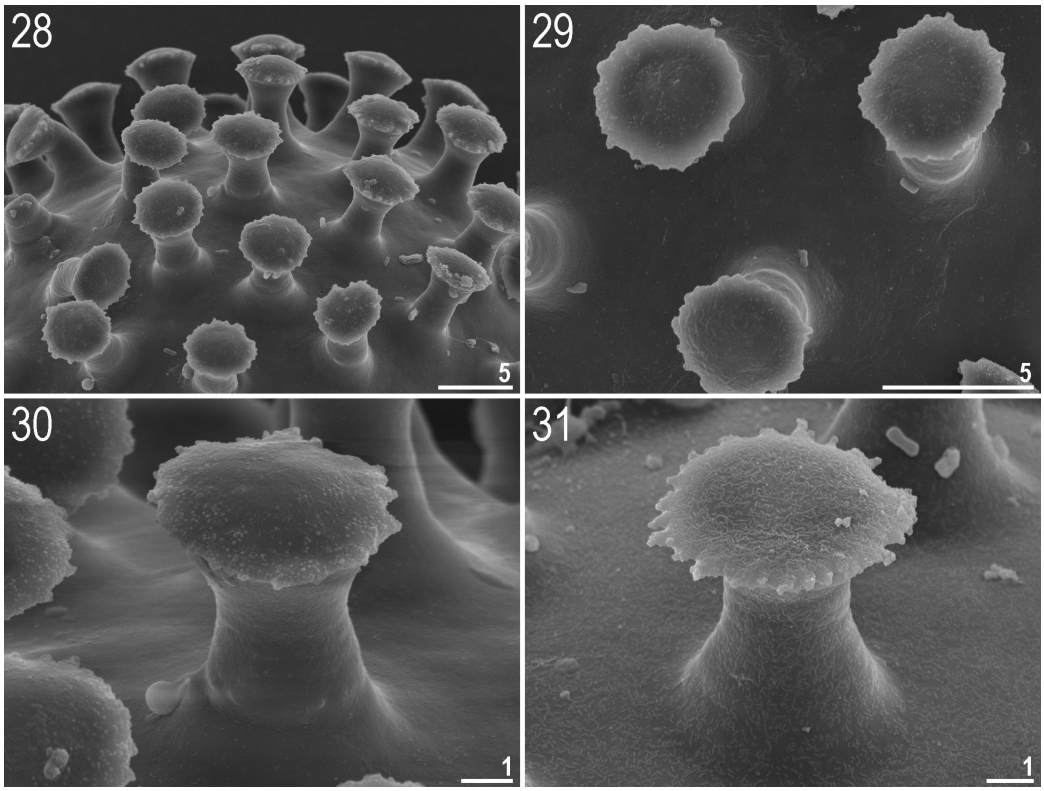
Figs 24-27. *Macrobiotus kazmierskii* sp. n. – 24-25 – eggs; 26 – egg circumference (midsection); 27 – egg surface. (24-25: SEM, 26-27: PCM).

ridges/baffles (PCM). The third band of teeth lies to the rear of the oral cavity, behind the second band of teeth and just in front of the buccal tube opening. This band is divided into two series: ventral and dorsal (with three teeth in each series). Both series consist of one median and two lateral teeth. Dorsal teeth are thinner and longer than ventral ones (PCM). The medio-ventral tooth is usually very short, and it may also be broken into two (rarely more) smaller teeth, thus there may be up to seven (occasionally more) teeth in this band (PCM).

Buccal tube 36.5 long and 4.5 [*12.3*] (external), 2.1 [*5.8*] (internal) wide with one bend in anterior part of tube (visible in lateral view). Ventral lamina 24.2 [*66.3*] long. Stylet supports inserted on buccal tube at 27.9 [*76.4*]. Pharyngeal bulb slightly oval with apophyses, two macroplacoids and microplacoid (Fig. 21). Pharyngeal apophyses distinct, rounded and forked posteriorly. First macroplacoid thinner anteriorly and with a central constriction, 10.0 [*27.4*] long, second 6.0 [*16.4*] long without constrictions. Small, triangular microplacoid 2.0 [*5.5*] long. Macroplacoid row 16.4 [*44.9*] long. Placoid row 18.8 [*51.5*] long.

Claws of the *hufelandi*-type, stout (Figs 22-23). Primary branches with distinct accessory points. Lunules on all legs smooth. Primary branch (pb) with basal claw of I pair of legs 9.7 [*26.6*] long, secondary branch (sb) 8.3 [*22.7*] long, II pb. 10.5 [*28.8*], sb. 8.7 [*23.8*]; III pb. 10.5 [*28.8*], sb. 8.5 [*23.3*]; IV pb. 12.2 [*33.4*], sb. 10.5 [*28.8*]. Thin cuticular bars present under claws I-III. Other cuticular thickenings on legs absent.

E g g: Transparent/white, laid freely (Figs 24-31). Spherical, with smooth surface and processes in the shape of truncated cones terminated with a disc (Figs 26-31). Disc edges smooth or slightly



Figs 28-31. *Macrobiotus kazmierskii* sp. n. – 28-29 – smooth egg surface with processes; 30-31 – variability of egg process dish indentation. (SEM).

sharpened (in one egg prepared for SEM structures similar to teeth were visible, see Figs 30-31). There are 24-27 processes on the egg circumference.

D i f f e r e n t i a l d i a g n o s i s. *M. kazmierskii* sp. n. belongs to a minor subgroup of species within the *hufelandi* group that lay eggs with a smooth (*i.e.,* not reticulated) surface. Apart from the new species, the *persimilis* subgroup contains: *M. marlenae*, *M. patagonicus*, *M. persimilis* and *M. polonicus*.

The new species differs specifically from:

M. marlenae KACZMAREK & MICHALCZYK, 2004 by the presence of granulation on legs I-III, the absence of dentate lunules on legs IV, the lack of teeth on the terminal discs of egg processes, a higher number of egg processes on the egg circumference (24-27 in the new species and *ca.* 16 in *M. marlenae*), and by a slightly narrower basal diameter of egg processes (3.8-6.4 in the new species and 6.5-6.9 in *M. marlenae*) (KACZMAREK & MICHALCZYK 2004).

1. *M. patagonicus* MAUCCI, 1988 by the presence of the first band of teeth in the oral cavity armature, the presence of a constriction in the first macroplacoid, and by the lack of teeth on the terminal discs of egg processes (MAUCCI 1988).

2. *M. persimilis* BINDA & PILATO, 1972 by the absence of dentate lunules on claws IV, a narrower buccal tube (in specimens about 400 long, the new species 5.6, and *M. persimilis* 7.9), and by the presence of granulation on legs (BINDA & PILATO 1972).

Table III

Measurements [in μm] of selected morphological structures of specimens of *Macrobiotus kazmierskii* sp. n. mounted in HOYER's medium (RANGE refers to the smallest and the largest structure found among all measured specimens; N – number of specimens/structures measured, SD – standard deviation)

Character	N	Range		Mean		SD	
		μm	*pt*	μm	pt	μm	*pt*
Body	9	225.0-604.9	*679.8*-1134.9	418.3	*970.2*	116.6	131.4
Buccal tube	10	31.6-53.3	–	42.9	–	7.2	–
Stylet support insertion point	10	24.1-42.0	*75.8*-79.3	33.4	*77.7*	6.0	1.2
Buccal tube external width	10	4.0-7.0	*12.1*-14.7	5.7	*13.3*	1.2	0.9
Buccal tube internal width	10	2.0-4.6	*5.8-10.0*	3.1	*7.2*	0.9	1.2
Ventral lamina	9	19.7-31.1	*58.3-66.3*	27.5	*62.4*	3.9	2.8
Macroplacoid 1	10	6.6-12.4	*20.9*-27.4	10.3	*23.8*	2.0	1.9
Macroplacoid 2	10	4.5-9.7	*13.6*-19.2	7.4	*17.1*	1.8	*1.6*
Microplacoid	10	1.9-3.8	*5.2*-7.6	2.8	*6.4*	0.7	0.8
Macroplacoid row	10	12.7-24.0	*39.6-47.5*	18.9	*43.9*	4.0	2.8
Placoid row	10	15.5-27.6	*48.6-56.1*	22.6	*52.3*	4.5	*2.5*
Claw 1 - primary branch	7	9.0-14.1	*26.6*-30.5	11.3	*28.4*	2.1	*1.4*
Claw 1 - secondary branch	7	7.5-11.5	*19.7*-25.9	9.3	*23.5*	1.7	*2.1*
Claw 2 - primary branch	8	9.2-15.7	*27.8*-33.2	12.8	*30.2*	2.4	1.7
Claw 2 - secondary branch	8	7.1-13.5	*20.7*-28.2	10.4	*24.4*	2.3	2.5
Claw 3 - primary branch	8	9.0-15.9	*26.9*-32.2	12.4	*29.3*	2.5	1.9
Claw 3 - secondary branch	8	7.0-14.3	*21.1*-30.1	10.2	*24.2*	2.7	3.1
Claw 4 - primary branch	7	9.8-18.0	*29.6*-40.8	14.5	*35.9*	3.0	3.5
Claw 4 - secondary branch	7	8.0-12.6	*24.2*-28.8	10.8	*26.9*	1.8	1.6

3. *M. polonicus* PILATO *et. al.*, 2003 by the absence of dentate lunules on legs IV, the absence of lateral gibbosities on legs IV, the presence of granulation on legs, the lack of teeth on the terminal discs of egg processes, larger eggs (85.6-102.8 (without processes)/101.9-121.7 (with processes) in the new species and 72.6-76.2/82.6-87.1 in *M. polonicus*), and by higher egg processes (6.3-10.5 in the new species and 5.1-6.1 in *M. polonicus*) (PILATO *et. al.* 2003).

R e m a r k s. Adults: Measurements and *pt* values of selected morphological structures for 10 randomly chosen specimens are given in Table III.

E g g s: Measurements for 11 eggs are provided in Table IV.

E t y m o l o g y. The species is named after Professor Andrzej KAŹMIERSKI, a distinguished Polish zoologist and a reviewer of the first author's PhD thesis.

Table IV

Measurements [in μm] of selected morphological structures of eggs of *Macrobiotus kazmierskii* sp. n. mounted in HOYER's medium (MIN and MAX refer to the smallest and the largest structure found among all measured eggs/structures; N – number of eggs/structures measured, SD – standard deviation)

Character	N	Min	Max	Mean	SD
Diameter of egg without processes	9	85.6	102.8	91.5	6.2
Diameter of egg with processes	9	101.9	121.7	109.0	6.5
Processes height	33	6.3	10.5	7.6	1.0
Processes base width	33	3.8	6.4	5.2	0.7
Process base/height ratio	33	0.5	0.9	0.7	0.1
Terminal disc width	33	4.7	8.0	6.0	0.7
Distance between processes	33	3.8	7.0	5.1	0.7
Number of processes on the egg circumference	9	24	27	25.4	1.1

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