

**FOURTEEN ROTIFER SPECIES
NEW TO THE BELGIAN FAUNA,
WITH NOMENCLATORIAL AND TAXONOMICAL REMARKS
ON SOME *SQUATINELLA* — SPECIES**

by

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SUMMARY

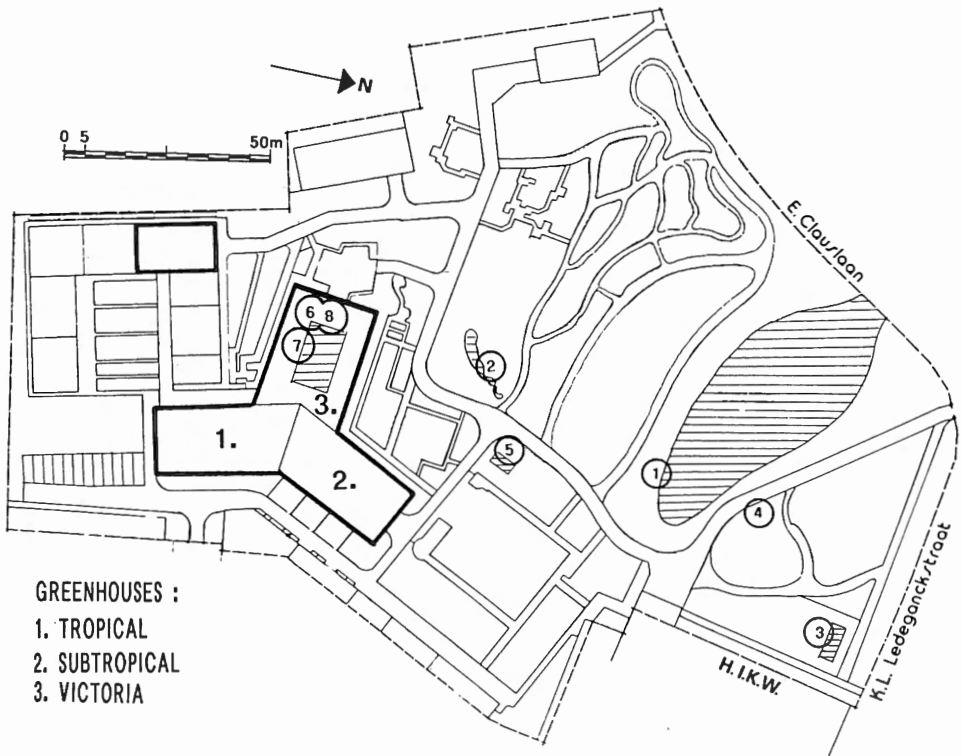
Fourty-four rotifer species, of which fourteen are new to the Belgian fauna, were obtained from samples collected in the Botanical garden of the State University of Ghent (Belgium). Admittedly, of these fourteen species, seven are thermophilous and found only in a pool in a hothouse, but the remaining seven represent still a remarkably high number of additional species to the Belgian fauna. This can only be explained by the fact that most research efforts on Rotifera in Belgium were focussing on planktonic habitats. Nomenclatorial and taxonomical remarks on some *Squatinella*- species are added.

Key-words : Rotifera, distribution, *Squatinella*.

INTRODUCTION

During an International Training Course on Lake Management, which took place from October 1990 to March 1991 at the « Laboratorium voor Ecologie der Dieren, Zoögeografie en Natuurbehoud » of the University of Ghent (Belgium), zooplankton samples from ponds in the botanical garden of the university were studied. To our surprise, a considerable number of rotifer species not found in Belgium before, were identified. In the present contribution, the complete list of species, recorded from these samples, as well as remarks on some of the taxa present, are given.

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Map 1 : The botanical garden of the University of Ghent. Sampling points indicated by numbers as in table 1.

TABLE 1

Characteristics of the ponds in the botanical garden

- point 1 : large pond, vegetation dominated by *Hyppurus vulgaris*, water temperature : 8.7 °C.
- point 2 : middle of three connected ponds, running water. Scarce submerged vegetation of filamentous algae and mosses. Water temperature : 9.4 °C.
- point 3 : Concrete cistern, some submerged mosses and *Alisma plantago-aquatica*. Water temperature : 12.2 °C.
- point 4 : Stagnant water in small pit, with *Nymphaea alba*. Water temperature : 9.8 °C.
- point 5 : Concrete cistern, vegetation of *Nuphar lutea*. Water temperature : 8.7 °C.
- points 6, 7, 8 : Large tank in hothouse. Samples 6 and 7 taken between vegetation, sample 8 : planktonic. Water temperature ranging from 23.2° to 31.0 °C.

MATERIAL AND METHODS

All the ponds studied are located in the botanical garden of Ghent university. A first series of samples was taken on 16 October 1990 in ponds 1 to 3 (see map 1). On 23 October 1990, a second series of samples was taken in these plus in five more sampling points. Three of these (6, 7 and 8) were situated in the pool of the « Victoria » hothouse. A photograph of one of the outside ponds (pond 2) was published by DUMONT (1987). Sampling was done with a hand plankton net (mesh size 50 µm). Some characters of the waters sampled are given in table 1.

RESULTS AND DISCUSSION

A list of the Monogonont rotifers found is given in table 2. In total, forty-four species were observed, of which one *Cephalodella*- species could not be identified due to its rarity (only one specimen was found).

TABLE 2

List of the Rotifera, found in ponds in the botanical garden of the University Ghent.

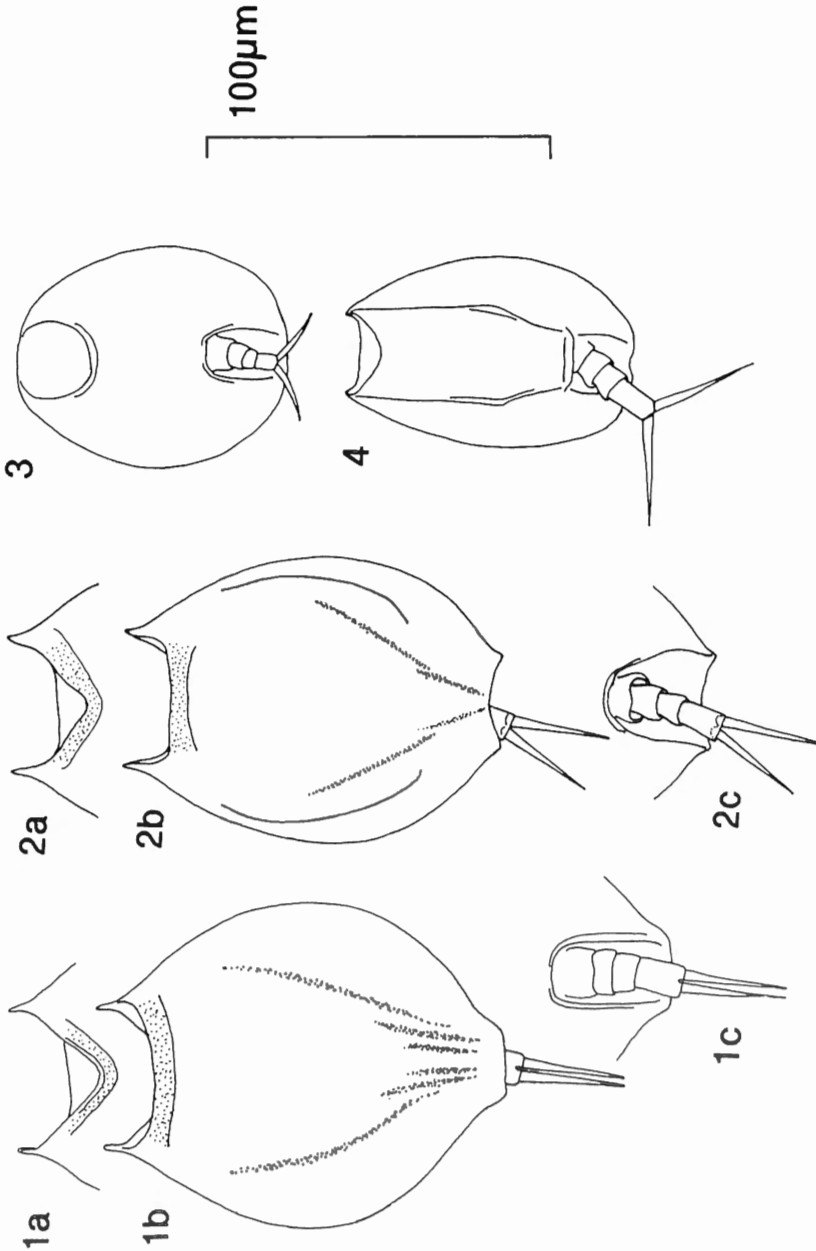
Species, marked with an asterisk are new to the Belgian fauna, crosses mark the presence of a species in the sample. Sampling was done on 16 October 1990 (pond 1 to 3) and on 23 October 1990 (1 to 8).

Pool :	1	2	3	4	5	6	7	8
Species :								
<i>Brachionus rubens</i> EHRENBERG, 1938			x					
<i>Cephalodella forficula</i> (EHRENBERG, 1932)							x	
<i>Cephalodella gibba</i> (EHRENBERG, 1932)			x					
<i>Cephalodella ventripes</i> (DIXON-NUTTALL, 1901)		x						
<i>Cephalodella</i> spec.			x					
<i>Colurella adriatica</i> EHRENBERG, 1931		x						
<i>Colurella obtusa</i> (GOSSE, 1886)							x	
<i>Colurella uncinata</i> (O.F. MÜLLER, 1773)							x	
<i>Cupelopagis vorax</i> (LEIDY, 1857)		x					x	x
<i>Euchlanis dilatata</i> EHRENBERG, 1832		x			x			
<i>Keratella cochlearis</i> (GOSSE, 1851)					x			
<i>Keratella quadrata</i> (O.F. MÜLLER, 1786)		x	x		x			
<i>Lecane</i> (M.) <i>bulli</i> (GOSSE, 1886)						x	x	
<i>Lecane</i> (M.) <i>closterocera</i> (SCHMARDA, 1859)	x	x	x		x		x	
<i>Lecane</i> (M.) <i>hamata</i> (STOKES, 1896)	x			x	x		x	

Pool :	1	2	3	4	5	6	7	8
Species :								
* <i>Lecane (M.) pyriformis</i> (DADAY, 1905)	x	x	x				x	
<i>Lecane (L.) flexilis</i> (GOSSE, 1887)	x		x			x	x	
* <i>Lecane (L.) glypta</i> (HARRING & MYERS, 1926)							x	
<i>Lecane (L.) luna</i> (O.F. MÜLLER, 1776)	x	x	x	x	x		x	
<i>Lecane (L.) lunaris</i> (EHRENBERG, 1832)			x					
* <i>Lepadella apside</i> HARRING, 1918							x	
* <i>Lepadella costata</i> WULFERT, 1940							x	
<i>Lepadella ovalis</i> (O.F. MÜLLER, 1786)	x	x			x		x	
<i>Lepadella paterlla</i> (O.F. MÜLLER, 1786)	x	x	x	x	x		x	
* <i>Lepadella quadricarinata</i> (STENROOS, 1898)								
var. <i>sexcarinata</i> KLEMENT, 1959				x				
* <i>Lepadella triba</i> MYERS, 1934							x	
* <i>Lepadella rhomboides</i> (GOSSE, 1868)	x			x			x	
<i>Limnias melicerta</i> WEISSE, 1848							x	
* <i>Lindia torulosa</i> DUJARDIN, 1841								x
* <i>Mytilina compressa</i> (GOSSE, 1851)		x						x
<i>Mytilina mucronata</i> (O.F. MÜLLER, 1773)	x	x		x				
<i>Mytilina ventralis</i> (EHRENBERG, 1832)	x	x	x				x	
* <i>Notommata glyphura</i> WULFERT, 1935		x						
<i>Platytas quadricornis</i> (EHRENBERG, 1832)	x							
* <i>Pleurotrocha petromyzon</i> EHRENBERG, 1830		x						
<i>Polyarthra vulgaris</i> CARLIN, 1943		x	x		x			
* <i>Ptygura furcillata</i> (KELLCOT, 1889)							x	
* <i>Sphyrias lofuana</i> (ROUSSELET, 1910)						x	x	x
* <i>Spuatinella lamellaris</i> (O.F. MÜLLER, 1786)								
var. <i>mutica</i> (EHRENBERG, 1832)		x					x	
var. <i>tridentata</i> (FRESENIUS, 1858)		x						
<i>Suatinella rostrum</i> (SCHMARDA, 1846)		x	x	x			x	
<i>Testudinella elliptica</i> (EHRENBERG, 1834)			x	x				
<i>Testudinella patina</i> (HERMANN, 1783)		x						
<i>Trichocerca cavia</i> (GOSSE, 1886)		x						
<i>Trichorerca rattus</i> (O.F. MÜLLER, 1776)		x	x		x		x	

Of these forty-four species, fourteen turned out to be new to the Belgian fauna. Seven of these occurred only in the hothouse. *Lepadella apside* (Fig. 3), *L. costata* (Fig. 2), *Ptygura furcillata* and *Sphyrias lophuana* have a tropical or subtropical distribution or can, at least, be called thermophilous (KOSTE, 1978; SHARMA and SHARMA, 1987). It is likely that they represent accidental introductions. They may have been imported together with exotic plant specimens. The three other species (*Lecane glypta*, *Lepadella triba* (Fig. 4) and *Lindia torulosa*), as well as seven more species which were (also) caught outdoors (*Lecane pyriformis*, *Lepadella quadricarinata* var. *sexcarinata* (Fig. 1), *L. rhomboides*, *Mytilina compressa*, *Notommata glyphura*, *Pleurotrocha petromyzon*, *Spuatinella lamellaris* in its varieties *tridentata*

(Fig. 5) and mutica (Fig. 6)) are all periphytic, living on and between submerged vegetation. Judging from the composition of a recent check-list of Belgian Rotifera (DE RIDDER, 1989), it seems that most research efforts in Belgium have been directed to planktonic habitats. It is therefore not surprising that a short but intense sampling campaign in the weedy environment of small water bodies yielded such



Figs. 1-4. *Lepadella quadricarinata* var. *sexcarinata* : Fig. 1, dorsal view (b.), ventral view of head aperture (a) and food opening (c). *L. costata* : Fig. 2, dorsal view (b.), ventral view of head aperture (a) and food opening (c). *L. apsidea* : Fig. 3, ventral view; *L. triba* : Fig. 4, ventral view.

a remarkably high number of additional species. This view is supported by the capture of a periphytic species which is normally quite common (*L. pyriformis*) and whose absence in the list of Belgian Rotifera (DE RIDDER, 1989) can only be explained by insufficient sampling. The same holds true for *Pleurotrocha petromyzon*, but this species had in fact already been mentioned by BAIVERLIN (1984, unpublished dissertation) from the river Meuse.

One more taxon mentioned here is not listed in the review of DE RIDDER (1989). This is *Cephalodella ventripes* which has recently been recorded by DE SMET *et al.* (1988) from several ponds in the vicinity of Antwerp (DE SMET *et al.* 1988, 1989a, 1989b).

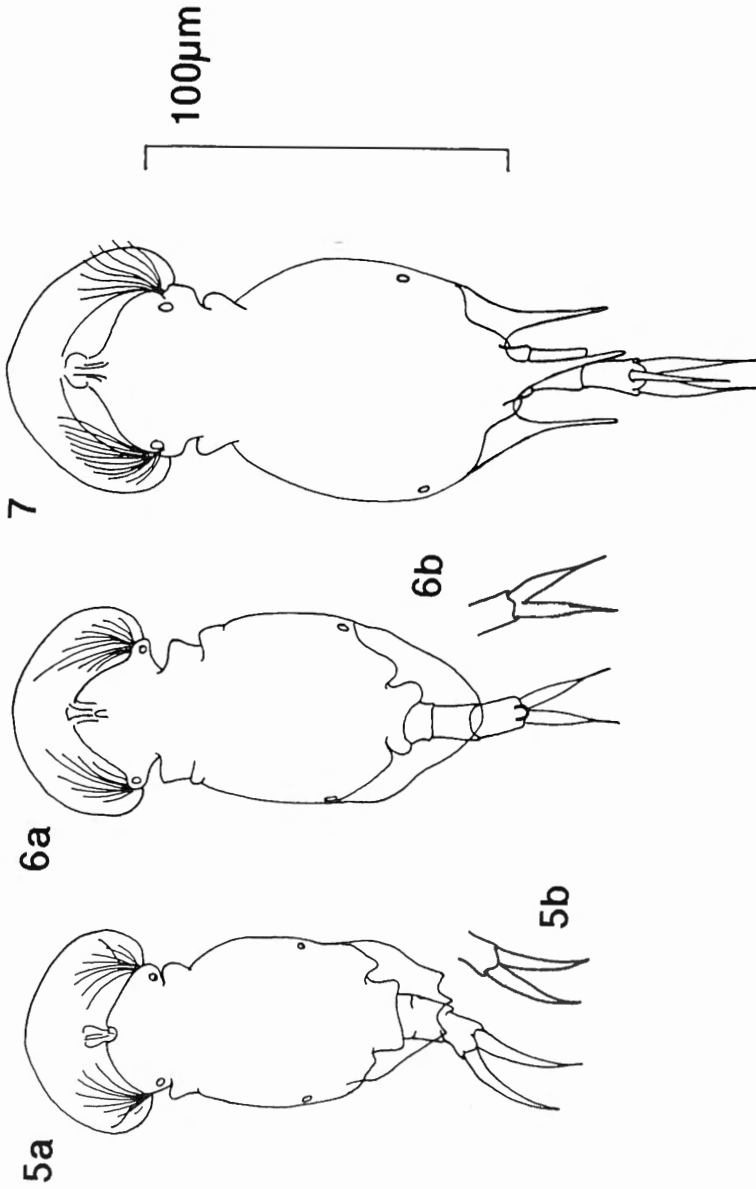
During our study, three morphologically different forms of *Squatinella* were found (Figs 5-7). They belong to a group of closely related taxa, characterised by the presence of a smooth dorsal lorica. From a taxonomical point of view, the three forms have been classified in several ways : KUTIKOVA (1970), PONTIN (1978) and BRAIONI and GELMINI (1983) believe that they represent different species, while PEJLER (1962) opines that all are synonyms.

A majority of authors, including VOIGT (1957) and KOSTE (1978, 1988) distinguish only two species, diagnosed by the presence or absence of a dorsal spine on the third foot segment (compare Figs 5, 6 with Fig. 7). The additional diagnostic characteristic used by KUTIKOVA (1970), PONTIN (1978) and BRAIONI and GELMINI (1983) is the presence (Fig. 5) or absence (Fig. 6) of three caudal extensions of the dorsal lorica. The diagnostic value of this characteristic is, however, low : a large number of intermediate forms have been recorded (CARLIN, 1939 ; KOSTE, 1978). It is therefore not maintained as a diagnostic characteristic for specific diagnosis.

PEJLER (1962) also rejects the validity of the first diagnostic characteristic, based on his observation of a specimen that seemed to be intermediate, and on WULFERT's description of *S. aurita*, in which a « spine » (dixit PEJLER, « Fortsatz » (= extension) by WULFERT, 1950) over the basis of the toes is reported to be occasionally present. The structure of the joint between the last foot segment and the toes (Figs 5-7) reveals that such an extension can indeed be present or absent, but its presence seems to result from a more pronounced retraction of the toes into the last foot segment and does therefore not represent intermediates between forms with or without a spine. PEJLER's (1962) observation must probably be interpreted in the same way.

As a result, only two taxa of specific rank are here recognised (apart from the insufficiently described *S. cirrata* (MÜLLER, 1773) : see KOSTE, 1978). In KOSTE (1978, 1988) the species provided with a spine is called *S. rostrum* (SCHMARDA, 1846) with as synonyms *S. lamellaris* (MÜLLER, 1786) (!) and *S. aurita* WULFERT, 1950. Evidently, this is erroneous as the name *S. lamellaris* is the senior synonym.

On the original figure of *S. lamellaris* by MÜLLER (1786, reproduced in VOIGT, 1957), no spine on the third foot segment is shown. Recognising this, CARLIN-NILSSON (1934) used the name to denote the taxon deprived of a dorsal spine on the third foot segment. HAUER (1936), however, argued that it is possible that MÜLLER had overlooked this spine in his description, because of an observation by



Figs. 5-7. *Squatineilla lamellaris* var. *tridentata* : Fig. 5, dorsal view (a), ventral view of foot and toes (b). *S. lamellaris* var. *mutica* : Fig. 6, dorsal view (a), ventral view of foot and toes; *S. rostrum* : Fig. 7, dorsal view.

EHRENBERG (1838, in HAUER, 1936) who mentions but does not depict « eine Borste...dicht über den Fuszfingern » in his redescription of *S. lamellaris*. HAUER'S (1936) assumption can not be verified, but it has served as a basis for the synonymisation of *S. lamellaris* with *S. rostrum* by CARLIN (1939).

The alternative hypothesis that EHRENBERG's (1838) and MÜLLER's (1786) specimens, identified by these two authors as *S. lamellaris*, were not conspecific, is based on the observations provided by both authors and is favored by us. CARLIN's (1939) synonymisation of *S. lamellaris* with *S. rostrum*, based on EHRENBERG's observations, is therefore rejected. The synonymy of *S. aurita* with *S. rostrum* by KOSTE (1978) is also considered erroneous (see discussion above).

We conclude that the names *S. rostrum* and *S. lamellaris* (new synonymy : *S. aurita*), until proof of the contrary, are the valid names for the species with and without a spine on the last foot segment, respectively. In the highly variable species *S. lamellaris*, specimens with a differently formed caudal edge of the dorsal lorica occur. The nominate form has strongly developed caudal extensions of the dorsal lorica (as depicted by BRAIONI and GELMINI (1983) and WULFERT (1956)), but these extensions can be weakly developed (corresponding with *S. tridentata* FRESENIUS, 1858 : Fig. 5 ; in the combination *S. lamellaris* var. *tridentata*), or be absent (corresponding with *S. mutica* EHRENBERG, 1832 : Fig. 6 ; in the combination *S. lamellaris* var. *mutica*).

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