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THE GENUS *KERATELLA* BORY DE ST. VINCENT, 1822 (ROTIFERA) IN UZBEKISTAN (CENTRAL ASIA)

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РОД *KERATELLA* BORY DE ST. VINCENT, 1822 (ROTIFERA) В УЗБЕКИСТАНЕ (ЦЕНТРАЛЬНАЯ АЗИЯ)

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Abstract

Five species of the genus *Keratella* have been recorded in Uzbekistan: *K. cochlearis*, *K. procurva*, *K. tropica*, *K. valga*, *K. quadrata*. Data on morphology and distribution of the species are given. A key to species is proposed.

Аннотация

Пять видов рода *Keratella* отмечены в водоемах Узбекистана: *K. cochlearis*, *K. procurva*, *K. tropica*, *K. valga*, *K. quadrata*. Приведены сведения об их строении и распространении. Предложен ключ для определения этих видов.

Keywords: Rotifera, *Keratella*, morphology, distribution, key to species, Uzbekistan.

Ключевые слова: коловратки, *Keratella*, строение, распространение, определительный ключ, Узбекистан.

Introduction

Keratella is a common and ubiquitous genus *Keratella*. According to Segers and De Smet [10] there are 53 known taxa in the genus *Keratella*. However, real number may be significantly more, because recent molecular studies show that many (probably most or even all) species of Rotifera are in fact cryptic species complexes (i.e. distinct species that are morphologically difficult to distinguish). It was shown for *Brachionus calyciflorus* [4], *Brachionus plicatilis* [7], *Keratella cochlearis* [1] and many other rotifers. It is highly likely that such cryptic diversity is far more common than thought in rotifers [10].

In her monography on Rotifera Monogononta of the USSR L.A. Kutikova [6] listed three species of the genus *Keratella* in Central Asia: *K. cochlearis* (Gosse, 1851), *K. tropica* (Apstein, 1907), *K. paludosa* (Lucks, 1912). In this paper we present data on morphology and distribution of the species recorded in Uzbekistan and propose key for their determination (table 1).

Material and methods

Material was collected using conical planktonic net from all regions of Uzbekistan and all types of waterbodies (lakes, reservoirs, ponds, rice fields, pools etc.) during 1980-2018. Also zooplankton collections of the National University of Uzbekistan, the Bukhara

State University, the Fergana State University, and the the Karakalpak Research Institute of Natural Sciences (Nukus) have been studied.

All drawings have been made by using a drawing tube.

Results

Five species of the genus *Keratella* have been recorded in Uzbekistan: *K. cochlearis* (Gosse, 1851), *K. procurva* (Thorpe, 1881), *K. tropica* (Apstein, 1907), *K. valga* (Ehrenberg, 1834), *K. quadrata* (O.F. Müller, 1786).

Keratella cochlearis (Gosse, 1851)

(Fig. 1 a, b)

Morphology. The lorica is similar to a spoon, with a convex dorsal and almost flat ventral side. From the anterior facet of the dorsal plate goes back the middle crest. Facets are covered with mesh or dots. In Uzbekistan 2 forms: *K. cochlearis cochlearis* (Gosse, 1851) and *K. cochlearis tecta* (Gosse, 1851) (without posterior spine). Length of lorica 100-150 μm .

Distribution. Cosmopolitan species [10] inhabiting in Uzbekistan different waterbodies (ponds, lakes, reservoirs, ricefields).

Keratella procurva (Thorpe, 1881)

(Fig. 1 c, d)

Morphology. Morphology is typical for *Keratella procurva procurva* (Thorpe, 1881). The anterior margin of the lorica with 6 spines, of which 2 are two central longer lateral and intermediate, and bent on the abdominal side. The dorsal side of the lorica with a longitudinal row of 4 median facets, the last of which is pentagonal in shape and ends with a middle rib. Facets are covered with dots like the front third of the ventral surface of the lorica. The posterior margin of the lorica bears 2 lateral spines. The left spine in Bukhara population may be significantly shorter than the right or completely absent. Length of lorica (L) = 80-110 μm . Width of anterior margin of lorica 0.80-0.90 times as long as maximal width (W) of lorica ($x = 0.85$). $L / W = 1.35-1.60$ ($x = 1.45$). Length of right posterior spine 0.22-0.43 ($x = 0.29$) times as long as lorica.

Unlike the original description, the individuals from Uzbekistan were not really "procurva" i.e. their lorica's ventral side was so heavy concave.

Distribution. Tropicopolitan species [10] reported from Australia [5], Spain [2], South America, India [11], Malaysia [3], etc. In Uzbekistan this species was recorded in fishponds of Kashkadarya and Bukhara Provinces [8]. It is apparently the northernmost records of *K. procurva*.

Keratella valga (Ehrenberg, 1834)

(Fig. 1 e)

Morphology. Lorica quadrangular, on the sides usually swollen. Задний край панциря с 2 неравными шипами – левый шип короче правого, иногда отсутствует, реже шипов нет вообще. The posterior margin of the lorica with 2 unequal spines – the left spine is shorter than the right, sometimes absent, rarely spines absent at all. Length of lorica 180-210 μm .

Distribution. Cosmopolitan species [10], more usual in small waterbodies (ponds, small lakes) in northern region of Uzbekistan (Karakalpakstan).

Keratella tropica (Apstein, 1907)

(Fig. 1 f)

Morphology. The lorica is elongated, at the back narrowed, ahead extended. A dorsal plate with a longitudinal row of 5 median facets. The posterior edge facet is small and almost rectangular. Posterior with 2 lateral uneven length spines or only with 1 right spine. Length of lorica 180-220 μm .

Distribution. Cosmopolitan warm-water species [10], more usual in small waterbodies in southern and central provinces of Uzbekistan.

Keratella quadrata (O.F. Müller, 1786)

(Fig. 1 g)

Morphology. Lorica almost quadrangular, from the sides usually flat, less often slightly swollen. The posterior margin with 2 usually quite long and diverging to the sides spines. The spines are usually of equal length. Length of lorica 280-320 μm .

Distribution. Cosmopolitan cold water species [10]. In Uzbekistan in ponds and lakes, freshwater and brackish, usually at cold time.

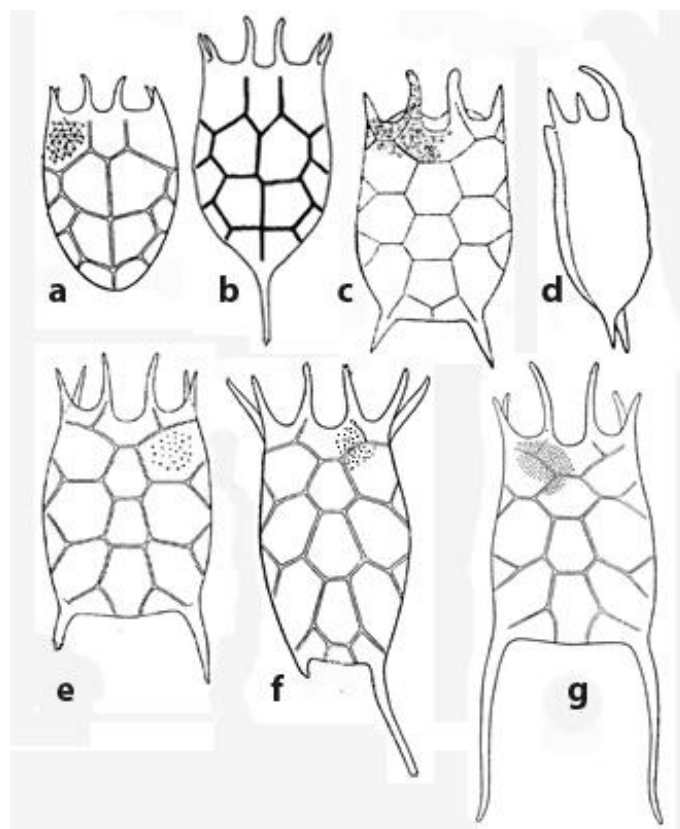


Fig. 1. *Keratella* spp. from Uzbekistan. a, b: *K. cochlearis*; c, d: *K. procurva*; e: *K. valga*; f: *K. tropica*; g: *K. quadrata*

Table 1.

Table for determination of species of the genus *Keratella* of the fauna of Uzbekistan

	Characters	Species
1	Dorsal plate of lorica with 2 central medial facets divided by medial ridge; posterior margin of lorica with 1 medial spine or without it	<i>K. cochlearis</i>
–	Central medial facets of dorsal plate of lorica are not divided by medial ridge; posterior margin of lorica with 1-2 lateral spines	2
2	Posterior margin of lorica with 2 medial facets divided by longitudinal medial ridge	<i>K. procurva</i>
	Posterior margin of lorica with 1 medial facet limited by 2 lateral ridges	3
3	Dorsal plate of lorica with medial row of 4 hexagonal facets; posterior edge of lorica with 1-2 usually the same length spines	4
–	Dorsal plate of lorica with medial row of 5 facets; last facet small, quadrangular; posterior margin of lorica with 1-2 unequal length spines	<i>K. tropica</i>
4	Lorica almost square; its lateral sides usually even	<i>K. quadrata</i>
–	Lorica elongated-rectangular, its lateral sides usually swollen	<i>K. valga</i>

Conclusion

Five species of the genus *Keratella* have been observed in the fauna of Uzbekistan. However, the use of more thorough morphological (primarily ultrastructural) and especially molecular methods can reveal greater diversity.

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