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SECOND RECORD OF *ACANTHOCYCLOPS BIARTICULATUS* MONCHENKO, 1972 AND FIRST DESCRIPTION OF ITS MALE (CRUSTACEA: COPEPODA)

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Key words: Copepoda, *Acanthocyclops*, groundwater fauna, Kazakstan

ABSTRACT

Acanthocyclops biarticulatus, previously known from one female only from groundwater of Uzbekistan, is recorded from a well in southern Kazakstan. Data on morphology and variability of males and females are presented.

INTRODUCTION

The groundwater fauna of Central Asia is studied very poorly. The only work devoted to the groundwater Cyclopoida of this region is a paper by V.I. Monchenko (1972). He described a new species, *Acanthocyclops biarticulatus* on the basis of one female only found in groundwater of the Samarkand region of Uzbekistan.

This study provides additional data on the morphology and variability of the females. For the first time data on males of *A. biarticulatus* are presented, collected in southern Kazakstan.

MATERIAL

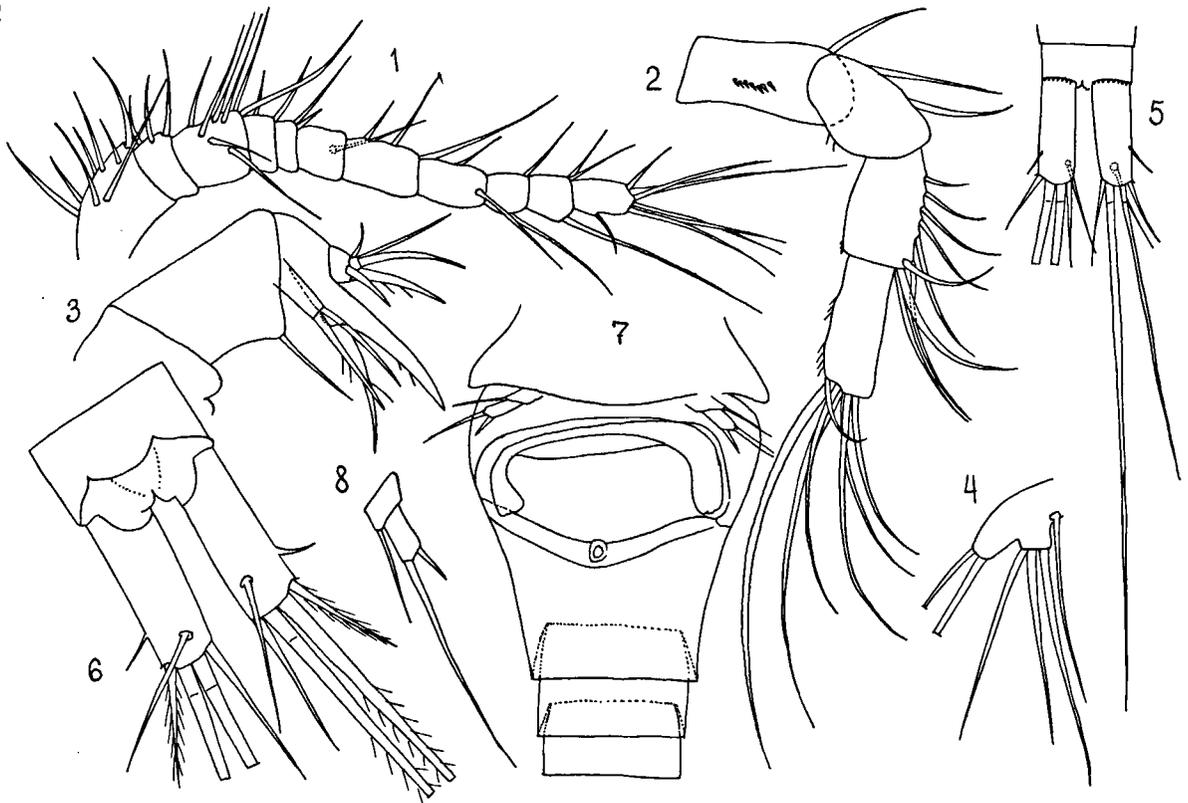
Ten females and ten males were collected in a well near the town of Turkestan (South-Kazakhstan region) on 10 June 1995. Depth of the well was 8 m. The sample was collected from the water surface of the well, which was 3 m lower than ground-level. The material (in tube no. Crust/Kz-42) is preserved in 4% formaldehyde at the Institute of Zoology (Tashkent).

One female and one male are deposited in the Zoologisch Museum, Amsterdam.

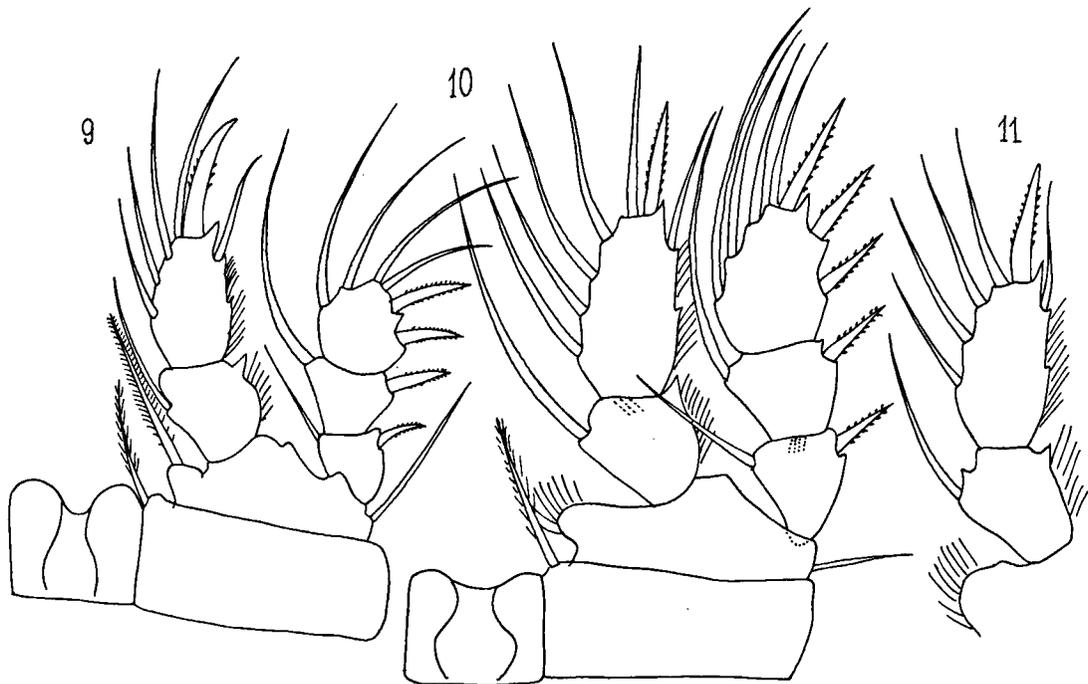
All drawings have been made using a camera lucida.

Acanthocyclops biarticulatus Monchenko, 1972 (Figs. 1-17)

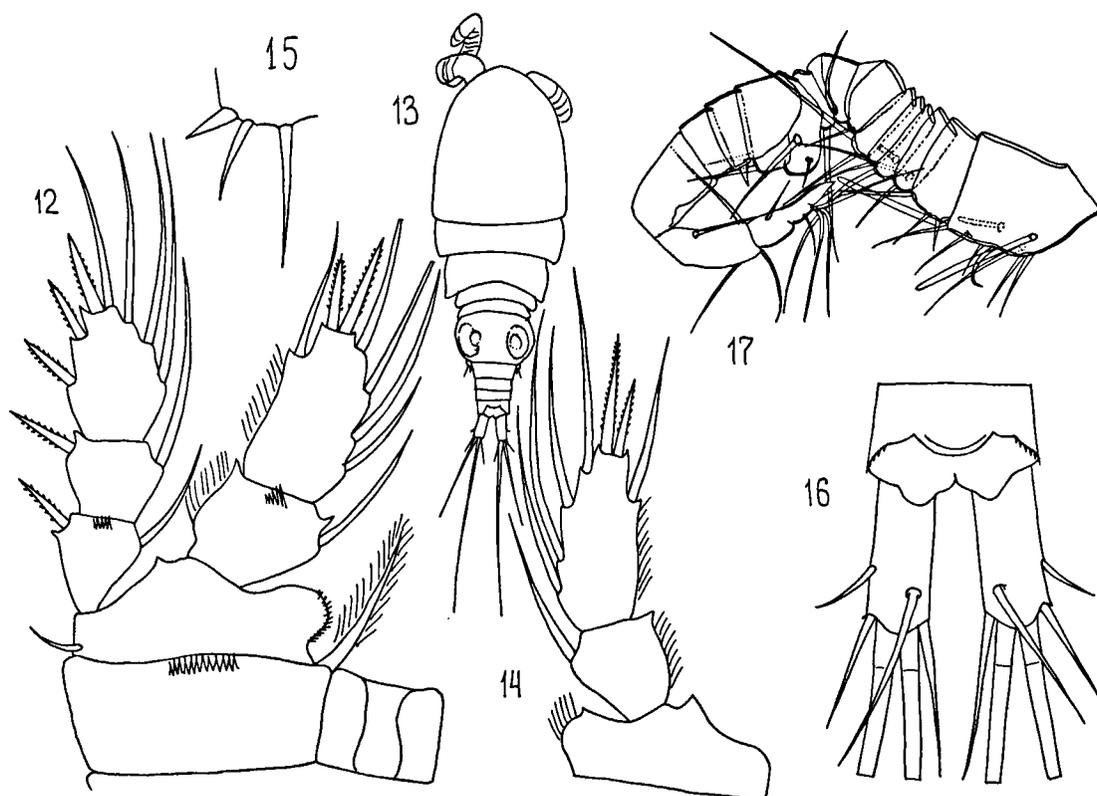
Description of females. Body length 600-685 µm. Antennule of 11 articles (Fig. 1). Third article of antenna with 9 setae (Fig. 2). First article of antenna with only 2 setae (Fig. 2). Maxilliped and maxillular palp as figured (Figs. 3-4). Posterior ventral margin of last abdominal somite with many spinules (Fig. 5). Lateral sides of last thoracal somite devoid of setules (Fig. 6). Furcal rami slightly diverged (Fig. 7). Exopods of P1-P4 of 3 articles, endopods of 2 articles (Figs. 9-12). External margin of second articles of endopods P1-P4 with a notch in the middle part. Distal articles of endopods P1, P2, and P4 with 5 setae, those of P3 with 6 setae (Figs. 9-12). Inner margin of basis of P1 with long spine and devoid of setules (Fig. 9). Inner margin of basipodite P2-P4 with setules (Figs. 10-12). Setules on basipodite P4 significantly shorter than those of basipodites of P2 and P3. Free margin of P4 coupler even (Fig. 12). Couplers of P1-P4 devoid of ornament. P5 consisting of two free articles, article 1 with outer expansion bearing single seta, article 2 bearing inner subterminal spine slightly shorter than length of article, and long outer terminal seta (Fig. 8).



Figs. 1-8. *Acanthocyclops biarticulatus* Monchenko, female: 1- antennule; 2- antenna; 3- maxillipede; 4- maxillular palp; 5- furca, ventral side; 6- furca, dorsal side (designations of setae correspond to those given in Table I); 7- last thoracic somite and abdominal somites; 8- P5.



Figs. 9-11. *Acanthocyclops biarticulatus* Monchenko, female: 9- P1; 10- P3; 11- basipodite and endopod P2.



Figs. 12-17. *Acanthocyclops biarticulatus* Monchenko: 12- P4 of female; 13- male, general view; 14- male basipodite and endopode P4; 15- male P6; 16- male furca, dorsal side; 17- male A1.

Description of males. Body length 500-585 μm . The morphology of the males is in general the same as the morphology of the females, except in the normal sexual dimorphism (Fig. 13). However, furcal rami of males are shorter, and inner apical furcal seta and setules on inner margin of basipodite P4 of males are longer than those of females (Table I). Third article of antenna bears 8 setae, whereas third article of antenna of females bears 9 setae. Setules on inner edge of basipodite P4 of male are longer than these of female (Fig. 14). P6 as in Fig. 15. Posterior margin of anal somite bears spinules on ventral as well as on dorsal side (Fig. 16). Antennule as in Fig. 17. The biometrical data are given in Table I.

DISCUSSION

The morphology of *Acanthocyclops biarticulatus* from Kazakhstan readily corresponds to the description given by Monchenko (1972). The specimens from Kazakhstan, however, differ in the following characters: slightly longer inner apical furcal setae, longer furcal rami, and longer subapical spine of P5.

This is the second record of this poorly known species. The new locality in Kazakhstan is situated at about 400 km north of the type locality in Uzbekistan.

A. biarticulatus is the second representative of the genus *Acanthocyclops* Kiefer, 1927 reported from Kazakhstan. *Acanthocyclops vernalis* (Fischer, 1853) was previously recorded in this region by Dobrokhotova (1975).

The morphology of P5 of *A. biarticulatus* corresponds to the genus *Acanthocyclops* as well as to the genus *Diacyclops*, resulting in difficulties in separating these genera.

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Table I. Measurements of *Acanthocyclops biarticulatus*
Letter designations of furcal setae as given in Fig. 6.
Data in parentheses taken from drawings of Monchenko (1972).

	Kazakstan				Uzbekistan (Monchenko, 1972)
	Female n=10 min-max	x	Male n=7 min-max	x	Female n=1
Body length (μm)	600-685	637	500-585	543	600
Furca L: W	2.57-3.33	2.95	2.42-2.83	2.59	2.20
Seta a: L furca	0.78-1.05	0.93	1.00-1.17	1.09	(0.56)
Seta a: seta b	0.16-0.19	0.17	0.18-0.20	0.19	
Seta a: seta c	0.28-0.36	0.31	0.34-0.39	0.36	
Seta a: seta d	1.20-1.43	1.31	1.33-1.50	1.41	(1.15)
Seta a: seta e	0.90-1.05	0.99	1.00-1.07	1.03	(0.50)
2EnpP4:					
Length: width	1.74-2.00	1.89	2.00-2.18	2.04	(1.89)
Inter. spine: length of art.	0.56-0.65	0.62	0.60-0.70	0.64	0.68-0.76
Inter. spine: exter. spine	1.29-1.57	1.40	1.29-1.47	1.39	1.33

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