

## THERMOCYCLOPS OUADANEI N. SP. (CRUSTACEA: COPEPODA) FROM MAURETANIA (NORTH-WEST AFRICA)\*\_

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### Abstract

*Thermocyclops ouadanei* n. sp. from Mauretania is described and figured. This new species is characterized by the structure of the receptaculum seminis, the uniting lamella of the P<sub>4</sub> which bears no marginal denticles on the rounded prominences, the length of the apical spines on the endopodite 3 of the P<sub>4</sub> and by the length of the furcal setae. Its relationship with other *Thermocyclops* species is discussed.

### Introduction

During an expedition of the University of Gent, under the leadership of Dr. H. J. Dumont, plankton samples were collected in Mauretania. In one of the localities, Ouadane, 5 specimens of the present species were found in a series of waterpits (collecting date 4-2-1976). Ouadane is situated north-east of the Adrar mountains (20° 58'N-11° 40'W).

*Thermocyclops ouadanei* was found in association with the cyclopid *Cryptocyclops linjanticus* Kiefer and the cladocerans *Ceriodaphnia cornuta* Sars, *Alona pulchella* King, *Biapertura karua* (King) and *Dunhevedia crassa* King.

*T. ouadanei* is named after the locality from where it was obtained.

### Material

Holotype: female without egg-sacs, labeled *Thermocyclops ouadanei* n. sp., holotype.

Allotype: male, labeled *Thermocyclops ouadanei* n. sp., allotype.

Paratype material: one adult male and two male copepodids.

All specimens are deposited at the Instituut voor Dierkunde, Rijksuniversiteit Gent, Belgium.

### Description

Female (Measurements: Table 1)

Total length excluding the furcal setae: 904  $\mu$ m.

The antennules consist of 17 segments, reaching the middle of the first thoracic segment.

Furca: the furcal rami are slightly divergent, they are relatively long and narrow distally, 4.4 times as long as wide (width measured at the insertion of the lateral seta).

Furcal setae: the dorsal seta is shorter than the inner apical seta and almost as long as the outer apical seta (Fig. 1.A).

Trunk limbs: all rami are three-segmented; the spine formula of the exopodites 3 is 2 3 3 3. The setae on the endopodites 3 and the exopodites 3 reach or surpass the spines on these segments.

P<sub>1</sub>: Endopodite 3 bears a curved apical spine; the spine at the base of the endopodite is strongly developed and reaches the third segment of the endopodite (Fig. 2.A).

Table I. *Thermocyclops ouadanei* n. sp. (measurements in  $\mu\text{m}$ )

			Female (holotype)	Male (allotype)
Total length			904	835
Furca length			98	75
width			22	20
Furcal setae	length dorsal seta		65	64
	length apical setae	inner	85	73
		outer	70	55
		medial inner	415	358
		medial outer	300	243
Endopodite 3 P <sub>4</sub>	length		64	49
	width		23	17
	length apical spines	inner	44	39
		outer	52	44
Genital segment	length		126	
	width		158	

P<sub>2</sub>-P<sub>3</sub>: structure basically the same as those of other *Thermocyclops* species (Fig. 2.B-C).

P<sub>4</sub>: Endopodite 3 is 2.8 times as long as wide, bearing two apical spines: the outer one is 0.8 times as long as the segment which bears it and 1.2 times as long as the inner spine (Fig. 2.D). Uniting lamella of the P<sub>4</sub> with rounded prominences which bear no marginal denticles.

P<sub>5</sub>: structure as in other *Thermocyclops* species (Fig. 1.D).

Genital segment: shorter than wide, covered with rows of minute spinules, the following two abdominal segments are ornamented in the same way. The structure of the receptaculum seminis is shown in Fig. 1.C; distinct cuticular thickenings are present lateral to the wings of the receptaculum seminis.

Male (Measurements: Table 1).

Total length: 835  $\mu\text{m}$  (other male: 713  $\mu\text{m}$ ).

The structure of the P<sub>1</sub>-P<sub>5</sub> is as in the female, except that the setae on the endopodites 3 and the exopodites 3 are not as long as in the female but they still reach or slightly surpass the spines.

P<sub>6</sub>: bears one seta and two inner spines, the external seta being the longest, the internal spine is slightly longer than the other spine (Fig. 1.B).

Furcal setae: the dorsal seta is slightly longer than the outer apical seta but still shorter than the inner apical seta.

Furca: slightly shorter than in the female, i.e. 3.8 times as long as wide.

The first four abdominal segments, except the ventral side of the first segment, are ornamented with minute spinules as in the female.

## Diagnosis

*Thermocyclops ouadanei* is characterized by the structure of the receptaculum seminis, the uniting lamella of the P<sub>4</sub> which bears no marginal denticles on the rounded prominences, the length of the apical spines on the endopodite 3 of the P<sub>4</sub> and by the length of the furcal setae.

The ornamentation of minute spinules is not considered to be diagnostic. According to Lindberg (1942) it can occur in some specimens of several cyclopids which normally have a smooth cuticle.

## Relationships

The present species could not be identified with any of the known African *Thermocyclops* species, but its position within the genus is fairly clear.

*T. ouadanei* belongs to the *Thermocyclops* group characterized by a uniting lamella of the P<sub>4</sub> without marginal denticles on the rounded prominences. To this group belong the following African *Thermocyclops* species: *T. emini* (Mrázek), *T. incisus* (Kiefer), *T. inopinus* (Kiefer), *T. tchadensis* Dussart & Gras and *T. iwoyiensis* Onabamiro (Einsle, 1970).

In Table 2 a synopsis is given of the main differences or similarities between *T. ouadanei* and the above cited *Thermocyclops* species. The dorsal furcal seta is almost as long as the inner seta in *T. ouadanei* and *T. incisus*, as long as the inner seta in *T. tchadensis* and *T. iwoyiensis*, half as long as the inner seta in *T. inopinus* and longer than the inner seta in *T. emini*. In *T. ouadanei* the inner furcal seta is only slightly longer than the outer seta, whereas in the other *Thermocyclops* species the inner seta is always

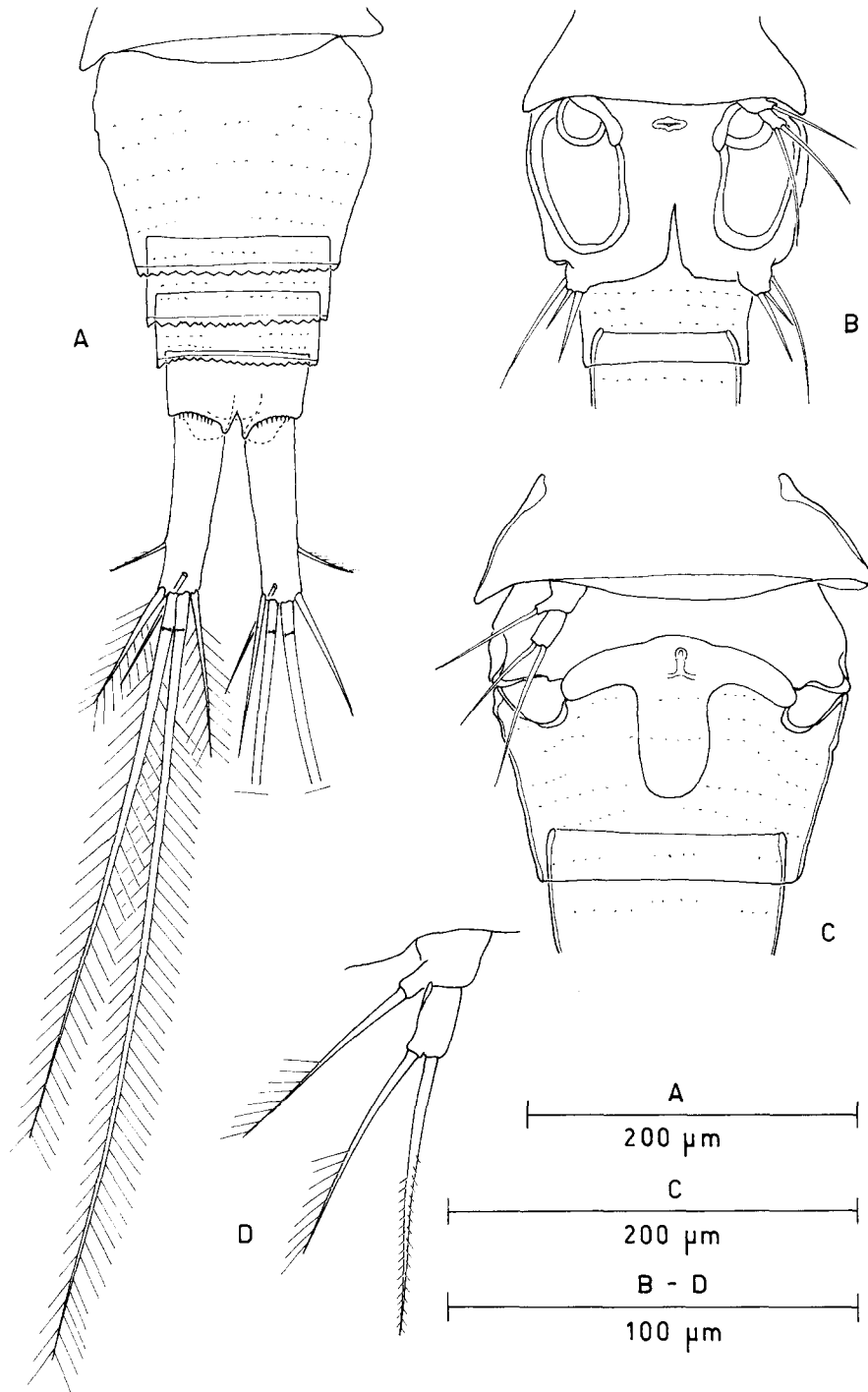


Fig. 1. *Thermocyclops ouadanei* n. sp. A. Female: abdomen and furca; B. Male: ultimate thoracic and first two abdominal segments showing structure of the P<sub>5</sub> and P<sub>6</sub>; C. Female: genital segment; D. Female: structure of the P<sub>5</sub>.

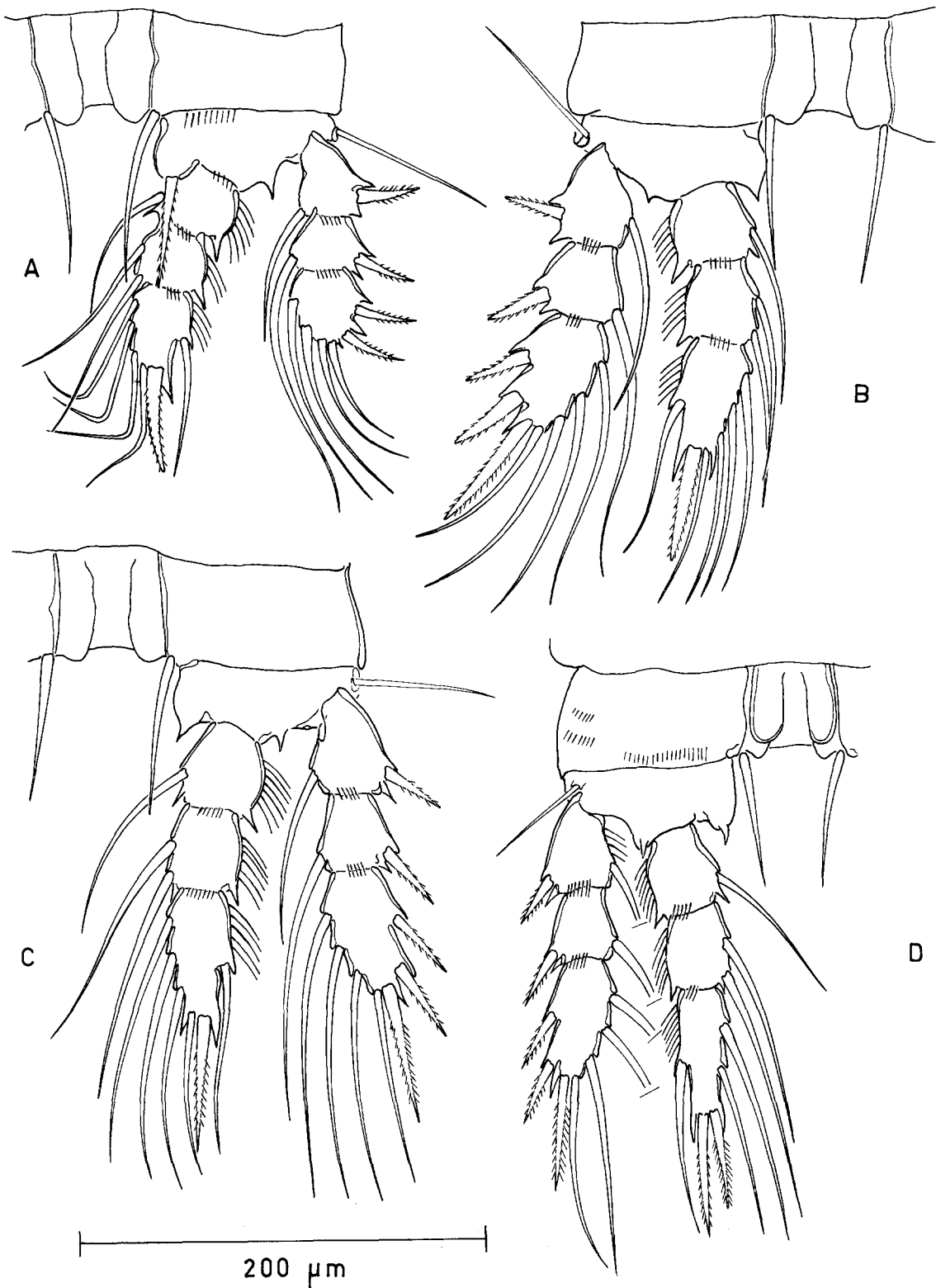


Fig. 2. *Thermocyclops ouadanei* n. sp. Female: structure of the trunk limbs A. P<sub>1</sub>; B. P<sub>2</sub>; C. P<sub>3</sub>; D. P<sub>4</sub>.

Table II.

	<i>T. ouadanei</i> present paper	<i>T. emini</i> (MRAZEK, 1895)	<i>T. inoptinus</i> (KIEFER, 1926)	<i>T. incisus</i> (KIEFER, 1932)	<i>T. tchadensis</i> DUSSART & GRAS, 1966	<i>T. iwoyiensis</i> ONABAMIRO, 1952	<i>T. brehmi</i> (KIEFER, 1927)
Uniting lamella P <sub>4</sub>	rounded pro- minences, no denticles	idem	idem	idem	idem	idem	idem
Endopodite 3 P <sub>4</sub>							
ratio length/width	2.8	3.5*	2.7	2.9	3.1 – 3.5	3.4	3.5
ratio length inner spine/outer spine	0.8	2.4*	1.9	2.5	2.2 – 2.3	2.5	1
Furca							
ratio length/width	4.4	3.4	3.8	3.2	3.3 – 3.5	3.1 – 3.9	4
Furcal setae							
ratio length dorsal seta/inner seta	0.8	1.2*	0.6*	0.8*	1 – 1.2	1	1*
ratio length inner seta/outer seta	1.2	3.2	1.7	3.3*	2.3*	2.4	3.3*
Genital segment	wider than long	longer than wide	longer than wide	longer than wide	longer than wide	longer than wide	longer than wide

\* no exact values given by the authors, data deduced from figures.

considerably longer than the outer seta. In *T. ouadanei* the inner apical spine on the endopodite 3 of the P<sub>4</sub> is slightly shorter than the outer apical spine; in the other *Thermocyclops* species the inner spine is always considerably longer than the outer spine. Furthermore, *T. ouadanei* appears to be unique in the structure of the receptaculum seminis, the length/width ratio of the genital segment and the length/width ratio of the furca.

*T. ouadanei* could not be identified with any *Thermocyclops* species known from other continents either. Following Kiefer's key (1930), we first came out at *T. brehmi*, described from Uruguay (Kiefer, 1927). However, the apical spines on the endopodite 3 of the P<sub>4</sub> are of equal length in *T. brehmi*, in contrast to *T. ouadanei* (Table 2). The length/width ratio of the furca is comparable in both species but the furcal rami are more divergent in *T. brehmi*. The length/width ratio between the dorsal furcal seta and the inner seta has nearly the same value but the inner seta is considerably longer than the outer seta in *T. brehmi*. No comparison can be made between the respective receptacula seminis; Kiefer (1927) described it as 'hammerförmig' in *T. brehmi* but he gave no figures.

## Résumé

*Thermocyclops ouadanei* n. sp., nouveau cyclopede de la Mauritanie est décrit et figuré. Les caractères principaux sont: la configuration du réceptacle séminal, la structure de la lamelle précoxale du P<sub>4</sub>, la longueur des épines apicales de l'endopodite 3 du P<sub>4</sub> et la longueur des soies furcales.

Les relations avec des autres espèces de *Thermocyclops* sont indiquées.

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