

## *Copepods of the lagune Ebrié (Côte d'Ivoire)*

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### ABSTRACT

*We report 12 species of copepods from the lagune Ebrié, bringing the total number of species known from this environment, after correction of some misidentifications in the literature, to a minimum of 30. Apocyclops panamensis is a first record for Africa. Onychocamptus chathamensis is a first record for the West-African coast.*

KEY WORDS : West Africa — Coastal lagoons — Zooplankton — Brackish water — Biogeography.

### RÉSUMÉ

#### LES COPÉPODES DE LA LAGUNE EBRIÉ (CÔTE D'IVOIRE)

*Nous rapportons 12 espèces de Copépodes de la lagune Ebrié. Après correction de quelques identifications erronées dans la littérature, le nombre total des espèces connues de la lagune atteint un minimum de 30. Apocyclops panamensis est cité pour la première fois d'Afrique, tandis que Onychocamptus chathamensis est nouveau pour la côte Ouest Africaine.*

MOTS-CLÉS : Afrique de l'Ouest — Lagunes côtières — Zooplancton — Eaux saumâtres — Biogéographie.

### 1. INTRODUCTION

The lagune Ebrié is a complex, elongate coastal environment of West-Africa (for details, see VARLET, 1978) in which freshwater from a number of rivers such as the Comoe and the Agnéby mixes with water of the Atlantic Ocean entering the lagoon via the Canal de Vridi. As a consequence, great variations in salinity occur between sites, per site between tides, and also between seasons.

Copepod collections, made by Mr. L. SAINT JEAN of ORSTOM at approximately monthly intervals in 1981 and 1982 at four different sites, and again in

February 1984 at Layo (lagoon's tributary, brackish ponds) (fig. 1), provided an opportunity to document the fauna of the lagoon. A list of all sampling sites and dates is given hereunder.

#### List of dates and stations

1. Layo, an extension of the lagoon, with man-made, fringing brackish-water ponds, used for aquaculture, 03.II.1984.
2. Bingerville, 07.III.1981, 27.VI.1981, 06.X.1981, 10.XI.1981, 25.I.1982, 10.III.1982, 10.V.1982.
3. Bietri, 22.I.1981, 06.III.1981, 25.VI.1981, 28.VII.1981, 05.X.1981, 28.I.1982, 04.III.1982, 29.IV.1982.

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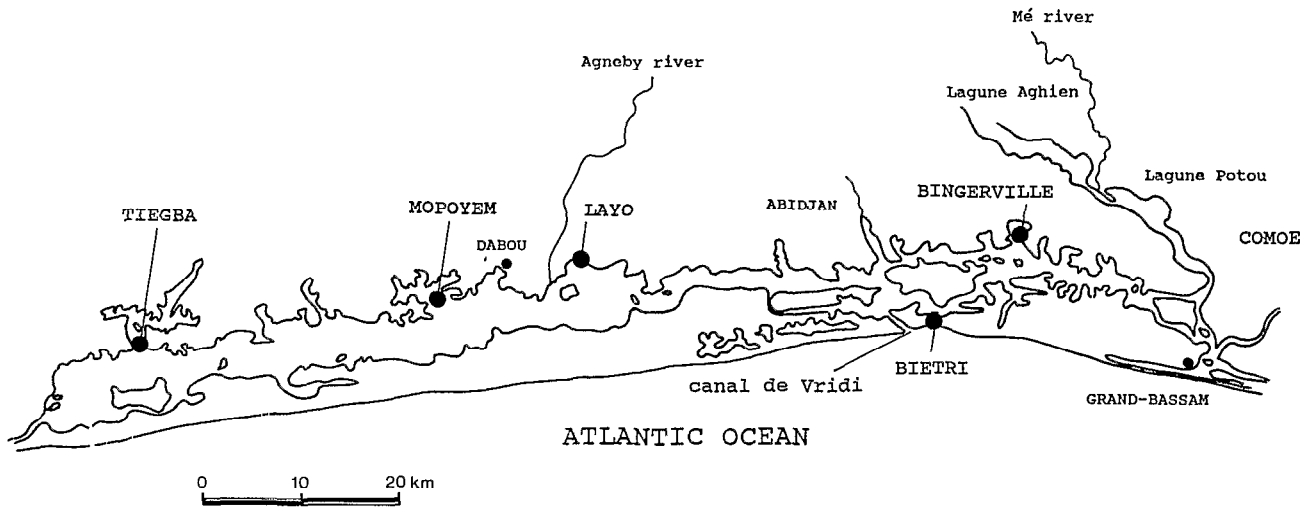


FIG. 1. — Lagune Ebrié (Ivory Coast), with sampling sites

4. Mopoyem, 29.VI.1981, 02.VIII.1981, 14.X.1981, 19.I.1982, 15.III.1982, 05.V.1982.
5. Tiegba, 04.III.1981, 28.VI.1981, 31.VII.1981, 13.X.1981, 20.I.1982, 16.III.1982, 04.V.1982.

### List of species

The numbers behind each species refer to the locality list above.

#### CYCLOPOIDS

1. *Apocyclops panamensis* (Marsh) : 1, 2, 3.
2. *Halicyclops korodiensis* Onabamiro : 2, 3, 4, 5.
3. *Mesocyclops ogunnus* Onabamiro : 1, 2, 5.
4. *Oithona brevicornis* Giesbrecht : 2, 3.
5. *Thermocyclops decipiens* (Kiefer) : 1.
6. *Tropocyclops confinis* Kiefer : 1.

#### CALANOIDS

7. *Pseudodiaptomus hessei* (Mrazek) : 2, 3, 4, 5.
8. *Acartia clausi* Giesbrecht : common in open water of the lagoon

#### HARPACTICOIDS

9. *Halectinosoma* spec. 1 : 1.
10. *Halectinosoma* spec. 2 : 3.
11. *Onychocamptus chathamensis* Sars : 1.
12. *Schizopera* spec. : 1, 3, 4.

## 2. COMMENTS ON SPECIES NOT RECORDED IN PREVIOUS PAPERS

There are two publications dealing with the Copepoda of the lagune Ebrié : LINDBERG (1957), and RAHM (1964). Both deal with collections made

by RAHM in various parts of the lagune, of which only Bingerville overlaps with the collection studied in the present paper. Further, LINDBERG only studied the cyclopoids, while RAHM also included other copepod groups. In the discussion hereafter, we deal with the species encountered in the present collection but not recorded by RAHM.

### 2.1. *Apocyclops panamensis* (Marsh, 1913) : (figs 2-11)

This brackish-water species is distributed along the East coast of the American continent. It is here reported from Africa for the first time. Comparisons with material of American origin, kindly made available by Dr C. F. ROCHA (Sao Paulo) failed to reveal any differences with African specimens. Whether *A. panamensis* has been accidentally introduced to West Africa, or has occurred here naturally is an intriguing but unsolved question. The fact that the species was not reported in the earlier studies on the Ebrié lagoon would seem to argue for the former possibility. However, as there were other important faunal discrepancies between the present and RAHM's collections (see further), the hypothesis of an introduction remains open but unproven.

### 2.2. *Halicyclops korodiensis* Onabamiro, 1952

A taxon which has recently been demonstrated to be widespread along the West African coast (DA ROCHA, 1983; GABRIEL *et al.*, 1987), and which was common and well represented in the present collection, but absent from RAHM's. Both LINDBERG and RAHM, remarkably, record *Halicyclops orae eburnensis*. Because both species are quite different (e.g.  $Enp_3P_4$  in *H. korodiensis* has two reduced internal

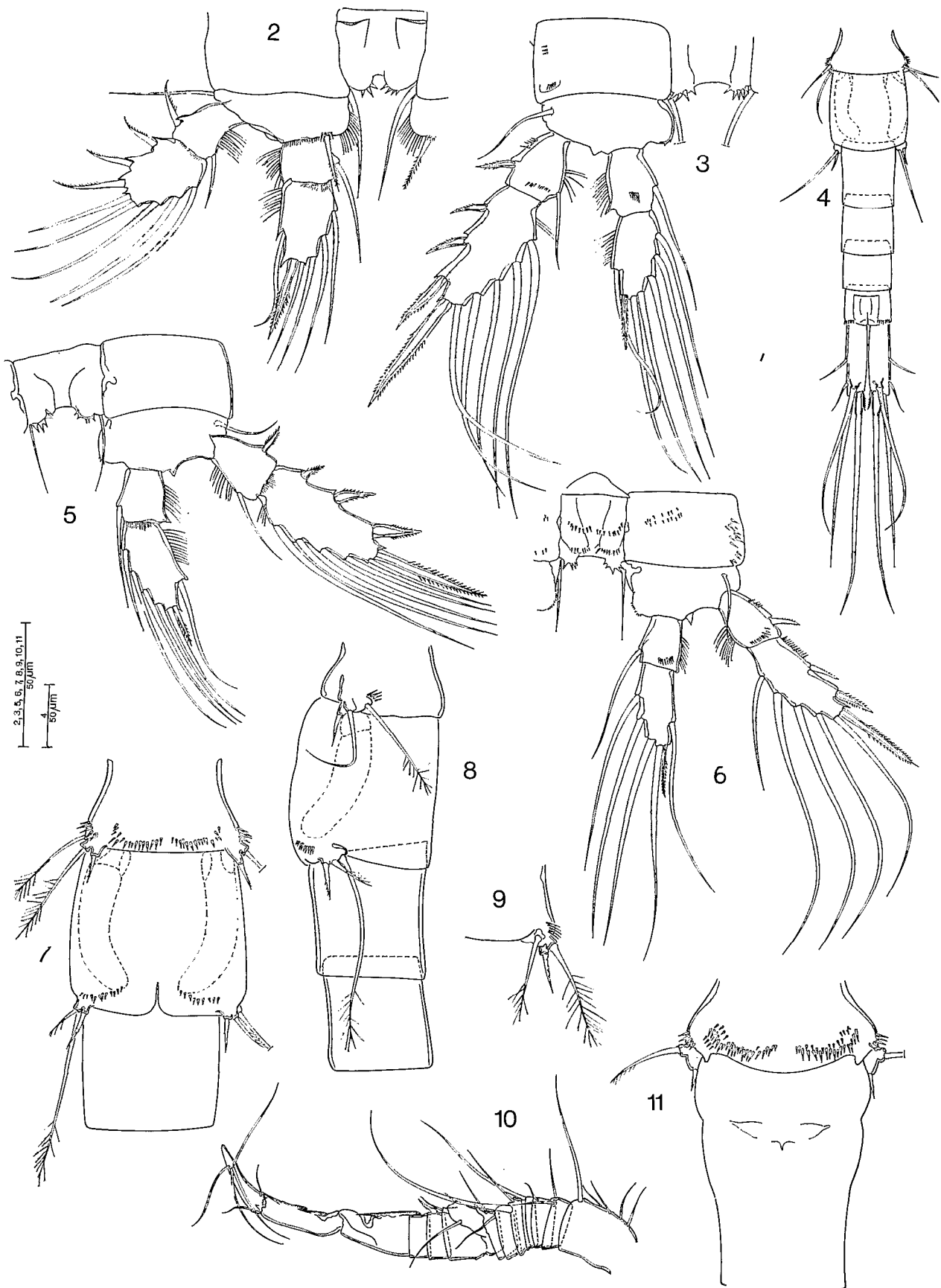


FIG. 2. — *Apocyclops panamensis* Marsh, Lagune Ebrié (Ivory Coast). 2. Structure P<sub>1</sub>. 3. Structure P<sub>3</sub>. 4. Male, last thoracic segment and abdomen. 5. Structure P<sub>2</sub>. 6. Structure P<sub>4</sub>. 7. Male, last thoracic segment and genital segment, lateral view. 9. Female P<sub>5</sub>, dorsal view. 10. Male A<sub>1</sub>. 11. Female, last thoracic segment and genital segment, ventral view

setae, which are long and spiniform in *H. orae eburnensis*), and because the latter was well illustrated from the lagune by LINDBERG, we can only conclude that both species co-exist here.

### 2.3. *Oithona brevicornis* Giesbrecht, 1891

This is yet another instance where a species recorded from the present collection differs from the taxon present in RAHM's days. *Oithona plumifera* Baird, the species mentioned by RAHM, can indeed hardly be confused with *O. brevicornis*. The latter has a typical mandibular structure, composed of a basis with two strong, curved spines, and an endopodite with four setae. *O. plumifera*, on the other hand, is distinctive by its typical shape, extraordinarily long antennules, and conspicuous long setae on P5 and the furca.

In this context, observations made by Mr SAINT JEAN in 1984-1985 take particular significance: in the estuarine region of the Canal de Vridi, with a salinity close to that of seawater, *O. plumifera* was found to subsist, in small numbers. On the other hand, the western fringe of the lagoon, which had a reduced salinity (1-3%) in 1981-1982, became more saline (4-6%) in 1984-1985. While *O. brevicornis* had been absent here in the first period, it developed in sizeable numbers during the second period.

### 2.4. *Mesocyclops ogunnus* Onabamiro, 1967

This species, first described from the Ogun River, Nigeria (ONABAMIRO, 1952) was subsequently recorded in many parts of Africa (VAN DE VELDE, 1984). LINDBERG's and RAHM's record of *M. leuckarti* is certainly erroneous, and doubtlessly pertains to *M. ogunnus*.

### 2.5. *Thermocyclops decipiens* (Kiefer, 1929)

LINDBERG (1957) and RAHM (1964) record the related *Thermocyclops neglectus* (Sars), almost certainly a misidentification. Both species were formerly not properly separated. They differ mainly by the relative length of the furcal rami, which are typically 2.2:2:1 for *T. neglectus*, and 2.6-2.8:1 for *T. decipiens*.

### 2.6. *Pseudodiaptomus hessei* (Mrazek, 1984)

This species, which was exceedingly common in SAINT JEAN's collections, was not mentioned by RAHM or LINDBERG. Because it is a common and typical inhabitant of coastal brackish waters in West Africa (see e.g. VAN DE VELDE, 1978), this absence is particularly puzzling and hard to explain (table I). Although some of the many discrepancies listed in the table cannot be understood from the limited data available, it appears that RAHM's

TABLE I

Saint Jean's collection	RAHM's collection
Cyclopoida	
<u>Apocyclops panamensis</u>	<u>Afroscyclops curticornis</u> <u>Afroscyclops gibsoni</u>
	<u>Cryptocyclops bicolor liljantici</u> <u>Cryptocyclops falsus</u> <u>Ectocyclops compactus</u> <u>Ectocyclops phaleratus f. rubesc</u> <u>Ectocyclops rahmi</u> <u>Eucyclops serrulatus</u> <u>Eucyclops stuhlmanni</u> <u>Eucyclops van douwei</u> <u>Halicyclops orae eburnensis</u> <u>Mesocyclops leuckarti</u> <u>Microcyclops pseudo-opercularis</u> <u>Microcyclops varicans</u> <u>Oithona plumifera</u> <u>Paracyclops affinis</u> <u>Thermocyclops emini</u> <u>Thermocyclops neglectus</u> <u>Thermocyclops nigerianus</u>
<u>Halicyclops korodiensis</u> <u>Mesocyclops ogunnus</u>	<u>Tropocyclops prasinus</u>
<u>Oithona brevicornis</u>	
<u>Thermocyclops decipiens</u>	
<u>Tropocyclops confinis</u>	
Calanoida	
<u>Acartia clausi</u> <u>Pseudodiaptomus hessei</u>	
Harpacticoida	
<u>Halectinosoma spec. 1</u> <u>Halectinosoma spec. 2</u> <u>Onychocamptus chathamensis</u> <u>Schizopera spec.</u>	

samples were relatively richer in freshwater species than SAINT JEAN's. Species replacements naturally come to mind and the particular ecotype of *P. hessei* in the lagoon might well be an example of this phenomenon. In RAHM's days, the lagoon had indeed a double connection to the ocean, one at Bassam, which was completely closed in 1981-1982, and the Canal de Vridi, which was first opened in 1950-1951. It is therefore quite possible that RAHM's records show an assembly of species in a state of flux, and from which *P. hessei* had been temporarily eliminated. This species has indeed been found by SAINT JEAN (*pers. commun.*) to respond rapidly to salinity changes. He noted that it was extremely rare in the estuarine zone, directly influenced by ocean water (close to Vridi). At Bingerville (loc. 2), a locality strongly influenced by river runoff, conversely, it was exceedingly common during the rainy summer, but became rare during the dry season, when salinity rose to 20‰. However, all differences observed,

after correcting some obvious misidentifications, may equally well result from a difference in the nature of the biotopes sampled.

### 2.7. *Onychocamptus chathamensis* (Sars)

A brackish-water harpacticoid of tropical affinities, recorded earlier from South Africa (Zandvlei near Cape Town) by RUHE (1914), which is here reported for the first time from West Africa.

#### ACKNOWLEDGEMENTS

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