

## Taxonomical and zoogeographical remarks on Rotifera from the Ivory Coast (W. Africa)

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### SUMMARY

In plancton samples from the Ivory Coast, we found aberrant forms of *Lecane hastata* and of *Lepadella acuminata*. Taxonomical remarks are formulated for *Brachionus quadridentatus* « var. *melheni* » Barrois & Daday and for *Br. mirabilis* Daday. *Br. angularis* and *Br. caudatus* without posterior spines can be distinguished by the dimensions of the lorica. The ecology of *Testudinella emarginula* has been discussed.

102 taxa are new for the Ivory Coast. Several species are met with for the second or the third time in Africa.

KEY WORDS : Rotifers — Ivory Coast — Taxonomy, ecology and biogeography of several taxa.

### RÉSUMÉ

#### REMARQUES TAXONOMIQUES ET ZOOGÉOGRAPHIQUES SUR LES ROTIFÈRES DE CÔTE D'IVOIRE (AFRIQUE DE L'OUEST)

Dans des échantillons de plancton, provenant de la Côte d'Ivoire, nous avons trouvé des formes aberrantes de *Lecane hastata* et de *Lepadella acuminata*. Des remarques taxinomiques ont été formulées pour *Brachionus quadridentatus* « var. *melheni* » Barrois & Daday et pour *Br. mirabilis* Daday. *Br. angularis* et *Br. caudatus* sans épines postérieures se distinguent par la taille. L'écologie de *Testudinella emarginula* est discutée.

102 taxa sont nouvelles pour la Côte d'Ivoire. Certaines espèces se rencontrent pour la seconde ou la troisième fois en Afrique.

MOTS-CLÉS : Rotifères — Côte d'Ivoire — Taxinomie, écologie et biogéographie de plusieurs taxa.

### INTRODUCTION

In the course of investigations on zooplankton from the Ivory Coast (West-Africa), kindly put at our disposal by C. LÉVÊQUE and R. POURRIOT (Paris), we came across some interesting facts of taxonomical and zoogeographical nature. The samples were collected principally in the basin of the River Bandama, with some additions from the basins of Bagoé, Cavally and Comoe Rivers. Physical conditions and chemical composition of the waters concerned were studied by ILTIS and LÉVÊQUE (1982). For the River Cavally however, numerical values are very scarce. In the studies by the first author named, of the phytoplankton of the same

rivers (ILTIS, 1982a, 1982b and 1982c), Cavally River has not been taken into account. On the other hand, LÉVÊQUE *et al.* (1983) only deal with the limnology of the Bandama River. From the above sources, we can only conclude that the River Cavally, near Toulepleu, has a temperature between 23° and 28 °C, and that the water is slightly alkaline (pH  $\geq$  7).

#### 1. Description of new taxa

##### 1.1. *Lecane cf. hastata*

In the sample of Cavally River, collected near Toulepleu on 26/4/77, a few specimens were met with, which we believe to be closely related to

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*Lecane hastata* (MURRAY, 1913). This species has, as can be deduced from figures in different textbooks, a very flexible lorica.

The new taxon differs from *Lecane hastata* proper, by having a nearly circular lorica, a narrower anterior sinus and a sinuated posterior margin of the dorsal plate (fig. 1). Dimensions in  $\mu\text{m}$ :

length of dorsal plate: 90  
width of dorsal plate: 80  
length of ventral plate: 120  
width of ventral plate: 110  
width of anterior sinus: 50  
depth of anterior sinus: 5  
length of toes: 45  
length of claw: 20

### 1.2. *Lepadella cf. acuminata*

In the sample of Cavally River, collected near Danané on 23/4/77, a single specimen was encountered, which we believe closely related to *Lepadella acuminata* (Ehrb., 1834). It differs from *Lepadella acuminata* proper, by having six ripples on the dorsal plate of the lorica (by which feature it resembles the "*f. sexcostata*" Bartos, 1955), and by a widening of the posterior part of the lorica, forming a characteristic saillie on each side (fig. 2). Dimensions in  $\mu\text{m}$ :

length of lorica: 72  
width of lorica: 50  
depth of lorica: 21  
depth of anterior dorsal sinus: 5  
depth of anterior ventral sinus: 20  
length of foot opening: 25  
width of foot opening: 10  
length of toes: 25.

## 2. Remarks on some other taxa

### 2.1. The *Brachionus quadridentatus*-group

The taxon, described in 1894 by Barrois and Daday as *Brachionus capsuliflorus* var. *melheni* and as *Brachionus quadridentatus* var. *melheni*, is considered by KOSTE (1978: 73), as a valid subspecies, living in subtropical and tropical waters. It has long anterior spines of the lorica and slender, diverging posterior ones. In the examined material from the Ivory Coast however, we found it in several samples (Pool near the bridge on the Nzi at Fétékro, 7/7/77 — Pool east of Katiola, 22/8/77 — Pool, east of the bridge at Fétékro, 8/8/77 — Nzi at Fétékro, 15/4 and 25/4/77 — Kossou, Dike, 7/4/77) in presence of the so-called nominate form. We conclude accordingly that "*melheni*" is only an infrasubspecific taxon, not recognized by the International Code of Zoological Nomenclature.

On the other hand, we found in the "Étang de Gonfreville" (9/11/77) and in the "Étang-barrage de Touro, SW de Katiola" (14/11/77) individuals which we attributed to *Brachionus mirabilis* Daday, 1897. This species was discovered in and described from New-Guinea. Afterwards, similar forms were found in Paraguay (DADAY, 1905); in Africa (Lake Malawi, Tanzania: DADAY, 1910; CUNNINGTON, 1920 and Ghana: RUSSELL, 1956); in N. America (Florida, AHLSTROM, 1940); in Panama (HARRING, 1914); in S. America (Brasil: AHLSTROM, 1940; THOMASSON, 1971; KOSTE, 1972 and 1974); Suriname (LEENTVAAR, 1975).

This so-called species is closely related to *Brachionus quadridentatus* HERMANN, 1783, which is cosmopolitan. It differs from the latter by its long median anterior and still longer posterior ventral spines, arising from the base of the foot opening. In all the figures we have seen (AHLSTROM, 1940, pl. XI, figs. 5-8; THOMASSON, 1971, pl. XX, figs. 1-3; KOSTE, 1972, pl. 8; ID., 1974, pl. II, figs. 1a-b) these posterior spines have a length, equal at least to 2/3 of the length of the lorica.

In the individuals we found however (fig. 3) the posterior ventral spines only reach half the length of the lorica or less. Dimensions of one specimen in  $\mu\text{m}$ :

total length of lorica: 185  
length of median anterior spines: 37  
length of posterior ventral spines: 45  
length of posterior spines: 65

In this way, our forms seem to be intermediate between *Brachionus quadridentatus* and *Brachionus mirabilis*. Therefore, and considering that the localities, where *Brachionus mirabilis* has been met with, are situated thousands of kilometres from each other, so that the known individuals hardly can have descended from a common ancestor, we conclude that *Brachionus mirabilis* is only a member in the large variation series of *Brachionus quadridentatus*. Accordingly, we consider it has no taxonomic status and note it as *Brachionus quadridentatus* "*f. mirabilis*" DADAY, 1897, and withdraw it from the species and subspecies (KOSTE, 1978: 75) status.

### 2.2. *Brachionus angularis* and *Brachionus caudatus*

GREEN (1977) described dwarfism of *Brachionus caudatus* in tropical crater-lakes and gave figures of dwarf individuals from the River Sokoto (Nigeria). One may wonder if these dwarfs can be mistaken for *Brachionus angularis*. In our material, both species occurred together in several samples:

Etang de Touro, près Katiola (30/6/77).  
Fétékro, mare à l'est du pont (19/5 and 29/8/77).

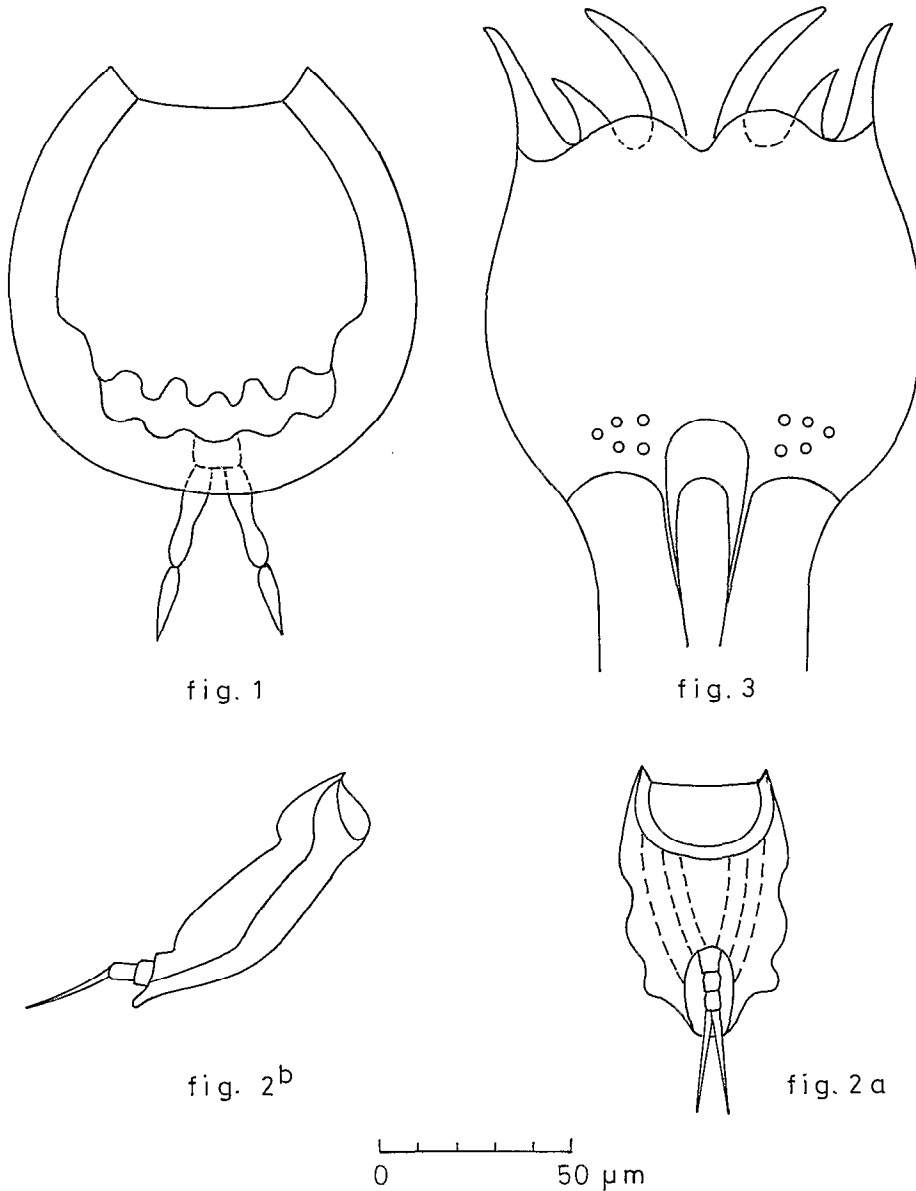


FIG. 1. — *Lecane cf. hastata*, dorsal view; FIG. 2. — *Lepadella cf. acuminata*: a: ventral view; b: side view; FIG. 3. — *Brachionus quadridentatus f. mirabilis*

Maraoué à Entomokro (7/4/77).

Barrage vers usine de café de Tombokro (21/4/77).

Bandama à Bada (15/4 and 26/4/77).

Barrage usine de café sud de la route de Bouaflé (21/4/77).

Pont de la Maraoué, au sud de Kossou (7/4 and 21/4/77).

whilst they occurred separately on several other occasions.

*Brachionus angularis* was always very small in the material examined (cf. KOSTE, 1978: 92):

	Length of lorica in $\mu\text{m}$
Barrage vers usine de café de Tombokro....	60 to 75
Étang de Touro.....	70 to 90
Mare barrage rural à l'est de Katiola.....	60 to 95
Barrage du Kan, à Bouaké.....	80 to 92

Eggs were also very small (cf. KOSTE, *ibid.*): from  $55 \times 40$  to  $60 \times 40 \mu\text{m}$ .

In most cases, *Brachionus caudatus* displayed posterior spines. In the "Barrage vers usine de café de Tombokro" however, individuals with and individuals without posterior spines occurred together. The latter form had a frequency double of that of the former. Dimensions of both forms were different:

	Length of lorica in $\mu\text{m}$
Ind. with spines (spine length = 30 à 40 $\mu\text{m}$ ).	145 to 182
Ind. without spines.....	90 to 125

The proportion of egg-carrying individuals was the same in both forms (50 %). Egg dimensions: 80 x 60  $\mu\text{m}$ .

Two conclusions can be made:

- (a) In the case of *Brachionus angularis* and *Brachionus caudatus* without posterior spines, occurring in the same sample, the difference in dimensions permits an exact determination to species level;
- (b) *Brachionus caudatus* without posterior spines does not always make part of a cyclomorphosis, as postulated by GREEN (1960).

### 3. Ecology of *Testudinella emarginula*

*Fide* KOSTE, 1978: 533, this species is cold stenothermical. It has however been met with in Africa on several occasions: Shaba (GILLARD, 1952), Tanganyika (ID., 1957), Lake Albert, Uganda (GREEN, 1967), Lake Tchad (POURRIOT, 1968), Lake Bangweulu and Luapula Basin (DE RIDDER, 1981), Basse Casamance, Sénégal (ID., 1983), Sudan (ID., 1984).

In the material from the Ivory Coast, *Testudinella emarginula* was present in water having a temperature of 28,5 °C (Bagoé at Kouto, 14/6/77). As a conclusion,

the thesis of its stenothermism for low temperatures has to be abandoned.

### 4. Species, rare in Africa

For following species, our records are the second for the African continent:

- Colurella anodonta* (previous record: DE RIDDER, 1981: Luangwa Valley, Zambia,  
*Lecane hastata* (previous record: DE RIDDER, 1983: Basse Casamance, Sénégal).  
*Lecane pusilla* (previous record: BERZINS, 1959: Sénégal).  
*Lepadella* (H.) *heterodactyla* ( DE RIDDER, 1983: Basse Casamance.  
*Microcodon clavus* )  
*Trichocerca flagellata* )  
*Trichocerca myersi* (previous record: POURRIOT, 1971: Lake Léré).

*Trichocerca mus* has been met with for the third time in African waters (previous records: POURRIOT, 1968: Lake Tchad, and NOGRADI, 1983: Lake Naivasha, Kenya).

### 5. Species new to the Ivory Coast

Publications on the Rotifers of the Ivory Coast are scarce: DE BEAUCHAMP (1955), RAHM (1964), LAMOOT (1967) and YTE, REY and POURRIOT (1983). They total a number of 39 taxa, identified to species level. As a result of our investigations, 102 taxa are new for the country considered. They are marked with an (N) after the name in DE RIDDER and POURRIOT (1984). Most of these taxa are periphytic. Without doubt, they find a suitable ecological niche between the aquatic vegetation described by LÉVÊQUE *et al.* (1983).

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