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New records of brackish water Rotifera and Cladocera from Mexico

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RESUMEN

Se colectaron mensualmente muestras de zooplancton en varios puntos de muestreo en la laguna salobre de Mecoacán (Tabasco), durante los años 1995-1997 las cuales revelaron la presencia de 37 especies de rotíferos y dos especies de cladóceros. En ese estudio, encontramos cinco nuevos registros de Rotífera y que son: *Platyias leloupi*, *Ploesoma hudsoni*, *Synchaeta bicornis*, *S. hyperborea* y *Trichocerca marina* y un nuevo registro de Cladocera: *Moina minuta*. Asimismo se ilustran los nuevos registros y se presentan aspectos de su distribución.

Palabras clave: Registros nuevos, Rotíferos, Cladóceros, Tabasco, México.

ABSTRACT

Zooplankton samples collected monthly from various parts of the brackishwater lagoon Mecoacan in the State of Tabasco during the years 1995-1997 revealed the occurrence of 37 rotifer species and two cladoceran species of which five rotifers viz. *Platyias leloupi*, *Ploesoma hudsoni*, *Synchaeta bicornis*, *S. hyperborea* and *Trichocerca marina* and one cladoceran viz. *Moina minuta* are new to Mexican fauna. The recorded species are illustrated and aspects of their distribution are presented.

Key words: New records, Rotifer, Cladoceran, Tabasco, Mexico, Brackishwater

INTRODUCTION

In Mexico studies on zooplankton, particularly, Rotifera and Cladocera (Crustacea), in freshwater bodies have been well documented (Rico-Martínez and Silva-Briano 1993; Sarma and Elías-Gutiérrez, 1997, 1999; Elías-Gutiérrez *et al.*, 1998a). Some species of rotifers and cladocerans also occur in saline and marine environments (Wallace and Snell, 1991; Dodson and Frey, 1991) and they received little attention.

The freshwater bodies in the central part of Mexico have been well explored rotifer and cladoceran taxa (see reviews of Sarma *et al.*, 1996; Sarma, 1999 for Rotifera and Elías-Gutiérrez *et al.*, 1998b for Cladocera). Similar information from other parts of Mexico, especially for rotifers is scarce (Örstan, 1995). For example no data on the rotifer taxa are available from the coastal states of Tabasco, Chiapas and Campeche (Elías-Gutiérrez *et al.*, 1998a).

In this paper, we present the first study on the rotifers and cladocerans found in the brackishwater lagoon of Mecoacan in the State of Tabasco.

MATERIALS AND METHODS

The study site is a perennial brackishwater lagoon (Mecoacan) situated at 18°20' - 18°26' N and 93°01' - 93°15' W located in the State of Tabasco (Mexico). We collected zooplankton samples from the surface and at 1 and 2 m depths. For each sampling at least 100 l were filtered using 50 μm plankton mesh and were immediately

preserved in 10% formalin. The samples were collected once a month over a 2-year period (1995-1997).

For the identification of Rotifera we followed mainly Koste (1978). However, we also consulted other literarture as necessary (Koste and Shiel, 1987, 1989, 1990, 1991). Trophi preparation, when needed, was done using the dilute sodium hypochlorite solution. Cladocera were identified following Korovchinsky (1992) and Goulden (1968). All figures were drawn under a compound microscope using a calibrated camera lucida (Nikon Labophot Model 2).

RESULTS AND DISCUSSION

Analysis of zooplankton samples from Mecoacan lagoon yielded 37 taxa of Rotifera and 2 species of Cladocera. Of these, 5 rotifer species and 1 cladoceran species are new records (marked with *) to the fauna of Mexico.

Rotifera:
Phylum: Rotifera
Order: Ploimida
Family: Epiphanidae
1. *Epiphanes macrourus* (Barrois & Daday, 1894)
Family: Brachionidae
2. *Anuraeopsis fissa* (Gosse, 1851)
3. *Brachionus angularis* (Gosse, 1851)
4. *B. budapestinensis* (Daday, 1885)
5. *B. calyciflorus* Pallas, 1766
6. *B. caudatus* Barrois & Daday, 1894
7. *B. falcatus* Zacharias, 1898
8. *B. havanensis* Rousselet, 1911
9. *B. plicatilis* (O. F. Müller, 1786)
10. *B. rotundiformis* Tschugunoff, 1921
11. *B. urceolaris* (O. F. Müller, 1773)
12. *Keratella americana* Carlin, 1943
13. *K. cochlearis* (Gosse, 1851)
14. *K. tropica* (Apstein, 1907)
15. *Platyias leloupi* (Gillard, 1957)*

Family: Euchlanidae
16. *Euchlanis dilatata* Ehrenberg, 1832
Family: Lecanidae
17. *Lecane bulla* (Gosse, 1851)
18. *L. curvicornis* (Murray, 1913)
19. *L. grandis* (Murray, 1913)
20. *L. stenroosi* (Meissner, 1908)

Family: Notommatidae
21. *Eosphora najas* Ehrenberg, 1830
Family: Trichocercidae
22. *Trichocerca dixonnuttali* Jennings, 1903
23. *T. elongata* (Gosse, 1886)
24. *T. marina* (Daday, 1890)*
25. *T. ruttneri* (Donner, 1953)
26. *T. similis* (Wierzejski, 1893)
27. *T. stylata* (Gosse, 1851)

Family: Gastropodidae
28. *Ascomorpha saltans* Bartsch, 1870

Family: Synchaetidae
29. *Ploesoma hudsoni* (Imhof, 1891)*
30. *Synchaeta bicornis* Smith, 1904*
31. *S. hyperborea* Smirnov, 1932*
32. *S. pectinata* Ehrenberg, 1832
33. *S. stylata* Wierzejski, 1893

Family: Asplanchnidae
34. *Asplanchna brightwelli* (Gosse, 1850)
35. *A. sieboldi* (Leydig, 1854)

Order: Gnesiotrocha
Family: Filiniidae
36. *Filinia longiseta* (Ehrenberg, 1834)

Bdelloidea
37. *Philodina* sp.

The diversity of rotifers in the Mecoacan lagoon can be considered as high since rotifers predominantly occur in freshwater environments (Green, 1993, 1995). The salinity values in the present study varied between 5-35‰ throughout the study. Majority of the rotifer species encountered in this study are mostly tropical (Koste, 1978) and it is not surprising that we encountered them in Mecoacan lagoon where the mean observed water temperature was around 25°C. The euryhaline *Brachionus plicatilis* (Fig. 1) and *B. rotundiformis* (Fig. 2) were the most common species in our study. We discuss here the new records of zooplankton from the point of view of zoogeography.

Platyias leloupi (Fig. 3). Specimens agree with the descriptions available in literature (Koste and Shiel 1987). It is found in Brazil, and many countries in the African and Asian Continents (Koste, 1978; Sarma, 1988).

T. marina (Fig. 4). Strong loricate species with prominent anterior spines. Characterized as stenohaline species. Commonly encountered in the plankton of coastal waters.

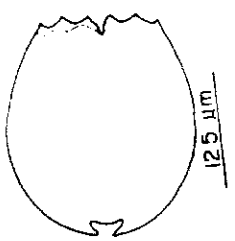

Figura 1. *Brachionus plicatilis* (dorsal view).

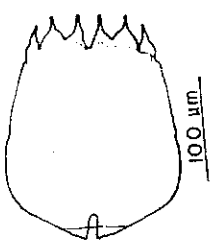

Figura 2. *B. rotundiformis* (dorsal view).

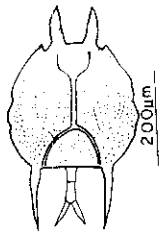

Figura 3. *Platyias leloupi* (dorsal view).

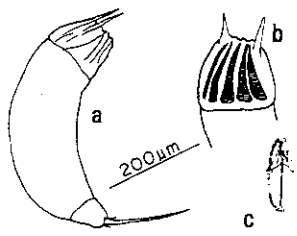

Figura 4. *Trichocerca marina* a: lateral view; b: ventral view; c: trophi.

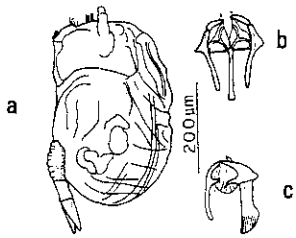

Figura 5. *Ploesoma hudsoni* a: lateral view; b: trophi (dorsal view); c: trophi (lateral view).

Recorded from East and northern European seas, Caspian sea and Black sea (Koste, 1978).

Ploesoma hudsoni (Fig. 5). Specimens were collected from the Mecoacan lagoon when the salinity was 15‰. Koste (1978) regards this species as common in plankton collections of warmwater lakes and brackish water environments.

Synchaeta bicornis (Fig. 6). Large non-loricate species, easily identified by the presence of two antero-lateral horn structures, more prominent under preserved condition. Planktonic species recorded from South sea, Netherlands, and in the brackish waters of the United States of America (Koste, 1978).

S. hyperborea (Fig. 7): Co-existed with *S. bicornis*. Earlier recorded from planktonic collections of coastal water of France and North Sea (Koste, 1978).

Cladocera:
Phylum: Arthropoda
Class: Branchiopda

Order: Ctenopoda
Family: Sididae
1. *Diaphanosoma brevireme* Sars, 1901

Order: Anomopoda
Family: Moinidae
2. *Moina minuta* Hansen, 1899*

Since cladocerans are predominantly found in freshwater systems, not much attention is paid to the brackish and marine water species (Dodson and Frey, 1991). This is also the case in Mexico. For example, Elías-Gutiérrez *et al.* (1998b) have listed predominantly the freshwater Cladocera of Mexico.

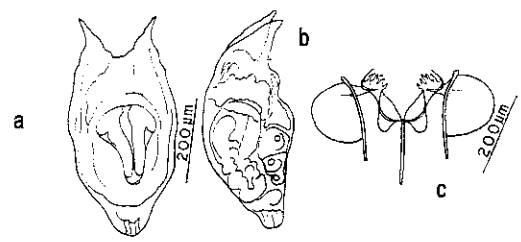

Figura 6. *Synchaeta bicornis* a: dorsal view; b: lateral view; c: trophi.

Moina minuta (Figs. 8a-f): Species characterized by a small head (Fig. 8a); antennules provided with long sensory seta on the anterior margin (Fig. 8d); at the base of the antenna two long sensory setae present (Fig. 8c), one of them longer than the combined length of basipod and first segment of exopod. On the basipod, between exopod and endopod one seta present. The present specimens agree with the description of first thoracic leg (Fig. 8b) given in Goulden (1968) based on the samples collected from Guatemala. However, slight differences are noticeable in the number of teeth on the pecten of the postabdomen (Fig. 8e) (8 in the present case vs 11-14 in Goulden (1968)) and the ventral margin of the carapace (Fig. 8f). Type locality is in Brazil. It is regarded as limnoplanktonic prefering saline and/or oligohaline rivers. Recorded from lakes and rivers opening to the ocean from the east coast of Central and South America (Goulden, 1968).

The present study thus adds one genus (*Ploesoma*) to the rotifer fauna of Mexico. This is one of the few studies in Mexico attempting to investigate marine rotifers (Rico-Martínez and Silva-Briano, 1993) and cladocerans (Elías-Gutiérrez *et al.* 1998b) from the taxonomic point of view. This study thus suggests more extensive investigations are needed to understand the diversity of rotifers and cladocerans in Mexico not only from the freshwater habitats, but also from marine and brackishwater environments.

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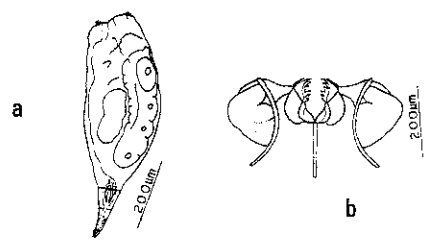

Figura 7. *S. hyperborea* a: lateral view; b: trophi.

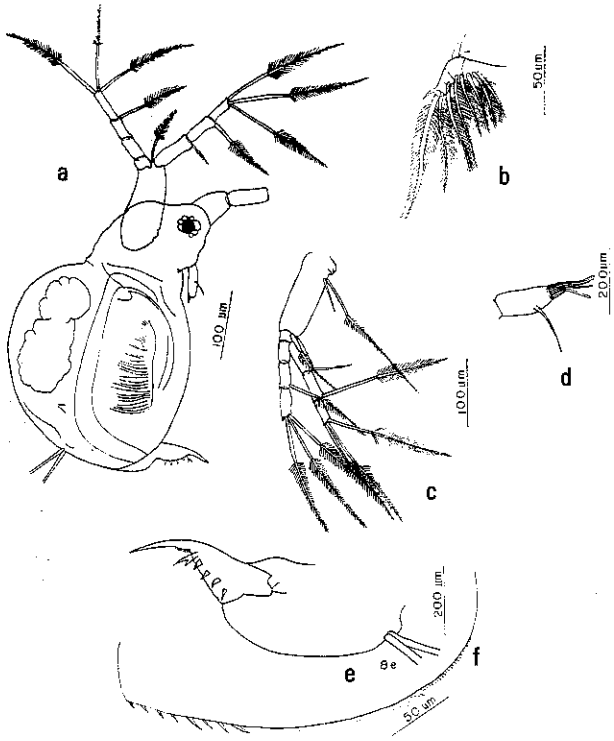

Figura 8. *Moina minuta* a: habitus; b: first thoracic leg; c: second antenna; d: antennule; e: postabdomen; f: ventral margin of carapace.

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