

## CONTRIBUTION TO THE KNOWLEDGE OF RECENT OSTRACOD FAUNA FROM SOME DANUBE DELTA LAKES

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**Abstract.** The limnic ostracod fauna from some Danube Delta lakes was investigated. Eighteen species were recorded, and a brief description including information on the ecology and the geographical distribution of the main species was provided. *Cyprina ophthalmica* was the most frequent and abundant species, followed closely by *Darwinula stevensoni*. A brackish water assemblage, represented by *Cyprideis littoralis*, *Tyrrhenocythere amnicola donetziensis* and *Cytheromorpha fuscata* was identified only in the Razelm-Sinoe lagoon.

**Keywords:** freshwater Ostracoda, ecology, Danube Delta.

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### INTRODUCTION

The recent limnic ostracod fauna of Romania is being at present insufficiently investigated. Although ostracods are often one of the most frequent and numerous benthic crustacean groups, in freshwater environments, they have been much neglected, and very little is known about their ecology or the seasonal distribution of the species. In many previous studies, concerning freshwater zoobenthic communities, ostracods were only counted as such, but not identified up to the level of genera or species. Relatively few papers have been published dealing directly with the recent limnic ostracod fauna of Romania, among them being those by Puscaiu (1951), Beldescu (1961a,b) and Caraion (1967a,1972,1973).

### MATERIAL AND METHOD

The present study focuses on the qualitative structure and distribution of the ostracod populations living in Danube Delta area (Fig. 1). The ostracod samples were collected from 16 lakes in the years 1997-1999, during summer (from May to September). A sediment sample was taken from each lake with a Van Veen Grab, and as far as ostracods are concerned, only a sub-sample was retained from the whole sediment with a hand corer of 10cm inner diameter, to a depth of 5cm. Buffered 5% formaldehyde was used to preserve the whole sample. After extraction from the sediment samples, the ostracods were stored in 70% alcohol containing a small amount of glycerine to prevent the decalcification of the valves.

### RESULTS AND DISCUSSIONS

The faunal composition revealed eighteen ostracod species. The occurrence of the species in each lake is presented in Table 1.

In this survey many of the *Candona* species occurred in very low numbers, most of them being represented by early juvenile stages, which rendered their determination more difficult. They are stenothermal cold water species, being present as adults in winter and early spring, and as larvae and juvenile stages during the summer. Almost all the *Candona* species tolerate highly alkaline waters thus being a good ecological indicator. The valves are exceedingly various in form and size: elongate, reniform, rounded, stout, trapezoidal or triangular. The calcification is more or less strong. The surface of the valves is usually smooth or weakly sculptured. The left valve is larger than the right, sometimes hardly visible, and sometimes distinct.

*Candona neglecta* Sars, 1887 and *Candona candida* (O.F. Muller, 1776) were the most frequent *Candona* species in the analysed area. Distribution: widely distributed throughout the Holarctic.

*Fabaeformiscandona fabaeformis* (Fischer, 1851) is very rare. Only one individual adult was found. Distribution: widely distributed throughout the Holarctic.

*Fabaeformiscandona protzi* (Hartwig, 1898) is also a rare species in the Danube Delta area. As in the case of the previous species, only two adults were found in the lake Rosulet. Distribution: mainly in the northern part of the paleartic.

*Paracandona albicans* (Brady, 1864) was a constant presence with few specimens in the majority of the analysed samples. Living specimens have a characteristic orange colour in the medial-dorsal part of the carapace. It is a new species for the Danube Delta and also for the limnic fauna from Romania. Distribution: Holarctic.

Fossilized valves belonging to these *Candona* species appear frequently in sediments from the Black Sea continental shelf that are attributed to the Neoeuxinic Basin.

*Limnocythere inopinata* (Baird, 1843) can occur in a wide variety of sediment types. In Danube Delta area it was often found on muddy grounds or on muddy plant detritus, but the last substratum seems to be preferred. It tolerates highly alkaline waters. Distribution: holarctic

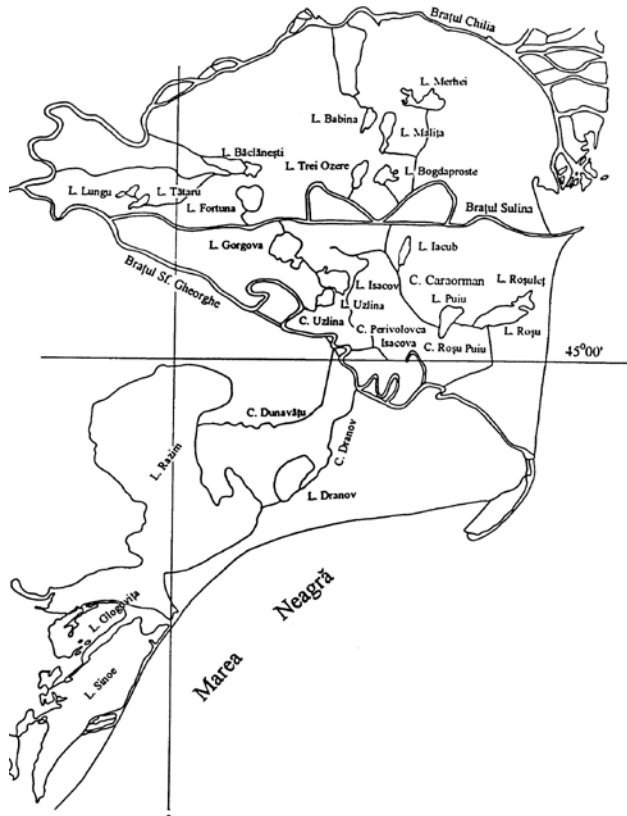


Figure 1 Sampling Area

Table 1 Ostracod species collected in the Danube Delta area

species/lake	Matita	Merhei	Babina	Trei Ozere	Bogdaproste	Fortuna	Gorgova	Iacub	Uzlina	Isacova	Puiu	Rosu	Rosulet	Dranov	Razelm	Sinoe
<i>Cypria ophthalmica</i>	+	+	+	+	+	+	+	+	+	+	+	+	+		+	
<i>Cypria exsculpta</i>	+															
<i>Cypridopsis vidua</i>		+		+	+	+		+	+			+				
<i>Cyprinotus</i> sp.	+							+			+					
<i>Candona candida</i>		+			+	+			+		+		+			
<i>Candona neglecta</i>	+	+	+			+		+	+	+	+	+				
<i>Candona schweyeri</i>	+		+						+							
<i>Fabaeformiscandona fabaeformis</i>														+		
<i>Fabaeformiscandona protzi</i>														+		
<i>Pseudocandona pratensis</i>									+				+			
<i>Paracandona albicans</i>	+		+	+	+	+		+	+							
<i>Darwinula stevensoni</i>	+	+	+		+	+	+	+	+	+	+	+	+	+	+	
<i>Limnocythere inopinata</i>	+	+														
<i>Ilyocypris gibba</i>									+							
<i>Cyprideis littoralis</i>														+	+	+
<i>Cyprideis littoralis</i> var. <i>nodded</i>															+	+
<i>Tyrrhenocythere</i> am. <i>donetziensis</i>															+	+
<i>Cytheromorpha fuscata</i>																+

*Ilyocypris gibba* (Ramdohr, 1808) It lives mainly in permanent waters, more or less on sandy sediments. It is tolerant towards mesotrophic conditions, and usually produces one generation per year. In the present study it

was collected in only one site in the lake Uzlina. Distribution: palearctic.

In the Razelm-Sinoe lagoon a brackish-water assemblage with *Cyprideis littoralis*, *Tyrrhenocythere*

*ammicola donetziensis* and *Cytheromorpha fuscata* was identified.

*Cyprideis littoralis* (Brady, 1864) is regarded as a brackish water ostracod which tolerates a wide range of salinity, from fresh water ponds to hypersaline lagoons. It occurs in great numbers at salinities between 2 and 16‰, being a useful ecological indicator of the paleoenvironment. The species is also eurythermic, and can easily endure freezing. Eggs can withstand freezing but not desiccation, so that the species is confined to permanent aquatic biotopes (Theisen, 1966). In the studied area it occurs in two forms, which are by some authors considered as species or subspecies: “forma littoralis” with smooth shells, and “forma torosa” with noded valves. These forms exhibit a gradual transition and they are found together. Distribution: cosmopolitan.

*Cytheromorpha fuscata* (Brady, 1869) is a brackish water species, common on detritus sand. It is also known as a frequent dweller in the shallow waters of the Romanian littoral (Caraion, 1967b). Distribution: in the Baltic and the North Sea, Black and Azov Sea basin and in the Caspian Sea.

*Tyrrhenocythere amnicola donetziensis* (Dubowsky, 1926) is a new species for the Danube Delta fauna. Only few adult individuals were found on a sandy bottom. Distribution: Black Sea, Caspian Sea and Aral Sea basin.

## CONCLUSIONS

In the Danube Delta area ostracods constitute an important zoobenthic group, although in the previous biological studies they were given little attention. Unlike marine ostracods, they were not subjected to a through systematic study.

This study identified in the Danube Delta area two important assemblages, the first of which is a widely distributed freshwater one with *Cypria ophthalmica* and *Darwinula stevensoni* as the most frequent and abundant species. The other is a brackish one restricted to the Razelm-Sinoe lagoon and characterized by the presence of *Cyprideis littoralis*, *Tyrrhenocythere amnicola donetziensis* and *Cytheromorpha fuscata*, some of the most common species occurring in the shallow marine waters of the Romanian Black Sea littoral.

The relative qualitative scarceness in some lakes can be attributed to the fact that the samples were collected only in summer months. However, it should be noted that these results represent preliminary observations and that additional species are to be expected, especially with a seasonal or monthly survey.

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