

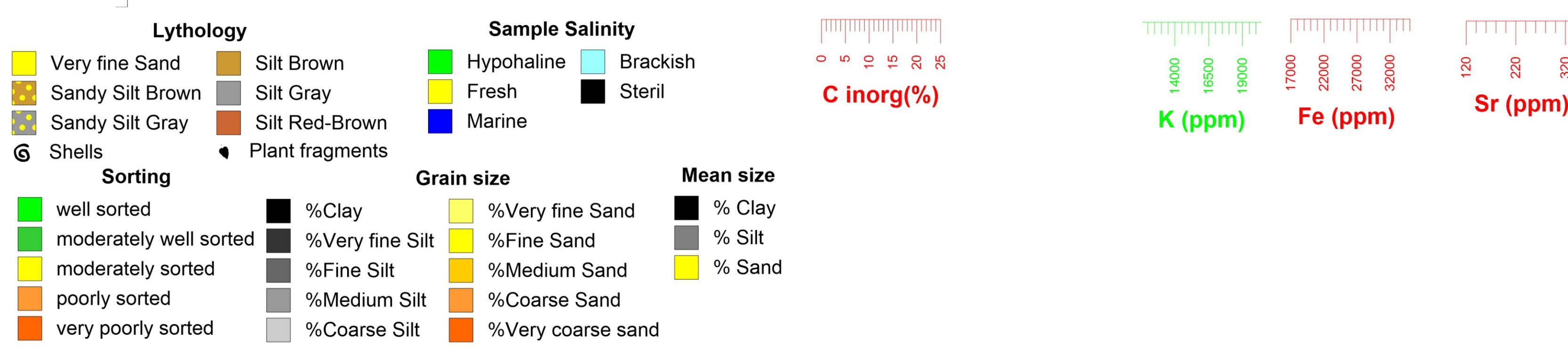
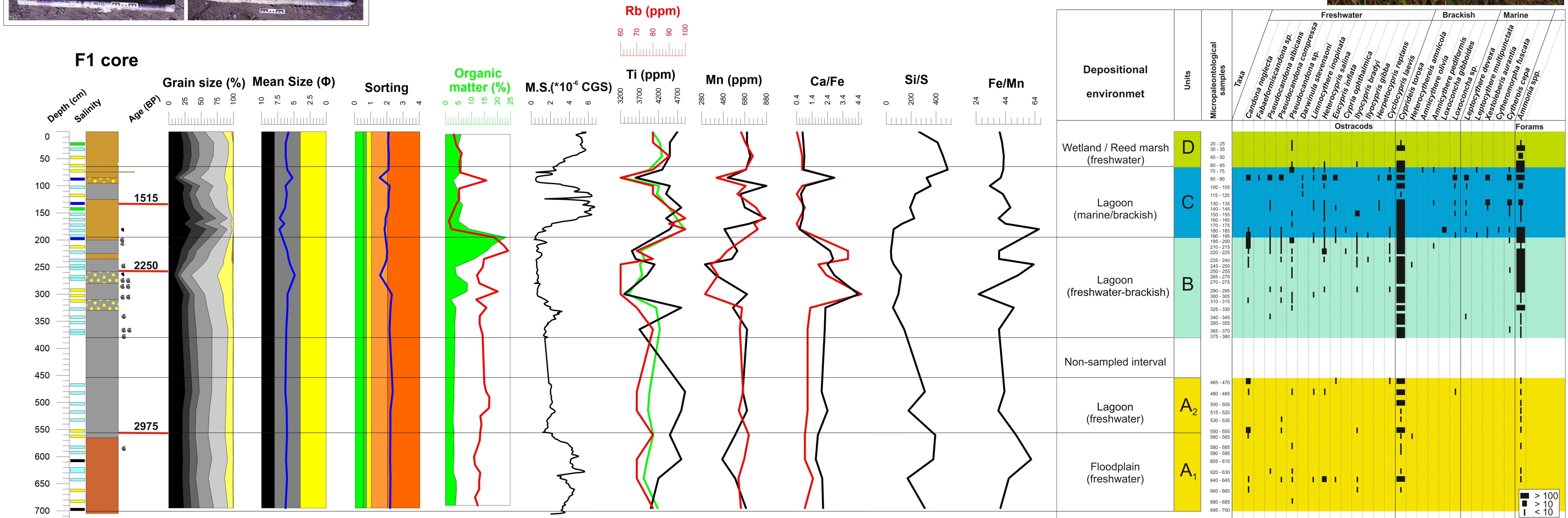
# Late Holocene paleoenvironmental changes in the Razelm-Sinoe lagoonal system, Danube Delta

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The Danube is the second largest river in Europe, after Volga. The Danube Delta developed during the Quaternary, when Danube started to flow into the Black Sea basin. It contains a sequence of deposits ranging from tens to 300-400 meters thick layers accumulated mainly during the Late Pleistocene and Holocene. Its present-day geomorphology expresses the interaction of the river (sediment and water discharges, flow energy, etc.) and the sea (wave and littoral currents regime, sea-level changes, etc.) over the past 12,000 yr. The structure and the evolution of deltaic systems are controlled by extremely complex processes and factors including variations in relative sea level, fluvial inputs, marine dynamics, morphology and tectonics.

The study area is located in Northern Dobrogea, in the close proximity of Acic Suhat archaeological site. This study is based on multidisciplinary investigations of a 7m long sediment core recovered with a percussion coring tool from the western bank of Razelm-Sinoe lagoonal system, currently located about 14 km from the Black Sea shoreline. The development of this area was influenced by the local sea-level changes, shifting from brackish lagoon to a freshwater lake environment. A total number of 46 samples were processed for microfossil analyses by boiling with Na<sub>2</sub>CO<sub>3</sub> and washing through a 63-mm sieve. Additionally, <sup>14</sup>C age determinations were undertaken on three samples. To determine the total carbonate content and organic matter, loss on ignition was used on samples collected at 10 cm intervals. Also, magnetic susceptibility and geochemical measurements were achieved on the core.



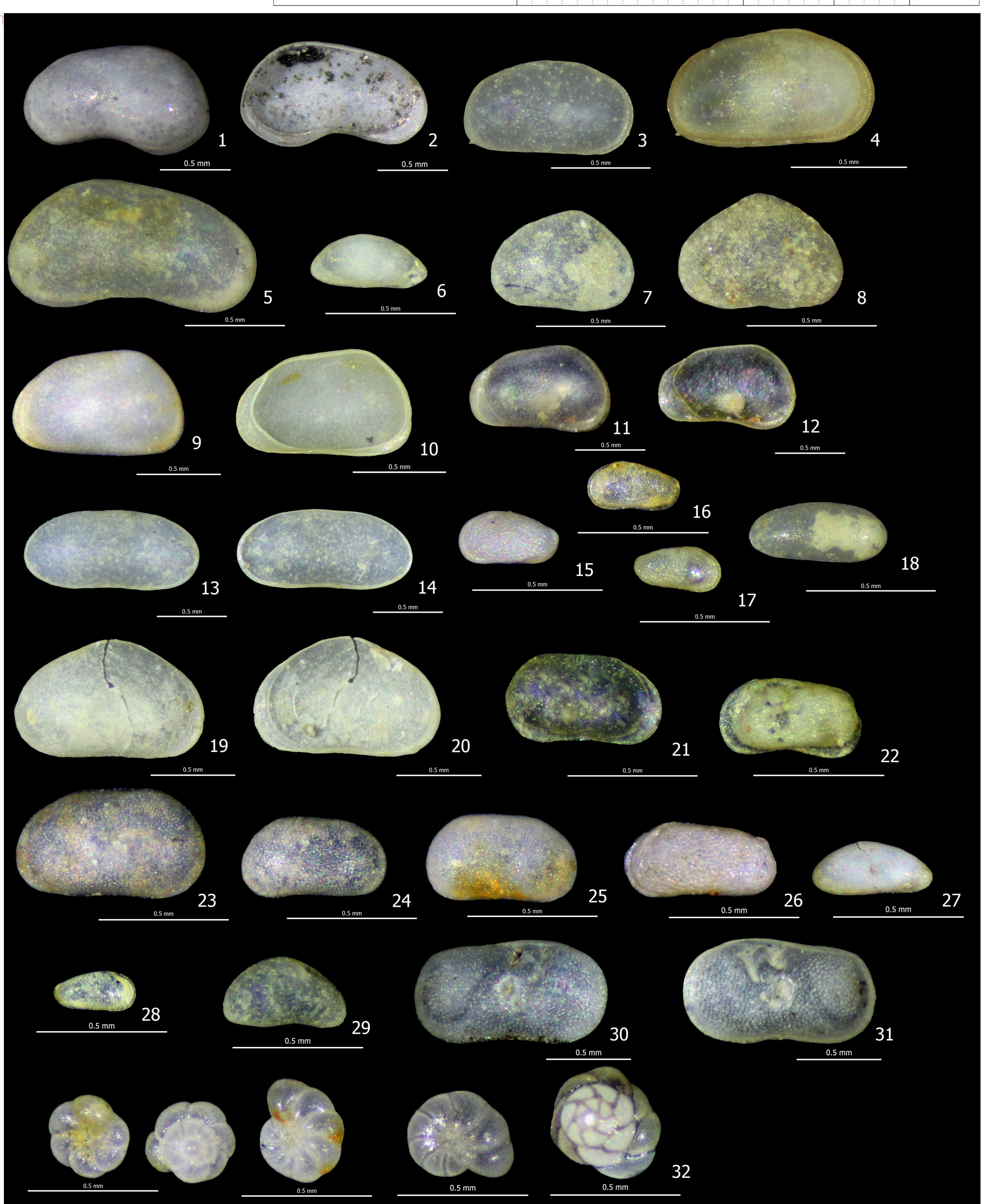
**Unit A1** contain a brown-red silt that is predominately sterile with very low diversity and abundance of ostracods, suggesting a floodplain environment close to a river mouth. The river in question is Slava, a typical river for this arid region with low mean discharge of less than 0.5 m<sup>3</sup>/s, but with high run-off and sediment load during extreme precipitation events. This is also supported by the high MS values and Fe/Mn ratio indicating constant terrigenous sediment input.

**Unit A2** is marked by an increase in ostracod abundance and by the occurrence of freshwater bivalve *Dreissena polymorpha*. Starting with this interval the lithology is changing to gray silt and the MS, Si/S and Fe/Mn values are decreasing, indicating low terrestrial input in a more stable freshwater environment, associated probably with the advancement of the Dunavăț channel, a branch of the Sf. Gheorghe distributary, inside the Razelm lagoon.

**Unit B** contains a mixture of freshwater and brackish-marine ostracods and very high abundances of *Amonia tepida* foraminifera species. The increase in LOI indicate both shells born detritus and organic matter, vegetation detritus. The low MS values indicate low terrestrial sedimentary input. The presence of *Leptocythere devexa* and *Cytherois cepa* marine species along with abundant foraminifera suggests an increase in salinity. Dunavăț branch reaches the open sea by now, therefore the lagoon is more prone to saline influxes trough breaches in the barrier closing the lagoon.

**Unit C** is marked by an increase in diversity and abundance of both freshwater and brackish-marine ostracod species. This, along with the increasing Si/S ratio values and the low Ca/Fe ratio values indicate a closed lagoon environment with high sediment influx. The lagoon is stabilized favoring high diversity and abundance of both fresh and brackish/marine species.

**Unit D** is characterized by low abundance and diversity of ostracods and by high MS values, suggesting a wetland / reed marsh environment.



**PLATE.** The ostracods are photographed mainly in external lateral view: 1, 2 and 5 – *Candona neglecta*; 3-4 – *Cyprideis torosa*; 6 – *Cytherois cepa*; 7-8 – *Eucypris inflata*; 9-12 – *Pseudocandona compressa* (10 and 12 – internal lateral view); 13-14 – *Herpetocypris reptans* (14 – internal lateral view); 15-17 – *Leptocythere devexa*; 18 – *Darwinula stevensoni*; 19-20 – *Heterocypris salina* (20 – internal lateral view); 21-22 – *Limnocythere inopinata*; 23-25 – *Pseudocandona* sp.; 24 – *Pseudocandona albicans*; 26 – *Amnocythere olivia*; 27 – *Cytherois cepa*; 28 – *Leptocythere pediformis*; 29 – *Xestoleberis aurantia*; 30-31 – *Ilyocypris bradyi* (31 – internal lateral view). Foraminifers: 32 – *Ammonia* spp.

### Acknowledgements

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