

## PRELIMINARY RESULTS OF FORAMINIFERAL ANALYSES: SOLINE BAY (KRK ISLAND, ADRIATIC SEA, CROATIA)

Jelena Vidovic<sup>1</sup> \*, Vlasta Cosovic<sup>1</sup>, Cedomir Benac<sup>2</sup> and Mladen Juracic<sup>1</sup>

<sup>1</sup> Department of Geology, Faculty of Science, Horvatovac 102 a, HR-10 000 Zagreb, Croatia - jelena.vidovic@geol.pmf.hr

<sup>2</sup> Faculty of Civil Engineering, University of Rijeka, V. Cara Emina 5, HR-51 000, Rijeka, Croatia

### Abstract

The foraminiferal assemblages were studied at four stations in Soline Bay (Krk Island, Adriatic Sea, Croatia). Soline Bay is a protected lagoon with sediment rich in organic matter, without anthropogenic, industrial, agricultural impact and with negligible water input. The results demonstrated: dominance of hyaline taxa specimens along the Bay with an increase in number toward the shallower part, a decrease in the relative abundance of porcelaneous taxa specimens in the same direction, a low diversity and a high dominance of a very few species at all stations, plankton specimens in the shallow part of the Bay brought by tide currents.

*Keywords* : Lagoons, Adriatic Sea, Foraminifera, Sediments.

### Study Area

The foraminiferal assemblages from Soline Bay (Krk Island) were studied in May 2006 as a part of seasonal variability of the foraminiferal assemblages monitoring project in the selected localities at the east coast of the Adriatic Sea (Croatian part of the Adriatic Sea). Soline Bay was selected as an example of the protected lagoon with fine-grained sediment rich in organic matter. Origin of the fine-grained sediment is the catchment area of the Bay composed of the Eocene Flysch. There is no anthropogenic, industrial, agricultural impact and there is a negligible water input.

### Materials and Methods

Hand collecting by a scuba diver took place in the transect along with the stations from #1 to #4, starting at water depth of 1.2m down to 10.5m. The temperature varied from 17°C in the deeper parts, to 20°C in the shallower parts of the Bay. Two samples were collected from each station. One sample was presently stained with the Rose Bengal, while other sample was left for sedimentological analyses. The stained samples were treated using a standard procedure. Dried fractions were split in aliquots containing at least 300 specimens, which were picked, identified and counted. Living (stained) and dead (empty) foraminiferal specimens were identified. The samples left for sedimentological analyses were processed using a standard procedure.

### Results and Discussion

The hypothesis was based on the fact that agglutinated and porcelaneous taxa would decline in abundance toward the shallower part of the Bay with the increase of fine-grained fraction proportion and that hyaline taxa would tolerate the change well [1].

The results have demonstrated a change in the sediment type from sandy mud at the station #1, gravely muddy sand at the stations #2 and #3, to gravely mud at the station #4 [2]. Inverse sediment zonation (fine-grained sediment in the shallower part of the Bay) is explained by the Eocene Flysch sediment supply.

Living (stained) specimens were rare at all four stations, ranging in proportion from 3% at the station #4, to 10% at the station #1. Therefore the interpretation was based on the total assemblage.

The general trends observed at Soline Bay were the following: 1) low diversity and high dominance of a few species at all stations, 2) hyaline taxa specimens domination along the Bay with the maximum at the shallowest station (from 70% at the station #4, to 96% at the station #1), 3) decrease in the relative abundance of porcelaneous specimens in the same direction (from 25 % at the station #4, to 3 % at the station #1), 4) very low relative abundance of agglutinated species at all stations (1% at the station # 2 to 3% at the station #4), 5) high number of genus *Ammonia* specimens along the Bay, 6) decrease in number of genus *Elphidium* specimens toward the shallower part of the Bay, 7) relative abundance of plankton specimens increase toward the inner part of the Bay, most likely brought by tide currents, 8) mechanical damages (fragmentation) of numerous specimens of genera *Elphidium*, *Ammonia* and *Quinqueloculina*.

### References

- 1 - Platon, E., Sen Gupta, B.K., Rabalais, N.N. & Turner, R.E. 2005. Effect of seasonal hypoxia on the benthic foraminiferal community of the Louisiana inner continental shelf. The 20<sup>th</sup> century record. *Mar. Micropal.*, 54:263-283.
- 2 - Folk, R.L. 1954: The distinction between grain size and mineral

composition in sedimentary rock nomenclature. *J. Geol.*, 60:344-356.