Chapter 6
Evolution of El Hisha Lagoon (South-Eastern Tunisia, Gulf of Gabès) Through the Analysis of Ostracods and Benthic Foraminifera Assemblages

Soumaya Ben Rouina
University of Sfax, Tunisia

Rimeh Zarai
University of Gabes, Tunisia

Jamel Touir
University of Sfax, Tunisia

ABSTRACT

A 80 cm-long sediment core was taken from the El Hisha lagoon in the southestren coast of Tunisia. The sediments were deposited in a shallow marine lagoonal environment that was confirmed by the dominance of lagoonal assemblages associeted to coastal marine microfauna assemblages, evolving toward the closing. The settlement of the restricted lagoonal environments is linked to the building-up of sandy spit. Later, This lagoonal sedimentation was interrupted by high-energy events, causing the breakthrough of the sandy spit, corroborated by the presence

DOI: 10.4018/978-1-6684-7801-1.ch006

of planktonic foraminifera with benthic microfauna.

INTRODUCTION

Ostracods and benthic foraminifera are known to inhabit a wide variety of aquatic environments (marine, brackish and freshwater). The ostracods fossils associations are extremely useful for recording past sea level changes and reconstructing paleoclimatic and paleoenvironmental conditions (Frenzel and Boomer, 2005; Viehberg et al., 2008 ;Nachite et al., 2010; El Hmaidi et al., 2010; Horne et al., 2012; Wang et al., 2021; Guo et al., 2023). In the same topic, the fossil benthic foraminifera are also widely considered by many workers (Scott et al., 2001;Carboni et al., 2010;Morigi et al.,2005;Bernasconi et al., 2006;Yanko et al., 2006; Meriç et al., 2007; Di Bella et al., 2008; Woodhouse et al., 2023; Sayed et al., 2023)

The most important parameters controlling both the ostracods and benthic foraminifera distribution are the water temperature, salinity, dissolved oxygen concentration, hydrodynamic energy and the nature of substratum (Jorissen et al., 1995; Bekkali and Nachite, 1997; Murray, 2002 ; Samir et al., 2003; Hyams-Kaphzan et al., 2008; Phipps et al., 2010 ; Nachite et al.,2010; Barik et al., 2022; Harikrishnan et al., 2023). The previous interesting literature data are considered in the present work not only to interpret the paleoenviroment of each ostracods or foraminifera associations in the El Hisha lagoon to reconstruct the temporal change of the lagoon based on the vertical variation of the microfauna associations through the studied core (H). In fact, the interpretation and reconstruction of paleoenviroments based on the associated ostracods and foraminifers assemblages are widely discussed and reported in several works carried out on coastal sediments around the Mediterranean Sea (Mojtahid et al., 2010; Yavuzatmaca, 2022; Mazzini et al., 2023; Sayed et al., 2023). In Tunisia as well, some works have been achieved on many coastal environments and associated microfauna (Mansouri, 1979; Carbonel and Pujos, 1981; Ruiz et al., 2006; Ben Rouina et al., 2016; Hajji et al., 2023). Although this works have not been carried out in El Hisha lagoon-object of the present work-the proximity of the studied localities to the El Hisha lagoon allow us comparing and correlating between them. In this context Ben Rouina et al., (2011), has already studied the distribution of ostracods and benthic foraminifera in the surface sediments of the El Hisha lagoon and established the ecological associations of microfauna and characterized the different ecozones and the parameters governing their distribution in space. With particularly to the hydrodynamics through tidal currents with the main tidal channels (Ben Rouina et al., 2011).