

RECORD OF THE INVASIVE RED SEA MUSSEL *BRACHIDONTES PHARAONIS* (BIVALVIA: MYTILIDAE) FROM THE LAGOON OF BOUGHRARA (SOUTHERN TUNISIA, CENTRAL MEDITERRANEAN SEA)

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RÉSUMÉ

Brachidontes pharaonis, a été signalé sur les côtes tunisiennes trois fois. Un spécimen vivant a été prélevé sur une tortue échouée à Zarzis (sud de la Tunisie) en août 2007. La deuxième fois durant le projet "Protection des ressources marines et côtières du Golfe de Gabès" en 2011, l'espèce a été observée agrégée avec *Mytilaster minimus*, dans une zone côtière de Zarzis. *Brachidontes pharaonis* était considéré comme rare. En 2013, ce mollusque a été enregistré dans la même zone (Zarzis) dans une faible profondeur sur des récifs artificiels dans le port.

Lors d'une enquête sur la lagune de Boughrara en 2016, « a *Brachidontes bed* » a été découvert dans le nord ouest de la lagune (Ajim Channel) à une profondeur de 7 m. La salinité et la température de l'eau étaient respectivement de 45 PSU et 26,9 ° C. La densité des mollusques a été estimée à 5000 individus/m². Les mensurations biométriques ont été déterminées sur le site.

Mots clés : Record, *Brachidontes pharaonis*, Lagune de Boughrara, Sud de la Tunisie

ABSTRACT

Brachidontes pharaonis were recorded in Tunisia water thrice. The first time in August 2007, a living specimen was collected from a freshly loggerhead stranded Zarzis (southern Tunisia). The second time during the project of the "Protection of the marine and coastal resources of the Gabes Gulf" in 2011, the species was observed aggregated with *Mytilaster minimus*, in a coastal area of Zarzis. *Brachidontes pharaonis* was considered rare. In 2013, the mollusca were recorded in the same area (Zarzis) in a very shallow depth in harbour and artificial reef. During an investigation of the lagoon of Boughrara in 2016, a "Brachidontes bed" were discovered in the north west of the lagoon (Ajim Channel) at depth of 7 m. The salinity and the temperature water were respectively 45 PSU and 26.9 °C. The molluscs density was estimated to 5000 specimens/m². The biometric mensuration was also assessed in the site.

Key words: Record, *Brachidontes pharaonis*, the lagoon of Boughrara, Southern Tunisia

INTRODUCTION

Since the opening of the Suez Canal in 1869, a large number of Indo West Pacific molluscs have entered the Mediterranean through the Canal and established permanent populations along its coasts. The red sea mussel, *Brachidontes pharaonis*, a lessepsian invasive species, was first recorded in the Mediterranean in 1876. Twenty years after, the species became abundant in midlittoral and infralittoral rocky habitats, especially along the rocky shores of the Eastern Mediterranean Sea (ZENETOS *et al.* 2003, RILOV *et al.* 2004).

In Tunisia *B. pharaonis* was recorded thrice. The first time in August 2007, a living specimen was collected from a freshly loggerhead stranded in Zarzis, (southern Tunisia) (KARRA *et al.* 2014). The second time during the project of the "Protection of the marine and coastal resources of the Gabès Gulf"

2011, the species was observed aggregated with *Mytilaster minimus*, in a coastal area of Zarzis. *B. pharaonis* was considered rare. In 2013, the mollusca were recorded in the same area (Zarzis) in a very shallow depth in harbour and artificial reef (OUNIFI BEN AMOR *et al.* 2016).

During a field mission in the lagoon of Boughrara in 2016 during the project COZOMED (Effects of physical forcing on COastal ZOoplankton community structure: study of the unusual case of a MEDiterranean ecosystem under strong tidal influence), a "Brachidontes bed" were discovered in the north west of the lagoon (Ajim Channel).

In this note, we report the presence of the red sea mussel in the Boughrara lagoon, described the biometric characters of the bivalve and determined their density in the site.

MATERIEL AND METHODS

A “*Brachidontes* bed” were discovered in the north west of the area (33°40’5’’N; 10°46’40’’E) (Fig. 1) in Novembre 2016. The bivalve was collected by a

“Van Veen” Benne (625 cm²) at depth of 7 m. The salinity and the temperature water were respectively 45 PSU and 26.9 °C. The bottom of the sampling area is covered with coarse sand.

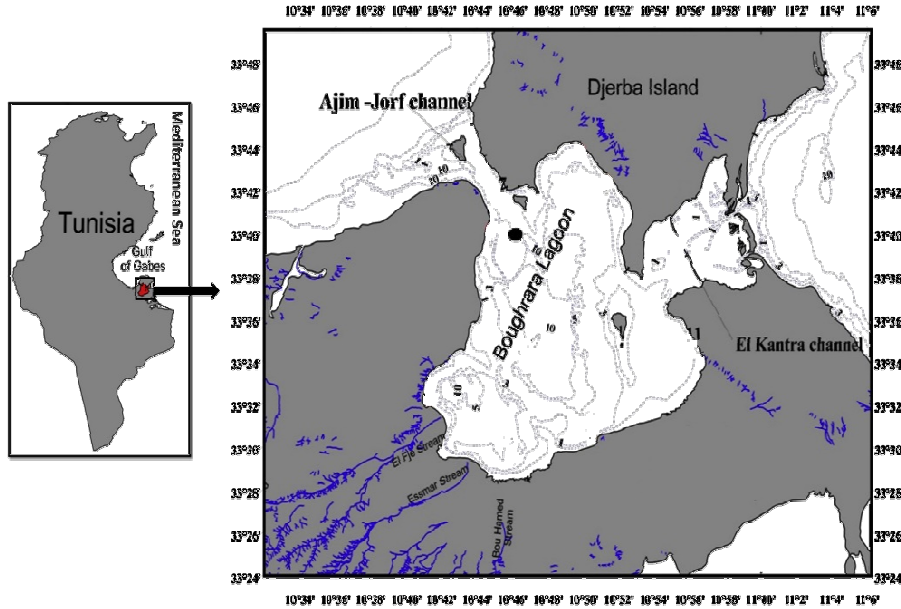


Figure 1: Sampling area; the black dot represent the localisation of *Brachidontes pharaonis* in the Boughrara lagoon (Southern Tunisia).

RESULTS

A 308 live bivalves (Photo 1) were collected. Shell length (SL) were ranged from 3.3 to 25.2 mm, the

most common sizes were ranged between 13 and 15 mm SL (Fig.2). The density of the red sea mussel was estimated to 5000 specimens/m² in the considered site.

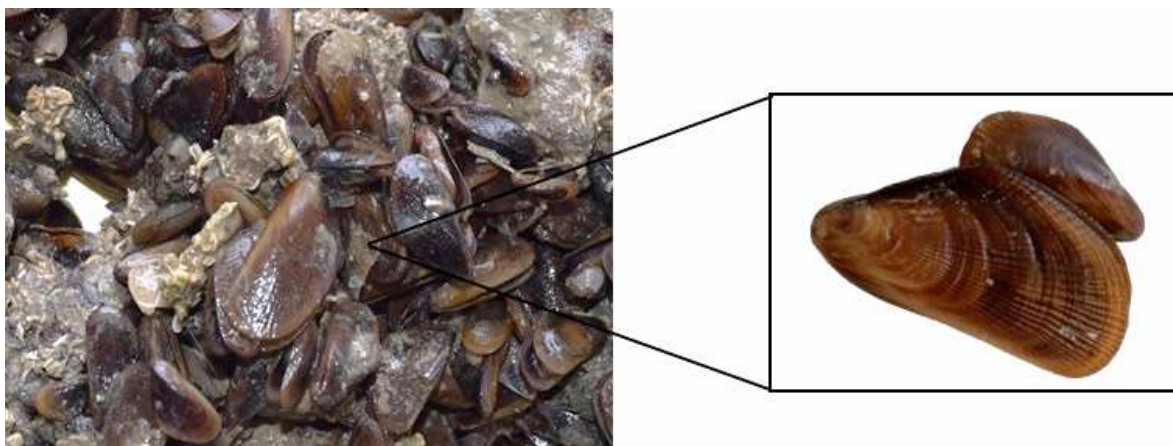


Photo 1: *Brachidontes* bed from Boughrara lagoon

Brachidontes pharaonis was observed aggregated with native *Mytilaster minimus* (Photo, 2), Only 6

specimens of the dwarf mussel were collected. The relative density of this native mussel was estimated to 96 specimens/m².

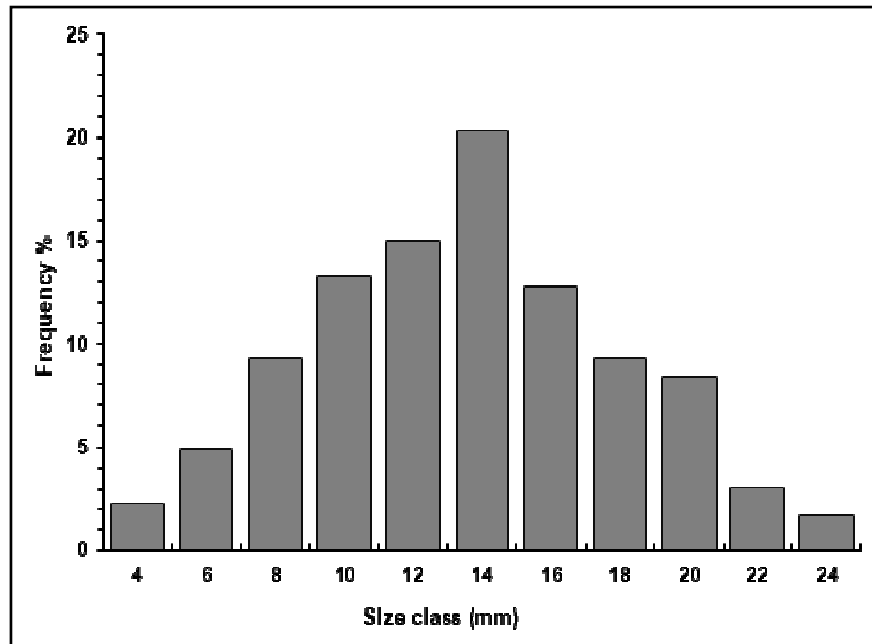


Figure 2: Shell length-frequency histograms of *B. pharaonis* collected from Bouhrara lagoon



Photo 2: The native *Mytilaster minimus* (in the left) and the lessepsian invasive *Brachidontes pharaonis* (in the right) in the Bouhrara lagoon

DISCUSSIONS & CONCLUSIONS

The introduction of *Brachidontes pharaonis* can be related to fishery activity in the region according to similar observations in Mediterranean Sea (SARRA *et al.* 2008). The relative density of the red sea mussel

observed in Bouhrara lagoon was curiously important seen that the species is not cited in the lagoon although many studies were recently carried in the area (KHEDHIRI *et al.* 2016). Authors records only *Mytilaster minimus* with a density ranged from 1 to 30 individuals/m². The established population of the

red mussel isn't certainly recent in the area. In fact, the density calculated is so important to confirm that the species isn't a new migrant.

In many area of the Mediterranean Sea the red sea mussel displaces the native mytilid, *Mytilaster minimus* (SAFRIEL *et al.* 1988; SARRA *et DE PIRRO*, 2011). It has a high metabolic plasticity and a great resistance to salinity, would enable this bivalve to replace some of the native species

Shells length recorded in the Boughrara lagoon are smaller to others populations elsewhere from Mediterranean Sea. In fact, the common size from Sicily (Stagnone di Marsala) was 21-24 mm LS with a maximum size over 36–40 mm (SARRA *et al.* 2008). It should be noted that the size is in relation with physical conditions and food availability (SARRA *et al.* 2008b).

More investigation in the Boughrara lagoon, classified as a fragile and vulnerable ecosystem, are necessary to determine the distribution of the species and to study the impact of the migrant mussel on the native species.

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