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| <p>First Record of <i>Flexopecten Glaber</i> (Linnaeus, 1758) (Bivalvia: Pectinidae) from the Romanian Black Sea Shelf <i>Adrian Filimon</i></p> | <p>“Cercetări Marine” Issue no. 50 Pages 186 – 191</p> | <p>2020</p> |
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FIRST RECORD OF *Flexopecten glaber* (Linnaeus, 1758) (BIVALVIA: PECTINIDAE) FROM THE ROMANIAN BLACK SEA SHELF

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ABSTRACT

The “Smooth Scallop” *Flexopecten glaber* (Linnaeus, 1758) is an edible bivalve which is widely distributed in the Mediterranean Sea. Generally, for the Pectinidae representative inhabiting the Black Sea, the name *F. glaber ponticus* (Bucquoy, Dautzenberg & Dollfus, 1889) is used. *F. glaber ponticus* is listed in WoRMS as the only accepted subspecies of *F. glaber* (Linnaeus, 1758). In June 2020, as a result of dredging activities in the Mangalia area, three living specimens of *F. glaber* were found at 25 meters depth, in shelly gravel and coarse sand habitat. After all available sources were consulted, it was concluded that in Romanian waters, *F. glaber* was listed just based on isolated shells. This finding, together with other aspects observed in the last years, illustrate positive changes in bivalve fauna from the Romanian Black Sea waters.

Key-Words: living *Flexopecten glaber*, molluscs fauna, Romanian Black Sea

AIMS AND BACKGROUND

The paper aims to point out the presence of living *Flexopecten glaber*, for the first time at the Romanian Black Sea shelf.

The “Smooth Scallop” *F. glaber* (Linnaeus, 1758) is a widely distributed bivalve in the Mediterranean Sea and Adriatic Sea. Generally, for the Pectinidae representative inhabiting the Black Sea, the name *F. glaber ponticus* (Bucquoy, Dautzenberg & Dollfus, 1889) is used. *F. glaber ponticus* is considered as a subspecies of the Mediterranean scallop *F. glaber* (WoRMS 2020). In the Black Sea, *F. glaber* migrated not earlier than 7,000 years ago and formed a strong population less than 3,000 years ago (Bondarev, 2018). Because of the short period since the species emerged to the Black Sea and based on taxonomical and genetic studies, some authors consider that *Flexopecten* from the Black Sea is identical with *F. glaber* from the

Mediterranean Sea (Bondarev, 2018; Slynko, 2020). In this study, the name *F. glaber ponticus* will be considered as a synonym of the *F. glaber*.

In Romanian waters, just isolated valves belonging to *F. glaber* (syn. *Chlamys glabra*) were found in front of Constanta, Agigea and Mangalia (Borcea, 1926; Grossu, 1962; Grossu, 1993). Only Micu, 2004 mentioned that *F. glaber* was found alive in 1971. This statement may be based on Băcescu et al., 1971 where *F. glaber* was also listed as a result of isolated shells identified in samples.

After all available sources were consulted, it was concluded that till now, in Romanian Black Sea waters, *F. glaber* was recorded just as isolated shells, but not as living individuals.

EXPERIMENTAL

Sampling was carried out using a rectangular dredge (L150 x l 100 x H 30 cm) in June 2020. The dredge was towed on the sea bottom for 5 minutes with a warp equal to 3 times the depth of water. While dredging, the ship's speed was maintained at 1.5 knots. It is hard to estimate time during which gear is on the bottom. The dredge will continue to drag along the bottom for some time after hauling has commenced. However, considering time and speed, the estimated dredged area was about 231 m². During this research, samplings by dredging were carried out along the entire Romanian coast (Danube Mouths-southern border of Romania) at depths between 20 and 50 meters. Bivalve molluscs belonging to the family Pectinidae were observed just in front of Mangalia at 25 meters depth (43.79151 N; 28.64513 E). They were immediately placed in a container with seawater for further taxonomical identification and observations.

The basic morphological characteristics, height (H) and length (L) of the shell were measured using a caliper with 0.1mm precision.

The biological age of the individuals was estimated by the annual marks, concentric lines formed during the seasonal slowdown of growth in winter (Gosling, 2003).

RESULTS AND DISCUSSIONS

In Romanian Black Sea waters, three living individuals of *F. glaber* were found in front of Mangalia at 25 meters depth, in a shelly gravel and coarse sand habitat. This biotope has many other associated species including *Liocarcinus vernalis*, *Diogene pugilator*, *Mytilus galloprovincialis*, *Pitar rudis*, *Polititapes aureus*, *Rapana venosa* and *Sagartiogeton undatus*. In the Mediterranean sea, it inhabits muddy and sandy bottom substrates with shell debris between 5 and 900 m depth, occasionally even down to 1600 m (Poppe, 1993). In the Black Sea, the species is present from 2 to 40 m depth (Nevesskaya, 1965).

F. glaber is a polymorphic species in terms of size, number of ribs, and color (Bondarev, 2020). Specimens collected in Mangalia had dimensions of 33.35 mm, 28.78 mm respectively 26.60 length and 31.84 mm, 28.23 mm and 26.67 mm height. The left valves are slightly larger and more convex compared to the right valves. On the shells surface are distinct concentric lines which once in a while form growing steps. The age, estimated by counting of growth rings, was 3 and 4 years. The valves outer surfaces have 10 to 12 radial ribs. Shells color varied from orange to pink with shadows of brown. For two of the three individuals, left (upper) valves were coloured more intensively than the right ones which were off-white. One of them has both valves completely orange (Fig. 1).



Fig. 1. *F. glaber* identified at Mangalia, Romania
(photo A. Filimon)

The presence of *F. glaber* specimens in Romanian waters is due to the dispersal of planktonic larvae from conspecific populations that live in Ukrainian and Republic of Crimea waters. In the Black Sea, *F. glaber* reproduces in June-July. In a day, larvae enter the D-veliger stage (prodissoconch I) and the shell length is 70 μm (Pirkova and Ladygina, 2017). The length of larval life in marine bivalves varies between three and five weeks, depending on environmental factors such as temperature, salinity and food ration (Gosling, 2003). Lateral dispersal of veliger larvae is through water currents. It was assumed that the immigration of propagules is from the northern waters of the Black Sea because there are healthy populations of *F. glaber*, in a good ecological state (Bondarev, 2019). Settlement in the southern part of the Romanian shore may be due to better water quality and habitat availability.

The *F. glaber* is an edible bivalve with a high market value. The harvesting of wild stocks cannot be considered in the Black Sea. In Romania, interest in mariculture has increased in recent years. Studies in the Adriatic Sea have shown that the relatively high growth rate makes this species a

perfect candidate for aquaculture (Marčeta *et al.*, 2016). The biology and ecology of *F. glaber* have not been sufficiently studied in the Black Sea. For accurate data, research must be carried out in the context of the physicochemical conditions from the Romanian Black Sea coast. These studies can be achieved in the frame of the Shellfish Aquaculture Demonstrative Center (S-ADC) that is established at NIMRD's headquarters (Nita *et al.*, 2019).

Long period of severe ecological disturbance caused by eutrophication and pollution affected throughout the northwestern shelf area of the Black Sea (Abaza *et al.*, 2018). In the last 5 years, the author observed that rare species, such as *Polititapes aureus*, *Pitar rudis*, *Pietricola litophaga* and *Donax trunculus* began to reappear frequently and in relatively large quantities. Occurrence in the samples collected in the last years of absent or very rare species can be considered a sign of ecological recovery (Gomoiu *et al.*, 2012).

CONCLUSIONS

The “Smooth Scallop” *F. glaber* (Linnaeus, 1758) was found alive in Romanian waters in June 2020.

After examining all available sources, it was concluded that *F. glaber* was never found alive at the Romanian Black Sea shelf. Considering the age of the specimens (3-4 years), there may be a small population of *F. glaber*. This finding, together with other aspects observed in recent years, illustrates important positive changes in bivalve fauna from the Romanian Black Sea coast. Also, the appearance in recent years of absent or very rare species can be considered a sign of ecological recovery.

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