

The presence of *Rapana bezoar*
opposite the Rumanian Black Sea shores
(Muricidae).

By

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The presence of a new gasteropod of an outstanding importance to the Black Sea fauna, has been recently recorded. DRAPCHIN (1953) and subsequently other numerous Soviet research workers mention the penetration and development in good conditions of the *Rapana bezoar* (LINNAEUS) gasteropod in the Pontic basin. In 1947, DRAPCHIN discovers this gasteropod for the first time in the Novorossisk gulf, and stresses the important fact that between 1947-1953, this species had become common on the entire Caucasian Black Sea shore, from Batum to Kertch. It is interesting to note that the native country of this species is the Pacific Ocean and the Yellow Sea, thus the Far-Eastern coastline, and that only a few years from its penetration into the Black Sea, it has become very common.

STARK's and specially CIUHCIN's (1961) subsequent observations on this gasteropod bring forth the fact that once penetrated into the Pontic Basin, it presents a very rapid migration, appearing after 1954, in great numbers in the gulf of Sevastopol and at Yalta as well, thus also on the Crimean coast, being considered everywhere as a very harmful species, specially to the oyster banks. The progress towards the west of this new element has been very carefully traced, and fishermen already reported the presence of the *Rapana* opposite the Rumanian shores; some 2-3 years ago it was found but seldom, while recently it appears frequently enough. In our collection we have a few specimens, collected alive near the shore, to the south of the mouth of the Danube, in the neighbourhood of Portita (Periteașca, Chituc). The informations received from Dr. M. BACESCU about the presence of this gasteropod in Rumanian waters, have shown me that the collective of hydrobiologists of the Constanta Marine Research Station were knowing about it. Further south (Constanta, Agigea), the presence of this species has not yet been reported.

Examining the biology of this gasteropod in the Black Sea, the existing literature shows that here, too, it prefers the coastline zone, to a depth of 15-16 m., seldom reaching 30 m. or more, having in view especially, the presence of oyster and mussel banks. It may also be found in the zone of other shell-fish with smaller shells, as well as on sandy, oozy or rocky sea beds, and on rocks, piers, etc.

It has been established that this animal possesses an exceptionally great

adaptability to very unfavourable conditions, such as: lack of long standing nourishment, reduced salinity, low or variable temperatures, etc. It also stands satisfactorily the dirty waters of harbours. This rapid adaptability has permitted the *Rapana bezoar* to undertake large migrations and to cover large areas by its distribution.

Numerous and extremely interesting observations have also been made on the multiplication of this animal within the Pontic basin. Examining in aquariums the breeding of *Rapana*, CIUHCIN has established that in 37 days, 675 cocoons had been laid, containing some 180.000 eggs, and reckoned that the total number of eggs laid by a singly female in one summer, may reach up to 377.000. For their nourishment, the young specimens attack small species of shell-fish, and have the possibility of becoming adult only at the age of three, and continuing their growth. This multiplication together with such a great number of eggs, makes a rapid population and distribution possible, and thus explains its penetration up to the Rumanian shores.

The presence of this species in the Pontic basin is of great negative, economic importance, because the *Rapana bezoar* is a great consumer of shell-fish. It has been established that whole oyster banks, of gigantic dimensions, which played an important economic role, have been completely wiped out by this predatory animal, reminding one, to this effect, according to CIUHCIN, of the Gudanski bank, as well as other banks on the Caucasian shores of the Black Sea. In the Pontic basin, there are also some other species of Muricidae, such as *Trophon breviatus*, and to a certain extent *Ciclope (Nassa) reticulata*, which have the same predatory regime, feeding on small shell-fish. Their number is however small, a biological equilibrium having been established, and no damages have been ascertained of the level and in the proportion of those caused by *Rapana*.

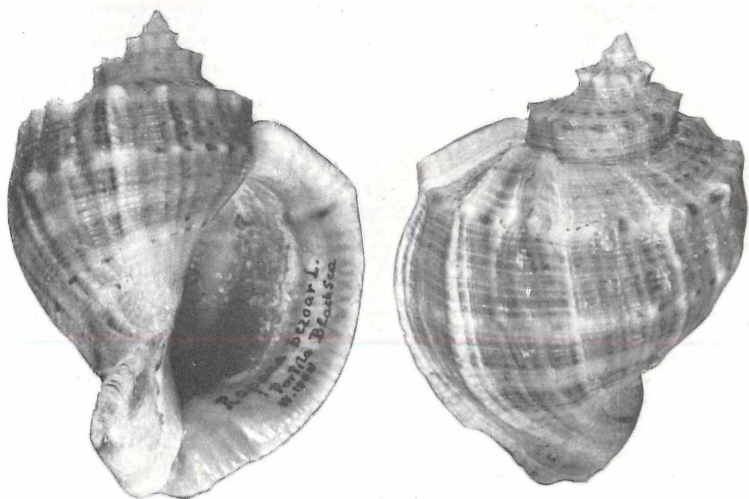


Fig. 1. *Rapana bezoar* (LINNAEUS); Portița, Black Sea. 84.5×63.5 mm [SMF 176027].

As a matter of fact, a certain equilibrium has been established on the shores of the Pacific Ocean, a oyster banks exist by the side of this gasteropod. So far we explain the rapid multiplication and the serious havoc caused by it in the Black Sea, by the lack of competitors, and probably of certain natural enemies which, no doubt, it has in the Pacific Ocean.

It has been established that in the Black Sea, it can also nourish itself with smaller shell-fish, in the absence of oyster and mussel banks. This nourishment will permit the *Rapana* to continue its migration and to populate still larger areas, and, at the same time, to survive, even if its favourite food will be lacking. This consumption of smaller shell-fish might explain, to a certain extent, the smaller dimensions of the Black Sea specimens of *Rapana*, as compared to those of the Pacific Ocean, which may reach a length of 18 cm., while the largest specimens recorded in the Pontic basin measure only 15 cm., the greatest number of them having a length of 10-12 cm.; the biggest specimens opposite the Rumanian shores hardly reach 10 cm., the common ones measuring 9 cm. or even less (Fig. 1).

It is true that, having but recently migrated into the Roumanian waters of the Black sea, the specimens found may generally be young ones, which will continue to grow, and one should not exclude the possibility that in a few years larger specimens will be found.

The zoocenosis of the benthal in the Black Sea is poor enough as compared to the richness and variation of other species in other seas. At the same time, the biotic zone which extends only to a depth of about 200 m., is rather narrow in certain places. The presence of this voracious ravager of both large shell-fish (*Ostrea*, *Mytilus*), and small ones (*Venerupis*, *Cardium*, *Spisula*, *Meretrix*), will determine a serious modification of the equilibrium established in the Pontic basin, and will lead to the modification of the composition of certain biocenoses. CIUHCIN has made some observations to this effect for the Soviet shores of the Black Sea. He notices the fact absence of the species of *Ostrea* and *Mytilus*, the *Rapana* already consumes the species of *Pecten*, *Modiolus* and *Cardium*.

The Rumanian Black Sea shores enjoy certain altogether different conditions. It has been established by numerous Rumanian research workers, to begin with ANTIPA's observations (1941) and continuing with the valuable contributions of BACESCU (1957, 1961) that there is a wide variation of physico chemical and climatic conditions, differing from year to year and from season to season. The intensity and irregularity of winds, the marine currents and the overflows of the Danube, determine considerable modification as far as changes of temperature and especially the reduction of salinity are concerned. It will be very interesting to observe the behaviour of this gasteropod, recently introduced into this region, which has such variable conditions, and what consequences they will have in the composition of the biocenoses established here, and which are of such importance to the food of some species of benthonic fishes.

At the same time we deem it important to point out that the presence of *Rapana* in the Black Sea does not exclude the possibility of its penetration into the Mediterranean Sea as well, or even into the Atlantic Ocean, if this has not already happened, and which will cause serious damages to the edible and industrializable species of shell-fish.

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