

MINERALOGY OF RECENT BRYOZOANS (*PENTAPORA FASCIALIS*) FROM DIFFERENT ENVIRONMENTS IN THE ADRIATIC SEA

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Abstract

Pentapora fascialis bryozoans, collected from 3 different sites in the Adriatic sea, were investigated by x-ray diffraction and scanning electron microscopy. Their skeletons consist of calcite and aragonite, in differing percentages. Compositional variation reflects possible differences in habitational environment.

Keywords : *Adriatic Sea, Bryozoa, Mineralogy.*

Pentapora fascialis [Pallas 1766] is the largest and most conspicuous calcified bryozoan in the Adriatic Sea. It is common in current-swept coarse bottoms. Colonies are mostly red, erect, rigid and heavily calcified (Fig. 1).

Three different samples of bryozoan *P. fascialis* were collected at three different localities in the North, Central and South Adriatic: in the Velebit Channel (Zdralova cove) from 10 to 20 m depth, on Jabuka shoal from 40 to 50 m depth and at Korcula Island (Lucnjak Islet) from 20 to 35 m depth. The samples were collected by scuba diving and dredging between August 2001 and April 2004.

Colonies of collected bryozoans are different in shape and size, but there is no visible difference in the structure and morphology of zooids from different colonies.

Along the coast of the Velebit Channel in the North Adriatic, large colonies of *P. fascialis* were particularly abundant. There, *P. fascialis* colonies grow only in the vicinity of submarine freshwater springs on sandy-detritic bottom, between 1 m and 35 m depth. Those colonies are always wide-branched and are, without any doubt, the biggest colonies ever found in the Adriatic, up to 200 cm in diameter [1].

On Jabuka shoal, in the Central Adriatic, only small and narrow-branched colonies (10 to 20 cm in diameter) were observed, within the depth range from 20 m to 50 m.

But large colonies of *P. fascialis* were also observed in the South on Korcula Island where the location was narrow passage between small islands Badija and Lucnjak characterized by constant and very strong currents. There, large and numerous colonies of *P. fascialis* (50 to 80 cm in diameter) grew in both forms, as wide- and narrow-branched colonies. Every sample was cleaned from organic matter and investigated by X-ray powder diffraction combined by scanning electron microscopy.

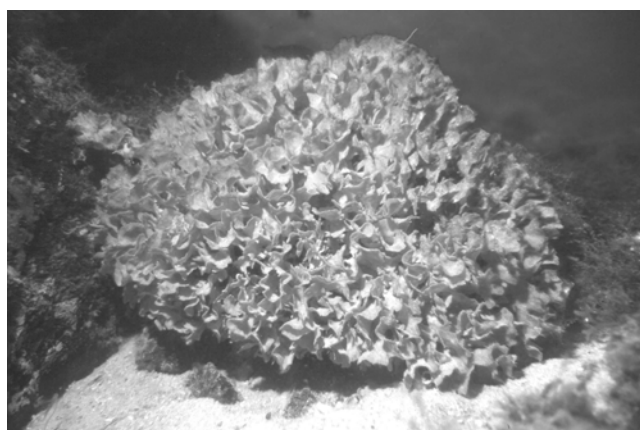


Fig. 1. Colony of *Pentapora fascialis* from the Adriatic sea.

All three samples show that their skeletons are built of a mixture of calcite and aragonite. The sample from the vicinity of Jabuka shoal contains the highest percentage of aragonite while two other samples show very similar and lower aragonite to calcite ratios. The reason for these differences probably derive from differences in the habitat environment or from

specific differences in organic production.

Unit cell parameters for calcite show that the purest end member calcite is formed in bryozoans from the Jabuka shoal colony ($a = 4.945(2)$ and $c = 16.92(2)$ Å), while unit cell dimensions of the other two samples Zdralova ($a = 4.941(3)$ and $c = 16.83(2)$ Å) and Korčula ($a = 4.943(1)$ and $c = 16.851(9)$ Å) indicating significant substitution of calcium for magnesium.

These differences in mineralogical composition of recent skeletons of bryozoans can be most probably attributed to different physical-chemical conditions pertaining to their habitat environment. The differences may also originate from the geological environment, since the Jabuka shoal is built of igneous rocks which are not very common in Adriatic Sea.

The differences in temperature and salinity probably caused different forms and sizes of colonies.

Reference

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