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## ***Callista chione* – geochemical archive of $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ data**

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The Smooth clam *Callista chione* is a commercially important venerid bivalve. It is widely distributed in the eastern Atlantic Ocean and the Mediterranean Sea and inhabits sandy sediments in coastal waters at depths down to 180 m. With specimens that can reach 10 cm of shell length and with a lifespan of more than four decades, *C. chione* represents an interesting archive for sclerochronological research. The aim of this study was to analyse possible variations in  $\delta^{18}\text{O}_{\text{shell}}$  and  $\delta^{13}\text{C}_{\text{shell}}$  values between *C. chione* specimens collected in different parts of the Mediterranean Sea.

*Callista chione* shells were collected alive from three localities: (1) Caleta de Vélez in the north region of the Alborán Sea, Spain; (2) Gulf of Venice, Italy, North Adriatic, and (3) west coast of the Istrian peninsula, Croatia, also in the North Adriatic. At the first two localities, specimens were obtained from catch of the commercial fishing vessels, while in Istria they were collected by SCUBA diving. Prior to analysis, the external shell surface was physically cleaned by grinding. Shell powder for  $\delta^{18}\text{O}_{\text{shell}}$  and  $\delta^{13}\text{C}_{\text{shell}}$  analysis was then collected by milling narrow sample swaths in the outer shell surface and processed at Mainz University using a GasBench II - IRMS.

Modelled daily temperature and salinity values were obtained for each locality and used for calculating the predicted  $\delta^{18}\text{O}_{\text{shell}}$  values. For Caleta de Vélez, daily temperature and salinity values were obtained by MEDSEA model; for the Venetian region by the AdriSC climate model, and for Istria by the 3D numerical model ROMS. Temporal alignment of measured  $\delta^{18}\text{O}_{\text{shell}}$  values was conducted manually in Excel by best-fitting measured isotope data to predicted  $\delta^{18}\text{O}_{\text{shell}}$  curves.

Seasonal  $\delta^{18}\text{O}_{\text{shell}}$  cycles were observed in all studied specimens. Temporal alignment of measured and modelled  $\delta^{18}\text{O}_{\text{shell}}$  values clearly showed that *C. chione* grew fast during the warm part of the year, while slower growth occurred during the winter months. Samples collected in Caleta de Vélez had the narrowest range of  $\delta^{18}\text{O}_{\text{shell}}$  values (-0.43 to +1.73 ‰), while  $\delta^{18}\text{O}_{\text{shell}}$  values in *C. chione* from Istria showed the largest amplitudes (-1.61 to +2.67 ‰). Growth patterns varied between sampling localities.

The  $\delta^{13}\text{C}_{\text{shell}}$  values varied strongly between localities and specimens. Highest  $\delta^{13}\text{C}_{\text{shell}}$  values were obtained for *C. chione* shells from Caleta de Vélez ( $0.51 \pm 0.03$  ‰, range -0.19 to +1.06 ‰). The broadest range of  $\delta^{13}\text{C}_{\text{shell}}$  values (-3.37 to -0.08 ‰) were measured in shells from the Venetian region. These samples also had the lowest mean ( $-1.42 \pm 0.14$  ‰). Shells from Istria had  $\delta^{13}\text{C}_{\text{shell}}$  values ranging from -1.57 to +0.38 ‰ (mean:  $-0.42 \pm 0.28$  ‰). Observed differences between localities are statistically significant (Kruskal Wallis  $H = 150.4$ ,  $p < 0.001$ ). Isotope data obtained for this study were compared with data from a previous study on the same species in the Eastern Adriatic.

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