

CARBON, OXYGEN AND RADIOCARBON ISOTOPIC COMPOSITION OF MODERN MOLLUSK SHELLS AS GEOINDICATORS TROPHIC STATE LAKES.

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This work is dedicated to studying of the relationship of carbon, oxygen stable isotope and radiocarbon composition of modern mollusk shells with characteristic features of their habitat and interspecific differences, that allows to consider an analysis of distribution of the isotopes, as an important instrument for further understanding of processes of forming of an isotopic composition of mollusk shells, ecological evaluations, paleogeographic and paleoclimatic reconstructions. The isotope measurements of more than 250 samples of mollusk shells, selected in different regions of Belarus and Poland were the base of the studies.

In the result of study carried out it was determined that:

- Eutrophication of the aquatic medium of lakes is accompanied by a distinct decrease in shell $\delta^{13}\text{C}$ values (on the average, from -3.2 ‰ in oligotrophic water bodies to -9.8 ‰ in eutrophic water bodies). This is connected with the influence of the eutrophication process on the role of organogenic CO_2 in the carbon dioxide resources of water bodies.

- River mollusk shells contain significant amount of the light carbon isotope (average $\delta^{13}\text{C}$ values vary from -11.6 to -12.9 ‰ for the rivers studied). This abundance of the light carbon isotope originates mainly from the ground-water recharge, which provides an inflow of soil CO_2 from the drainage area.

- The isotopic composition of shell carbon in mollusks from water reservoirs is intermediate between the compositions of river and lake mollusks. This is a consequence of the isotopic features of the inflowing rivers and the intensive isotope exchange with the atmosphere over large water areas.

- There is a significant difference in oxygen isotope composition between the river and terrestrial mollusk shells from the territory of Belarus and Poland: for river mollusk of Belarus - $\delta^{18}\text{O}_m = +21,6\text{‰}$ and terrestrial - $\delta^{18}\text{O}_m = +26,3\text{‰}$, for mollusks of Poland - $\delta^{18}\text{O}_m = +23,0\text{‰}$ and +28,1‰ accordingly. This fact is explained by the latitudinal effect of atmospheric precipitation.

- Relatively high ^{14}C values were observed in carbonate from mollusk shells: 132 pMC (Lake Muysata) and 124 pMC (Lake Drisvyaty), which is similar to ^{14}C water from Lake Muysata and Lake

Drisvyaty, connected by canals with the Ignalina NPP.

- Estimated isotopic characteristics of shells of modern mollusks from Belarus constitute a basis for the application in Europe (especially, in its temperate climatic zone) of the isotope method for the reconstruction of ancient natural settings, at least those existed during Holocene.