



INQUA 2019
DUBLIN
IRELAND

20th Congress of the International Union for Quaternary Research (INQUA)

INFORMATION

PROGRAMME

TITLES

AUTHORS

PRESENTERS

PROGRAMME CODE

SESSION

O-3132

Molluscs of the genus *Corbicula* as climatic and stratigraphic markers

Pavel D. Frolov^{1,2}, Alexey S. Tesakov¹, Alexey A. Bondarev³

¹Geological institute of Russian Academy of Science, Moscow, Russian Federation. ²Laboratory of Macroecology and Biogeography of Invertebrates, Saint-Petersburg State University, Saint-Petersburg, Russian Federation. ³Omsk regional branch of Russian Geographical Society, Omsk, Russian Federation

Abstract

Bivalves of the genus *Corbicula* are well known markers of warm climate. The mean air temperatures in modern habitats of *Corbicula* in Central Asia range from 13 to 16°C. Normally *Corbicula* cannot stand water temperature drops to 0°C for more than a week. *Corbicula* occurred several times in the fossil record of Eastern Europe. The first, late Gelasian entry is recorded in the North Caucasus as *Corbicula* aff. *jassinensis*. Widespread sites of *Corbicula* *apscheronica* are known in late Early Pleistocene (Calabrian) of Azerbaijan, Stavropol, and Kerch (Andrusov, 1923; Semenenko, 1987). The genus went extinct in the south of Eastern Europe by mid Calabrian.

First records of *Corbicula* in Western Europe are known from Early Pleistocene. *C. fluminalis* is recorded in early and late Gelasian sites of France, Netherlands, and East Anglia. And from Cablarian (Bavelian) of the Netherlands (Meijer, Preece, 2000).

In south of Western Siberia and in the foothills of the Altai Mts, *Corbicula* occurs in a narrow stratigraphic range at the end of Gelasian (Popova, 1981; Zykin, 1991). The finds are attributed here to *C. tibetensis* and *C. ferhanensis*, that possibly dispersed from Central Asia (Zykin, 2012). In the Baikal region, the end Gelasian warm spell also showed a dispersal of the genus (as *C. praebaicalensis*) to the headwaters of the Lena River (Logachev, Popova, 1962).

The next extensive northward migration of *Corbicula* occurred during warm interglacials of the mid Middle Pleistocene (Holsteinian, etc.). The northern boundary of the range of this mollusc in the mouths of the Kama and Irtysh rivers reached 55-60° N, being 10-15° further north from its modern range. In Eastern Europe *Corbicula* is present in Holsteinian sediments in the Black and Azov seas regions. Likewise, the last appearance of *Corbicula* in NW Europe occurred at MIS11-7 (Meijer, Preece, 2000). The reliable presence of *Corbicula* in the middle latitudes of Eurasia during the Eemian (MIS5) interglacial has not been supported by unambiguous records.

The two waves of northward dispersal of *Corbicula* in Early and Middle Pleistocene represent the most important climatic and stratigraphic benchmarks, invaluable for deciphering the bioclimatic history of Northern Eurasia. The taxonomic position of the fossil forms of this genus needs a revision. The modern extensive invasion of *Corbicula* is mainly connected with human activity.

This study was supported by RFBR grant No. 18-05-00746.