Early Callovian (Middle Jurassic) Ostracods from the Kursk Region (Central Russia) as Paleodepth Indicators

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Studying of early Callovian ostracods from the two boreholes (no. 4 and no. 7) drilled in Kursk region, Central Russia (derived from A.V. Chereschinsky, Voronezh University), have revealed existence of two different ostracod associations in the both successions (Fig.1).

Noteworthy both associations were found in both boreholes only in clays. In the siltstones (borehole no. 7) there were no ostracods at all. Therefore the ostracods analysis of reconstruction of palaeoenvironment is more detailed than facial one, for it can differentiate two biofacies in one lithofacies. The first biofacies (A) comprises ca. 20 species, while the second one (biofacies B) is twice poor in species contents (ca. 10 species), while the ostracods in the same biofacies practically are identically in both boreholes.

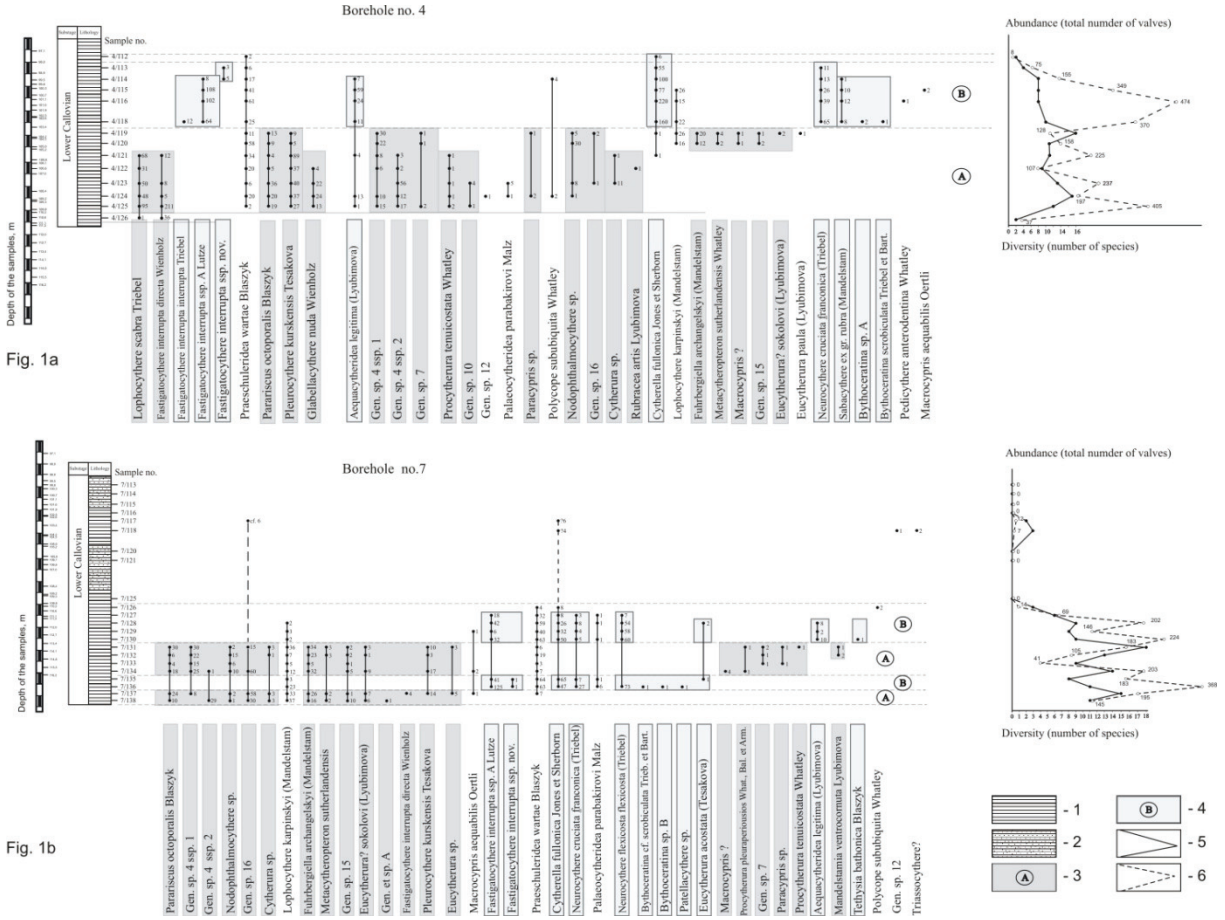

Fig.1 The ostracods distribution in successions of the wells no. 4 and no. 7
1, clay; 2, siltstone; 3, biofacies A; 4, biofacies B; 5, number of species; 6, total number of valves.

In the borehole no. 4 the first biofacies lies below the second, which becomes very poor in species upwards: 4 species were found in its upper part and only 2 species in the top (Fig.1a). Analysis of the relations between abundance and diversity of ostracods has shown that in the first biofacies changes in the both ones (abundance and diversity) are parallel or, in the background of little diversity high abundance of ostracod appearance. At the second biofacies continuous rise of ostracod abundance coincides with gradual reduction of species diversity and afterwards both diversity and abundance decreases. This situation could be explained by existence of the first biofacies in much more favorable environments comparing the second ones. Sandy and silty facies becomes more abundant upwards and these environmental changes seem to be connected with shallowing.

In the well no. 7 both these biofacies were found

two times, i.e. first biofacies follows upwards by second, and upwards cycle repeats again (Fig.1 b). Abundance and diversity of ostracods in this borehole are the same. It is noteworthy that anytime when biofacies B changes A the ostracods diversity diminishes and abundance increases. This is a usual reaction of community on the changes of environments for the worse, when its taxonomical structure simplifies and its biomass rises in the same time (the buffer mass). The sandy facies of the upper part of succession of the well no. 7 rises, too (the siltstones appear). We can connect the changes of environments for the worse in the biofacies B with shallowing of the basin and approaching of costal line. It confirms the previous conclusion.

These cycles could be considered as two transgressive-regressive cycles which are finished by strong shallowing of the basin. Each biofacies of ostracods is characteristic of specific depth, and species typical for one biofacies could be called ecological antipodes of the species from the other one and thus could be used as paleodepth indicators. The ostracod species, most typical of the first biofacies (A) are the following: *Lophocythere scabra* Triebel, 1951; *Fuhrbergiella archangelskyi* (Mandelstam in Lyubimova, 1955), *Fastigatocythere interrupta directa* Wienholz, 1969, *Parariscus octoporalis* Blaszyk, 1967; *Pleurocythere kurskensis* Tesakova in Tesakova, Gulyaev et Strezh, 2009; *Glabellacythere nuda* Wienholz, 1969; *Procytherura tenuicostata* Whatley, 1970; *Eucytherura*? *sokolovi* (Lyubimova, 1955); *Paracypris* sp., *Nodophthalmocythere* sp. They are typical of relatively deep environments, possibly 30-50 m. The ostracods, typical of second biofacies (B), are the following: *Cytherella fullonica* Jones et Sherborn, 1888; *Aequacytheridea legitima* (Lyubimova, 1955); *Palaeocytheridea parabakirovi* Malz, 1962; *Fastigatocythere interrupta interrupta* Triebel, 1951; *F. interrupta* ssp. A Lutze, 1960; *F. interrupta* ssp. nov., *Neurocythere cruciata franconica* (Triebel, 1951); *N. flexicosta flexicosta* (Triebel, 1951); *Bythoceratina* cf. *scrobiculata* (Triebel et Bartenstein, 1938); *Sabacythere* ex gr. *rubra* (Mandelstam in Lyubimova, 1955). They inhabited more shallow water with probable depth 5-20 m. Two species, which occurred with high abundance in the both associations, *Praeschuleridea wartae* Blaszyk, 1967 and *Lophocythere karpinskyi* (Mandelstam in Lyubimova, 1955), considered as eurybionts in relation to water depth and cannot be used for paleobathymetry reconstructions.

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Key words: Ostracods; Early Callovian; Kursk region (Russia); Paleodepth