

Conodont Biodiversity at the F/F boundary interval in carbonate sections of western slope of the South Urals

TAGARIEVA, R.Ch.

Institute of Geology, Ufa Scientific Centre, Russian Academy of Sciences, 16/2 Karl Marx street, Ufa, the Republic of Bashkortostan, 450077 Russian Federation; *stpal@anrb.ru*

F/F boundary interval in many carbonate sections of western slope of the South Urals is represented by brachiopods shell unit, the thickness of which doesn't exceed 2.1 m. The interstage boundary is located at the bottom of the Barma Horizon and is determined by simultaneous appearance of conodonts *Palmatolepis triangularis* SANN. and brachiopods *Parapugnax markovskii* (YUD.) (ABRAMOVA 1999, ABRAMOVA & ARTYUSHKOVA 2004, TAGARIEVA 2010). The lower part of the shell deposits corresponds to the Askyn horizon of Frasnian stage – conodont subzone Late *rhenana* and *linguiformis* zone (ABRAMOVA 1999).

The biodiversity analysis of conodonts of F/F boundary interval was performed on 4 characteristic sections – Bol'shaya Barma (stratotype of the Barma horizon), Akkyr, Ryauzyak and Kuk-Karauk. The Askyn Horizon conodonts complex is characterized by a rich species and quantitative diversity (Fig. 1). From the base of linguiformis zone in addition to zonal species *Palmatolepis linguiformis* MÜLL., the appearance of *Polygnathus brevilaminus* BR. & M. and *Pol. macilentus* OVN. & KUZ. was noted in all sections. *Icriodus* taxa start to play significant role in conodont complexes (see Fig. 1). All Frasnian *Palmatolepis*, *Polygnathus*, *Ancyrognathus* disappear on the F/F boundary. *Ancyrodella* and *Belodella* genera are totally extinct (see Fig. 1).

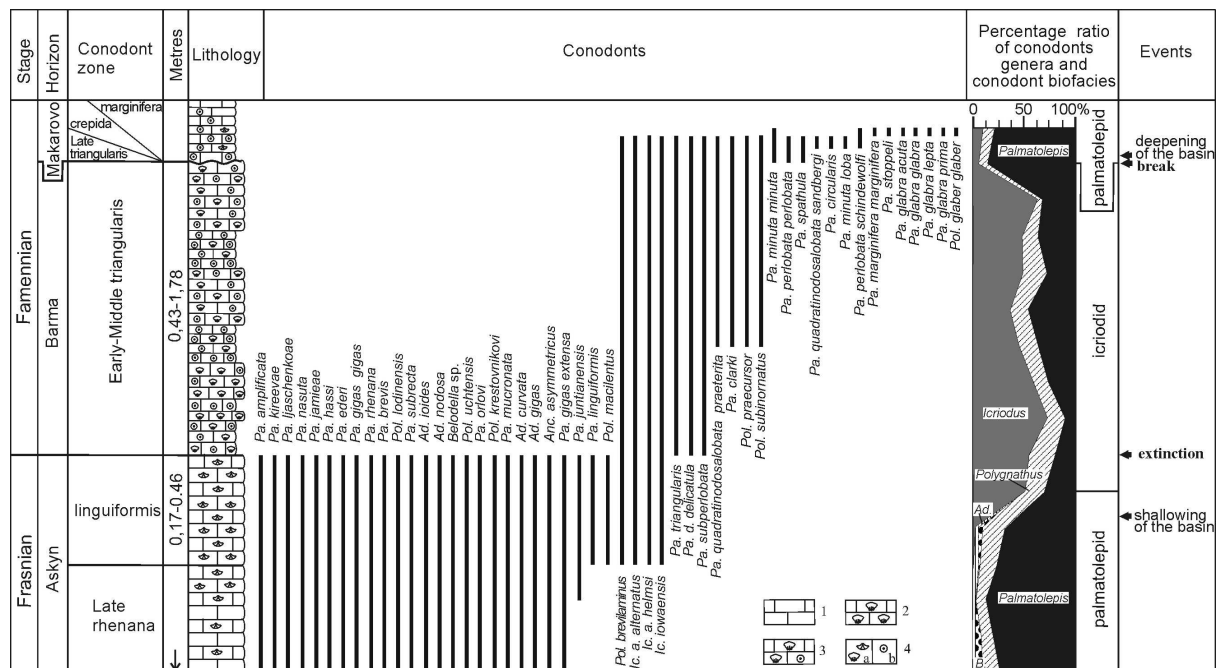


Fig. 1: Distribution of conodonts in F/F boundary interval of Bol'shaya Barma, Akkyr, Ryauzyak and Kuk-Karauk sections and conodont biofacies. Legend: 1 – limestone; 2 – brachiopod shell; 3 – brachiopod-crinoid limestone; 4 – a – brachiopods, b – crinoids. Abbreviations: Ad. – *Ancyrodella*, Anc. – *Ancyrognathus*; B. – *Belodella*; Ic. – *Icriodus*; Pa. – *Palmatolepis*; Pol. – *Polygnathus*.

The Barma Horizon in the sections under review corresponds to undivided Early and Middle *triangularis* subzones. The conodont biodiversity is extremely poor. Apart from single specimens of zonal species *Palmatolepis triangularis* SANN., the complex is characterized by presence of rare

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Palmatolepis delicatula delicatula BR. & M., *Pa. clarki* ZIEG., *Pa. quadratinodosalobata praeterita* SCHÜL., *Pa. subperlobata* BR. & M., *Pol. praecursor* MAT., *Pol. subinornatus* STREL. Abundant *Icriodus alternatus alternatus* BR. & M., *Ic. alternatus helmsi* SAND., *Ic. iowaensis iowaensis* YOUNG. & PET. and rare *Polygnathus brevilaminus* BR. & M. go from the Frasnian deposits situated below (see Fig. 1).

Barma shell deposits are overlain by crinoidal-brachiopod limestones of the Makarovo Horizon with stratigraphic break (the exception is Bol'shaya Barma section). The duration of the break in Akkyr and Ryauzyak sections corresponds to the interval of the Late *triangularis* subzone. In Kuk-Karauk section the break is more prolonged and Barma Horizon is overlain by the marginifera zone (see Fig. 1).

Biofacial analysis shows that the taxa of *Palmatolepis* genus prevail in conodont complexes of Askyn Horizon in all sections (ca. 77%). Almost in every sample the domination of *Pa. nasuta* MÜLL. species was noted. It makes up to 37-50% from all taxa discovered. According to (SEDDON & SWEET 1971, BARSKOV 1985, ZIEGLER & SANDBERG 1990) the specified complexes can be compared with palmatolepid biofacies indicating relatively deep-water environments (see Fig. 1). F/F boundary interval is characterized by prevailing of *Icriodus* (55% species) in conodonts complexes, which corresponds to icriodid biofacies (see Fig. 1). Perhaps it is connected with establishment of extremely shallow-water conditions at the end of Askyn time. This phenomenon became the reason of extinction of main Frasnian conodonts taxa (see Fig. 1). From the base of the Makarovo Horizon the diversity *Palmatolepis* species in conodont complexes increases again (ca. 85%). The change of icriodid biofacies to palmatolepid one can be indicative of deepening of the basin (see Fig. 1).

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