

Sedimentological-Ichnological Study of Lower Cretaceous Deposits of the River Pshavis Aragvi Gorge

Zurab Lebanidze¹, Rati Zedginidze¹, Tamar Beridze²
zurab.lebanidze@tsu.ge rati.zedginidze@tsu.ge tamar.beridze@tsu.ge

¹Department of Geology, Faculty of Exact and Natural Sciences, Tbilisi State University, University st. 13

²Institute of Geology, Tbilisi State University, Politovskaia st. 31

During the field work conducted in summer 2015 were carried out integrated sedimentological-ichnological studies of several cross-sections of the Lower Cretaceous deposits which crop out in the river Pshavis Aragvi gorge. On the basis of existed (Varsimashvili E., 2000) and our personal observations data Lower Cretaceous in the study area is represented by incomplete section from Hauterivian to Albian.

The oldest formation here is the lower Hauterivian Bakhani suite constituted by the alternation of calcareous and siliciclastic sediments-limestones, marls, sandstones, argillites (thickness 100-250m.). In the way-up section it is followed by greywacke-aleurolitic Pasaauri suite, this in turns is subdivided into three subsuites. The lower subsuite (100-300m.) is constructed by argillites and quartz-plagioclase sandstones (Upper Hauterivian); the middle subsuite (Lower Barremian) is constituted by quartz-arkoze thick-bedded sandstones with argillite interlayers(90-250m.) and the upper subsuite(80-130m.) is built up by argillites and quartz-plagioclase sandstones(Upper Barremian).Pasaauri suite grades into the Aptian Tetrakhevi suite represented by alternation of black and grey argillites and quartz-plagioclase-mica bearing sandstones(220-250m.).The Lower Cretaceous section ends by variegated argillites, grey marls and sandy limestones of Pavleuri suite with volcanogenic-sedimentary formations in its upper part (250-300m.).

Above described Lower Cretaceous rock units have all characteristic features of flysch due to their composition and feeding source of material represent the entire flysch formation with clastic-calcareous and grywacke-aleurolitic members.

Clastic-calcareous flysch is developed in the upper parts of the studied complex on the basis of granulometric and compositional features and thickness of rhythm elements is attributed to marly-argillaceous subtype. In the greywacke-aleurolitic subtype are defined sandstone-argillitic ("normal" flysch- Hauterivian), sandstone bearing (Lower Barremian) and argillitic(Upper Barremian-Aptian) varieties.

Different types of erosional structures are observed mainly in Hauterivian and Barremian sediments of the river Pshavis Aragvi basin. Current directions of the developed here erosional scores (flute marks)are mainly N-NW 0°-5° and indicate that source area for sediment transport is the high-relief basin margin(Bathonian cordillera).

In the Lower Cretaceous deposits of the river Pshavis Aragvi gorge have been recognized (preliminary detections) representatives of the following ichnogenus –*Chondrites* (2 ichnospecies), *Cochlichnus* (1 ichnospecies), *Nereites* (1 ichnospecies) and *Zoophycos* (1 ichnospecies). Presence of meandering and spiral traces in the ichnocomplex is diagnostic of biotype with stable environmental conditions and restricted food resources i.e. deep sea basin floor (*Nereites* ichnofacies). As for *Chondrites*, their distribution is diagnostic of low-oxygen environment.