

Sedimentological and Paleoichnological Study of the Upper Cretaceous Sediments of the Tsiv-Gombori Range

Zurab Lebanidze¹, Rati Zedginidze¹, Tamar Beridze²
e-mail: zurab.lebanidze@tsu.ge

¹Department of Geology, Tbilisi Iv. Javakhishvili State University,
13, University Street

²Al.Janelidze Institute of Geology, Tbilisi Iv. Javakhishvili State University,
31, Politkovskaia st.

During 2016 field work several cross-sections of upper Cretaceous formations of the Tsiv-Gombori range northern flank were studied aiming sedimentological investigations and detection of trace fossils occurrences. According to Ar. Tsagareli (1954), N.Mrevlishvili (1997) and the authors personal observations data the general cross-section of the upper Cretaceous flysch sediments of the study area is as follows: the oldest formation is the Ukugmarti suite, which conformably overlays the lower Cretaceous (Albian) Navtiskhevi suite and is made up by conglomerates, tuff-sandstones, polymict sandstones, marly shales and marls. The Ukugmarti suite covers lower Cenomanian and the lower part of the middle Cenomanian stages.

In the way-up succession the Ukugmarti suite is overlain by the Ananuri suite, which is subdivided into three parts. The lower part is built up by 4-45 meters thick package of cherty shales, sandstones and gritstones and corresponds to upper part of middle Cenomanian and upper Cenomanian. Common to the suite black silicites (4-55 m.) occupy the middle part of the suite and together with overlain package of cherty limestones, marls and sandstones (6-35 m.) correspond to lower Turonian. The upper Turonian Margalitisklde suite conformably continues the Ananuri suite and is constituted by the characteristic red and pinkish limestones, marls and gritstones alternation. In the way-up succession they grade into alternation of yellowish- white lithographic limestones and marls – the Eshmakiskhevi suite. The latter has variable thickness (30-350) and is dated as Coniacian-Santonian. Upper Santonian – lower Campanian 25-40 meters thick calcareous rocks form Jorchi suite and are represented by alternation of granular limestones and varicolored (red and green) marls.

Upper Campanian – Maastrichtian Sabue suite (25-200 m.) is the end member of the Upper Cretaceous cross-section which overlies the Jorchi suite or older rocks with unconformity and is built up by limestones, sandy limestones, calcareous sandstones, micro-conglomerates and breccias.

Mentioned above sediments, due to their composition and provenance of the material have all typical to flysch features and accordingly form entire calcareous-clastic flysch formation.

Within the northern slope of the Tsiv-Gombori range trace fossils have been detected in the Kakheti zone northern (the cross-sections of the rivers Khodashniskhevi, Turdo and Qisiskhevi) and southern (the cross-sections of the rivers Cheremiskhevi and Fafriskhevi) parts. In the first case trace fossils are related to the Jorchi and Sabue suites, in the second case – to the flysch facies of the Campanian-Maastrichtian orbitoides – bearing suite.

Based on our preliminary investigations in the upper Cretaceous sediments of the Tsiv-Gombori range representatives of following ichnogenera have been detected: *Chondrites* (2 ichnospecies), *Halopoa* (1 ichnosp.), *Ophiomorpha* (2 ichnosp.), *Phycosiphon* (1 ichnosp.), ? *Scolicia* (1 ichnosp.) and *Thalasinoides* (1 ichnosp.). The most abundant are the *Halopoa imbricata* Torell trace fossils.

According to the A.Tsagareli's map of facies distribution and paleogeography (1954, fig. 33) the Kakheti zone due to development of the limestone – marl- coarse clastic rocks facies of the orbitoides – bearing suite represented adjacent to the Gagra-Java onshore shallow-marine basin. Though the ichnocomplex analysis enables to suppose, that some rather remote from the onshore areas with favorable environments for horizontal trace fossils development and preservation existed in the basin as well.

The source area of this part of the basin was located in the South. This supposition is evidenced by NW (290°) current direction of the flute casts (narrow and deep upflow and shallower downflow) observed on the bases of beds in the river Kodashniskhevi cross-section.