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BIODIVERSITY OF THE LATE JURASSIC MICROORGANISMS (FORAMINIFERS) OF THE WESTERN CAUCASUS AS INDICATORS OF ENVIRONMENTAL EVENTS

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The Western Caucasus has a unique position at the transition between different palaeobiogeographic areas. Sometimes the faunal associations of this region reveal the influence of Tethyan fauna. The Upper Jurassic deposits of the Western Caucasus include rather complete and varied faunal assemblages (Rostovtsev, 1992). Usually, the adjoining palaeotectonic zones show different fauna assemblage distributions. Three regions of the Caucasus have experienced detailed foraminiferal investigations and reveal foraminiferal zonation of the Upper Jurassic---the Lagonaki barrier reef zone (Lagonaki zone, Western Caucasus) (Vuks, 2002), the Kabarda-Dagestan zone of Russia (Central and East-ern Caucasus) (Makarjeva, 1985), and the Tsesi-Korta zone of Georgia (Todria, 1991). The above-mentioned zones are also palaeotectonic zones (Rostovtsev, 1992).

The Lagonaki zone is in the western part of the northern slope of the Great Caucasus, be-tween the Belaya and Pshekha Rivers. In this zone, the Upper Jurassic is represented by the Lago-naki Reef Group, which conformably overlies the Lower-Middle Callovian and is unconformably overlain by the Cretaceous. This group is assigned to the Middle–Upper Jurassic (Upper Callovian-Tithonian). The Lagonaki Reef Group consists of an alternation of clay and limestones in the lower part and gray and white massive reef limestones with layers of massive oolitic limestones. Some-times, layers with bioclastic limestones are intercalated in the upper part. The thickness of the Lagonaki Reef Group is about 850 m (Rostovtsev, 1992). Usually, the Lagonaki Reef Group is con-sidered to be a reef. Toward the north, there are some reef bodies that correlate with the Upper Jurassic and are covered by earlier deposits. Recently, two foraminiferal assemblages and a local (biostratigraphical) zone were determined in the limestones of the eastern part of the Lagonaki zone (Vuks, 2002). The first is the Alveosepta jaccardi local zone (Oxfordian-Kimmeridgian), and the second is the Melathrokerion spirialis local zone (Tithonian). The Alveosepta jaccardi local zone is represented by a very poor assemblage. Alveosepta jaccardi (Schrodt) dominates in this association, or it is the only species. Besides foraminifera, there are many corals in these deposits (Rostovtsev, 1992). The foraminiferal assemblage of the Melathrokerion spirialis local zone reveals more variety. Besides foraminifera in these deposits, there are a lot of corals, algae, and some species of ammonoids and gastropods (Rostovtsev, 1992). The foraminiferal communities of the eastern part of the Lagonaki zone are mainly similar (in particular in the composition of genera) to some coeval foraminiferal associations from the reefal facies of Southern Europe, North Africa, and Asia.

In the Upper Jurassic of the western part of the Lagonaki zone is the transitional subzone between the above-mentioned and the Abino-Gunajskaya zones. In the transitional subzone, the Upper Jurassic deposits are represented by an alternation of clay and red limestone breccia. The foraminifera were found in the clay units only (Beznosov *et al.*, 1973). In this subzone, there are two foraminiferal associations which are the typical species. The first is the Alveosepta ukrainica (?) assemblage, and the second is the Anchispirocyclina jurassica - Lenticulina ponderosa assemblage (Vuks, 2004). These assemblages accordingly correlate with the Oxfordian-Kimmeridgian and Tithonian deposits. It is proposed that these deposits are the frontal reefal sediments and contain the special biotic communities that have some close features with previous foraminiferal associations. In the eastern part of the Abino-Gunajskaya zone (near the Lagonaki zone), there are two foraminiferal associations (Beznosov *et al.*, 1973) which are the typical species. The first is the *Alveosepta ukrainica* (?) assemblage, and the second is the *Anchispirocyclina jurassica - Lenticulina ponderosa* assemblage (Vuks, 2004). These communities accordingly correlate with the Oxfordian-Kimmeridgian and Tithonian (uppermost of the Upper Kimmeridgian?). These deposits consist of a rhythmic alternation of clay, siltstones, and sandstones, with some layers of red limestone breccia (lower unit), and subdivided by two units: lower and upper flysch-like members.

So based on the analysis of the distribution of foraminiferal assemblages, there are local zones for the eastern part of the Abino-Gunajskaya zone and the western part of the Lagonaki zone. The first foraminiferal local zone is the Alveosepta ukrainica (?), and the second, the Anchispirocyclina jurassica - Lenticulina ponderosa local zone. The Alveosepta ukrainica (?) local zone correlates with the Oxfordian-Kimmeridgian and Anchispirocyclina jurassica - Lenticulina magna local zone correlates with the Tithonian. This foraminiferal zonation is preliminary because, in the eastern part of Abino-Gunajskaya, the Anchispirocyclina jurassica - Lenticulina magna local zone includes the uppermost part of the Upper Kimmeridgian (?), and in western part of the Lagonaki zone, this foraminiferal local zone correlates with the Tithonian only. Therefore, it is necessary to obtain a more precise stratigraphic level for the boundary of the lithostratigraphic units and search for for a more detail within these zones. The for a miniferal assemblages of the eastern part of the Lagonaki zone mainly correlate with coeval foraminiferal associations of the above-mentioned areas. Thus, we have the possibility of tracing changes in the taxonomic composition of the coeval foraminiferal associations from the reefal facies of the eastern part of the Lagonaki zone to the frontal reefal sediments of the western part of the same zone and the flysch-like sediments of the eastern part of Abino-Gunajskaya. The genera and species composition of the coeval foraminiferal assemblages in the last two areas are closer to each other than the composition of the coeval foraminiferal associations in the Lagonaki zone. The existence of the similar foraminiferal assemblages in the above-mentioned regions allows one to suppose the possibility of migration of foraminifera in the Caucasus basins and from the palaeobasins of the southern part of Europe and North Africa to the Central Asian palaeobasins and backwards via the palaeobasins of Caucasus, Turkey, and Syria. Some of these assemblages involve the development of reef facies, which appear in the Late Jurassic of the Caucasus. At this time, each Caucasus basin has more individual features than in earlier times. The Late Jurassic of the Caucasus typically shows increasing facies and foraminiferal diversity, and irregular development in each basin. Features of the development of the above-mentioned palaeobasins are reflected in the peculiar evolution of the foraminiferal associations.

This work is a contribution to the IGCP 506.

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