

The Palynofloras at the Jurassic-Cretaceous Boundary (Russian Far East)

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The palynofloras were studied from the Upper Jurassic to Lower Cretaceous terrestrial deposits of the Bureya Basin and terrestrial and marine beds of Primorye region.

In Bureya Basin the Upper Jurassic is represented by Talyndzhan Formation, the Lower Cretaceous - by Urgal Formation. Talyndzhan Fm. is composed of gravels, sandstones, shales, mudstones, tuffs, tuffites and coals (more than 20 seams). The thickness of this stratigraphic unit is 500 m. The Urgal Formation overlies the Talyndzhan Formation conformably or with local unconformity and consists of conglomerates, gravels, sandstones, shales, mudstones and coals (about 50 seams). Thickness is about 600 m. The Urgal Formation is divided into Dublikan and Soloni Subformations, some geologists range these stratigraphic units into Formations (Vachrameev and Doludenko, 1961; Krassilov, 1972, 1973).

The deposits of these formations were sampled in detail with special emphasis on coals. Abundant and well-preserved palynomorphs were obtained.

The Upper Jurassic strata were deposited in brackish coastal environments. Horsetails, bryophytes, ferns, ginkgoaleans, czezanowskialeans and conifers made up plant communities of this age (Vachrameev and Doludenko, 1961; Krassilov, 1972, 1973). The burials are dominated by ginkgoaleans and czezanowskialeans, the role of ferns and cycadophytes is high.

The Late Jurassic palynoflora is characterized by predominance of fern spores, mainly have been assigned to osmundaceous and cyatheaceous ferns (up to 90%). The participation of diverse mosses is considerable. Gymnosperms are dominated by pollen close to Pinaceae and *Ginkgocycadophytus*.

Palynological assemblages from middle and upper parts of Talyndzhan Formation are similar to assemblages of Chonok Formation containing the Volgian *Buchias* (Vilyui syneclyse), Sytugin Formation (Priverkhoyansky depression), the upper Volgian deposits of Kheta River basin and Paks Peninsula (Eastern Siberia).

In the Cretaceous the sea retreats from this area and the accumulation of sediments took place on swampy seaside plains.

The Berriasian palynoflora is dominated by ferns, mainly belonging to Cyatheaceae, Dicksoniaceae, *Duplexisporites* (up to 84%). The palynomorphs *Stereisporites bujargiensis*, *Neoraistrickia rotundiformis*, *Contignisporites dorsostriatum*, *Appendicisporites tri-*

costatus, *Concavissimisporites asper* appeared. Among gymnosperms *Classopollis* and Pinaceae prevail (Markevich, 1995).

The Valanginian palynoflora is dominated by conifers (up to 60%) and *Ginkgocycadophytus*. Ferns reduce up to 50%. The osmundaceous ferns lost their significance, gleicheniaceae and schizaeaceae replaced them.

The cyatheaceous ferns, ginkgoaleans, cycadophytes, cheirolepidiaceae plants and conifers provided a basis for the Early Cretaceous plant communities. Essential features of these plant communities are inherited from the Jurassic vegetation. Their conservatism is related to similar environments.

The Berriasian palynoflora in Primorye region is known from Tauhe Formation of marine origin and from Ustinovka Formation with the Berriasian fossil plants (Primorye region, Coastal Uplift). Tauhe Formation contains ammonites *Neocomites* ex gr. *neocomiensis* (Orb.), *Dalmasiceras* sp. and bivalves *Buchia* cf. *volgensis* (Lah.), *Nucula* sp., *Myophorella* (*Myophorella*) *nottica* Konov., *Stolmorhynchia* sp., *Cyclothyris acuticostalis* Smirn. (Markevich et al., 2000). This palynoflora is dominated by gymnosperms, mainly by *Classopollis*. Among spores *Cyathidites* predominates. The peculiarity of palynological assemblage is the appearance of costate spores *Appendicisporites* (Markevich, 1980, 1995). The Berriasian palynoflora from marine Tauhe Formation has a similarity with palynoflora from Dublikan Formation.

The Berriasian flora from localities of Tauhe Formation comprises ferns, cycadophytes, and conifers (Krassilov, 1967).

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