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PALEOLIMNOLOGY
OF NORTHERN EURASIA

EXPERIENCE, METHODOLOGY, CURRENT STATUS
AND YOUNG SCIENTISTS SCHOOL IN MICROSCOPY
SKILLS IN PALEOLIMNOLOGY

PALEOLIMNOLOGY OF NORTHERN EURASIA:
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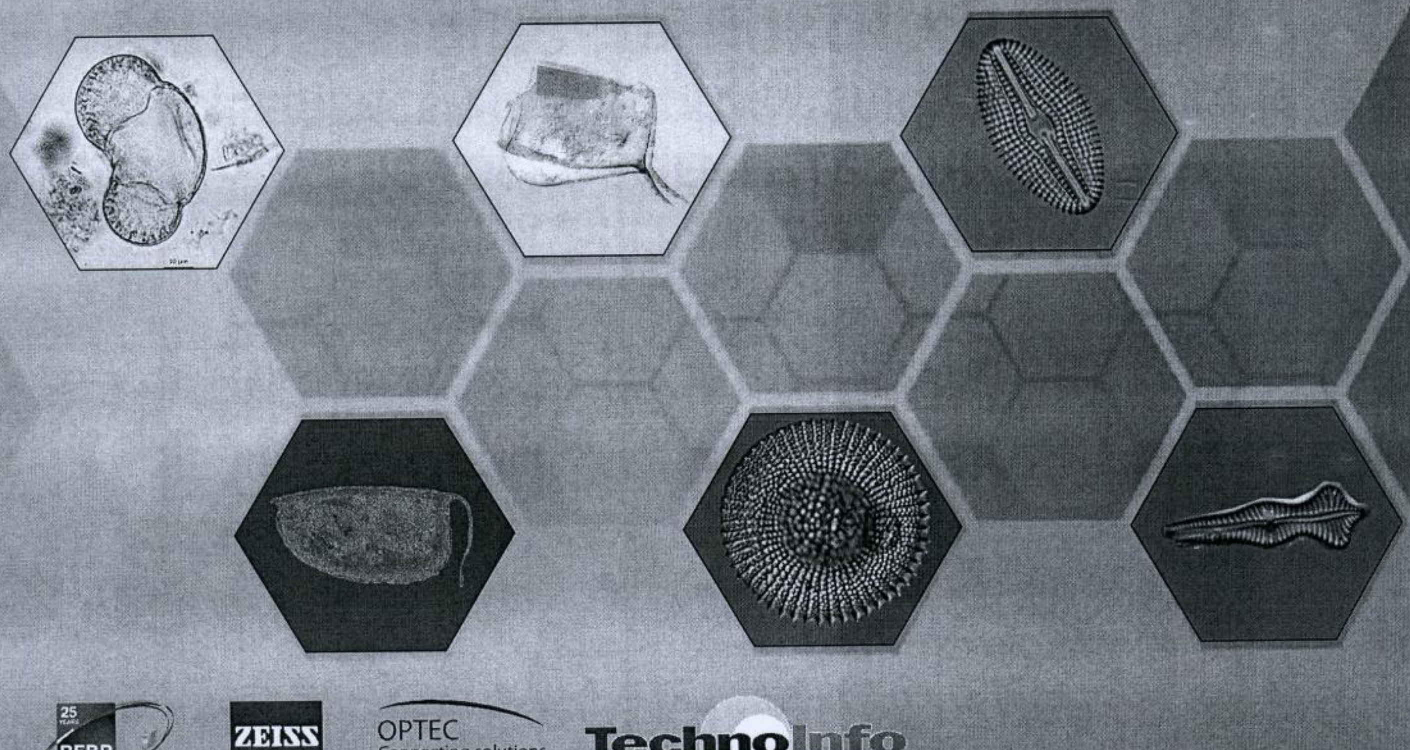
Proceedings of the 3rd International Conference

Kazan, Republic of Tatarstan, Russia, 1- 4th of October 2018



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P17 **Paleolimnology of Northern Eurasia: experience, methodology, current status and young scientists school in microscopy skills in paleolimnology:** proceedings of the 3rd International Conference (Kazan, Republic of Tatarstan, Russia, 1–4th of October 2018). – Kazan: Publishing House of Kazan University, 2018. – P. 148.

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Proceedings of the 3rd International conference "Paleolimnology of Northern Eurasia: experience, methodology, current status and young scientists school in microscopy skills in paleolimnology" are presented in the author's edition. On the meeting actual paleolimnology problems and recent scientific achievement in paleolimnological studies of the North Eurasia were discussed. Colleagues from various russian and foreign scientific centers exchanged their knowledge and experience of the last decades in the field of paleolimnology. Workshops for young scientists, postgraduates and students were conducted. Future opportunities and plans for joint future research are determined.

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Another situation is observed in the Vaga fluvial system. We identified the well-expressed grayish varved clays within the valleys of Vaga and its tributaries Kuloi and Kokshen'ga. The maximum (10 m) thickness of varved clays was observed in the outcrop near the Kuloi-Vaga confluence; thickness of sand and silt layers varies significantly, from several mm to several tens of cm, that means the unstable hydrodynamic regime, with alteration of lacustrine and fluvial sedimentary environment. At the top of the lacustrine unit there are water-escape structures characteristic for the proglacial lake deposits. Upstream the thickness of varved clay layer decreases and then recedes completely. The limit of varved clay deposits goes form SW to NE from Vaga to Kokshen'ga rivers.

Therefore, we can identify one episode of proglacial lake formation in the Late Pleistocene within the Severnaya Dvina catchment area. Two separate lake systems formed during the LGM (~ca 20 kyr BP): the Severnaya Dvina rather small, short-lived and shallow lake occupying only the middle reaches of SD river valley, and large, deep, long-living and braided Vaga lake occupying the valleys of Vaga and its tributaries Kuloi and Kokshen'ga. Such a difference in lake configuration and history could be explained by morphological features of river valleys, runoff volume and position of glacioisostatic forebulge crossing these river systems. The absolute height of water level could reach 80 m a.s.l.

The studies of LGM glacial boundary are supported by Russian Science Foundation (RSF), project 17-17-01289, the sedimentary and geochronological data was obtained due to financial support of RFBR grant 17-05-00706, following the plan of the scientific research of the Geological Institute of RAS № 0135-2018-0037.

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EXTINCTION AND RECOVERY OF THE CONCHOSTRACAN FAUNA ON THE PERMIAN-TRIASSIC BOUNDARY IN THE LAKES OF NORTHERN EURASIA

Zharinova V.V., Silantiev V.V.

Kazan (Volga region) Federal University, Kazan, Russia

Conchostracans are small crustaceans with a bivalve calcium phosphate chitinous shell. They were widespread in the Paleozoic and Mesozoic lakes in the various regions of the Earth (Lutkevich, 1941; Novozhilov, 1950; Novozhilov, 1959; Novozhilov, 1970; Molin, Novozhilov, 1965; Webb, 1978; Tasch, 1987; Lipatova, Lopato, 2000). At the same time, conchostracans were characterized by a high rate of evolution and some of their species existed for a short time. A great mass extinction took place at the end of the Permian period. However, many conchostracan species have managed to adapt to the negative environmental events. The most interesting are the changes of conchostracan assemblages at the Permian-Triassic boundary.

Late Permian conchostracan assemblage was represented by numerous genera: *Limnadia, Cyclestheria, Curvacornutus, Cornia, Glyptoasmussia, Megasitium, Pseudestheria, Polygrapta, Concilla, Loxomicroglypta, Brachysteria, Palaeolimnadiopsis, Lioestheria, Tigjanium, Gabonestheria, Lioleaiina, Kaltanleaia, Ulugkemia, Estheria, Concherisma, Palaeolimnadiopsis, Estheriella, Cyzicus, Leaia, Pseudoasmussia, Euestheria, Palaeolimnadia.* Some species were widely distributed in the Late Permian lakes: *Limnadia timanica* Mol., *Megasitium lundongaense* Novoj., *Pseudestheria novacastrensis* Mitchell, *Cyclestheria mitchelliana* Novoj., *Polygrapta chatangensis* Novoj., *Kaltanleaia rhodendorfi* Novoj. (Webb, 1978; Tasch, 1987). All these species are characteristic only for the Upper Permian deposits, and never occur in the Triassic.

Early Triassic conchostracan assemblage includes *Limnadia, Palaeolimnadiopsis, Cornia, Lioestheria, Pseudestheri*a, *Cycloestheria, Glyptoasmussia, Loxomicroglypta, Euestheria, Polygrapta, Concherisma, Gabonestheria* as well as Late Permian conchostracan assemblage (Webb, 1978; Tasch, 1987; Lipatova, Lopato, 2000). Such genera as *Rossoestheria, Caenestheria, Sphaerestheria, Cyclotunguzites, Estheriina, Nestoria, Palaeoleptestheria, Leptestheria, Sphaerograpta, Eulimnadia, Rhynchositum, Vertexia, Cornoleaia, Pseudestheriella* are characterized only for Triassic conchostracan assemblage (Lipatova, Lopato, 2000). Many new species first appeared in the Early Triassic. Following species are widely distributed in the Triassic deposits: *Lioestheria blomi* Novoj., *L. propinqua* Novoj., *Pseudestheria kashirtzevi* Novoj., *P. vjatkensis* Novoj., *P. rybinskensis* Novoj., *P. tumaryana* Novoj., *P. wetlugensis* Novoj., *P. sibirica* Novoj., *P. putjatensis* Novoj., *Cyclestheria obliqua* (Mitchell), *C. rossica* Novoj., *Sphaerestheria ovata* Novoj., *Cyclotunguzites elongatus* Mol., *C. gutta* (Lutk.), *Glyptoasmussia blomi* Novoj., *G. wetlugensis* Novoj., *Concherisma tomiensis* Novoj., *Estheriina aequalis* (Lutk.), *E. itilica* Novoj., *Limnadia blomi* Nov., *Vertexia tauricornis* (Lutk.), *Brachysteria kotscbetkovi* Novoj.; *Palaeolimnadiopsis albertii* Volz (Lipatova, Lopato, 2000).

The wide variety of new species appeared in the Triassic makes it possible to conclude that the conchostracans were highly adaptable to the changing of environmental conditions. The disappearance of Permian species and the first appearance of Triassic ones help to more clearly define the Permian-Triassic boundary in continental formations.

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