Biostratigraphic study of Middle and Upper Miocene nannofossils from the eastern Paratethys (Tamanskii Peninsula and northern Ciscaucasia)

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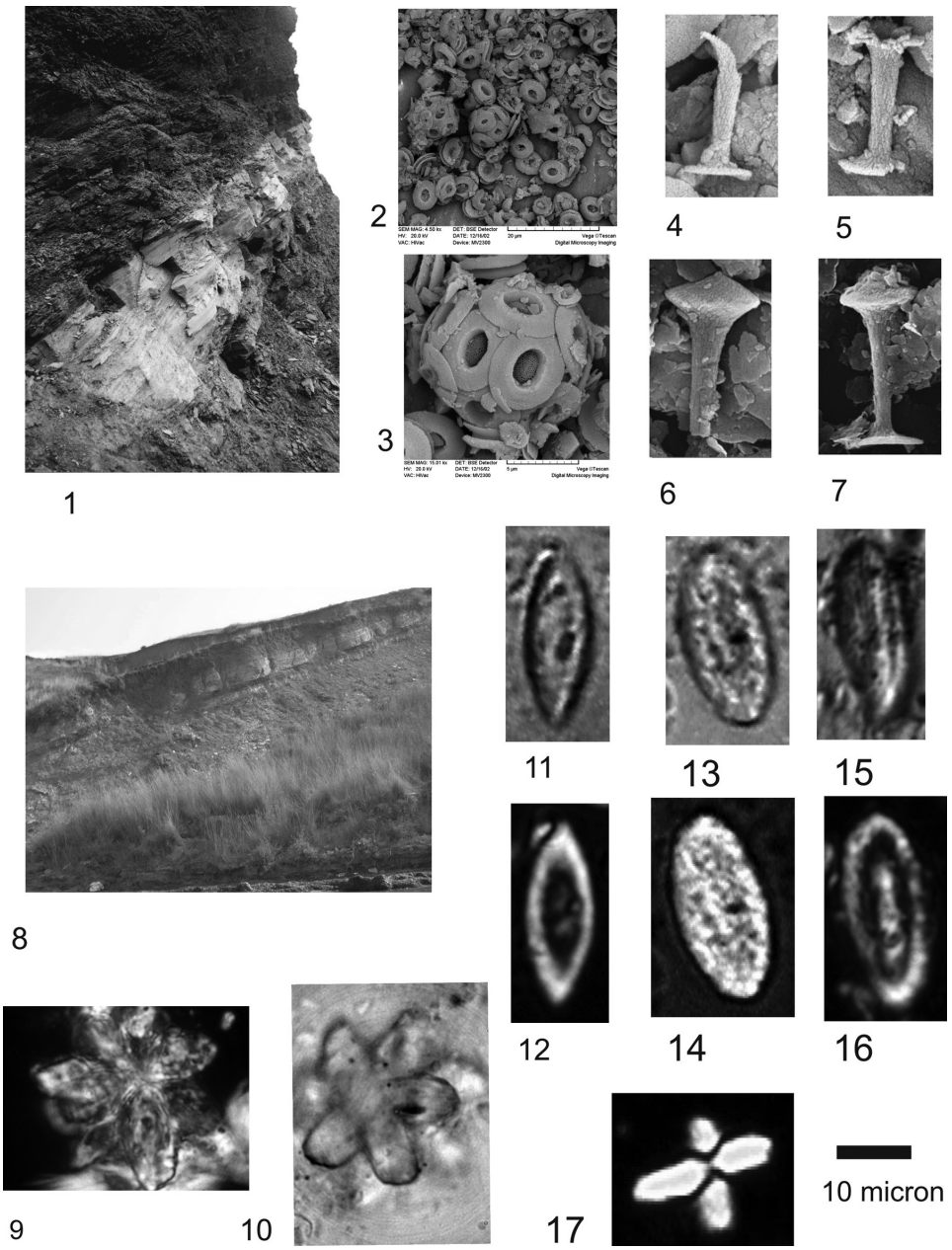
The main problem with stratigraphy of the Neogene eastern Paratethyan sediments is the correlation of its regional stages with the central Paratethys and Mediterranean units, as well as with standard nannoplankton NN zones. Problems in correlation of calcareous nannofossils in the Konkian, Maeotian and Pontian regional stages have not yet been successfully resolved (Krasheninnikov *et al*., 2003).

Calcareous nannofossils were investigated in the deep-sea sections of the Middle and Upper Miocene sediments. The sections of the Zelenskii Mountain anticline in the Tamanskii Peninsula and on the Pshekha River are among the most complete Miocene sections of the eastern Paratethys in Russia. The section on the Pshekha River belongs to the Afips-Pshekha structural facies subzone of the West Caucasian zone, which occurs in the Psekups–Pshekha–Kurdzhips interfluve. The high-resolution, bed-by-bed studies of the Konkian have established the presence of *Braarudosphaera bigelowii*, *Calcidiscus macintyrei*, *Coccolithus pelagicus*, *Cyclicargolithus floridanus*, *Cricolithus jonesii*, *Helicosphaera carteri*, *Helicosphaera* sp., *Reticulofenestra pseudoumbilica*, *Rhabdosphaera pannonica*, *Rhabdosphaera sicca*, *Rhabdosphaera* sp. and *Sphenolithus moriformis*. The impoverished, compared to the oceanic assemblages, nannoplankton complex lacks zonal species. The most diverse assemblage occurs in a thin interval and is correlated with the Sartagan Beds; subsequently it became rapidly impoverished and was replaced by the monospecific *Reticulofenestra pseudoumbilica* assemblage. The abundance of *Reticulofenestra* coccoliths is so great that they became rock-forming and make up a 1-m-thick marker marl bed traceable from the Tamanskii Peninsula in the west to the Pshekha River (Northern Ciscaucasia) in the east (Golovina *et al*., 2004). This interval is correlated with the Veselyanka Beds. The



flourishing of *Reticulofenestra pseudoumbilica* was most likely associated with a frontal contact zone of fluvial and marine waters or with the upwelling zone. Therefore, in the studied region, the Konkian stage terminated with peculiar bionomic conditions.

Calcareous nannofossils from the Maeotian and Pontian deposits in the Tamanskii Peninsula (Taman' and Iron Horn sections) are represented by poor assemblages bearing only one or two genera and likely indicating shallow-water and/or nearshore conditions; they are mostly of no biostratigraphic value. The Upper Maeotian deposits contain a great number of specific calcareous elements that in our opinion belong to the ascidian spicules. The abundant ascidian spicules are an excellent indicator of sublittoral and littoral conditions of sedimentation. Transition from the Maeotian to Pontian is characterized by a powerful development of monospecific *Braarudosphaera bigelowii* assemblages along with the diatom monospecific *Actinocyclus ehrenbergii* assemblages. These deposits mark a zone of the ancient hydrological front. Cyclicity of hydrological conditions is excellently illustrated by alternation of nannoplankton and diatom monospecific assemblages.

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References

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